Driving performance: Effective deposit and a broad scope

Container deposit return schemes that are **high-performing** achieve recovery rates of 85% or more.

International experience shows that to perform well, schemes need to have a an effective refundable deposit and a broad scope of drink containers, which for New Zealand would mean:

1. **A 20 cent refundable deposit**, which is a high enough incentive for people to return drink containers, and pick them up when they've been littered, to claim the refund
2. **The scope of drink containers is comprehensive**, including glass and plastic bottles, metal cans and beverage cartons, for recycling or for reuse

A 20 cent deposit amount

The primary goal of the refundable deposit is to incentivise people to return drink containers for recycling or reuse. There are multiple ways for people to get their refund back when they return empties – cash, vouchers to use in store, donation to charity, and electronic funds transfer (through an account or mobile phone app).

To motivate this behaviour, the deposit amount needs to be set high enough to encourage returns. Additionally, deposit schemes can feature a flat rate deposit (one deposit amount for all containers) or variable deposits (varied amount across container sizes, materials or whether the containers are recyclable or reusable). Most schemes use flat rate deposits.

New Zealanders prefer 20 cents

Previous surveys and research consistently show that in New Zealand, the majority of people favour a 20 cents deposit or higher. A total of 2,114 New Zealanders aged 18 and over were surveyed online from 21 February to 11 March 2020 (Consumer NZ, 2020). 27% considered that a minimum refund amount of 15-20 cents would be sufficient, and another 23% considered a

minimum refund amount of 25 cents or more would be sufficient. There were no significant differences in responses by annual household income. Additionally, in the Transforming Recycling 2022 public consultation, 88% of submitters supported a refund amount of 20 cents (Ministry for the Environment, 2023).

Further consumer research by Kantar/Consumer Link found 78% in favour of introducing a container return scheme (Reloop, 2022). Key findings include:

1. Only 45% said they would be willing to return empty containers for a refund if the deposit was set at 10 cents.
2. A larger majority, 66%, expressed willingness to return empty containers for a refund if the deposit was set at 20 cents.
3. The preferred deposit value was 30 cents as stated by 52% of consumers.

International experience

International evidence consistently shows that the deposit amount has the greatest impact on return rates: higher deposits typically result in greater participation and recovery (MfE RIS; Reloop, 2024; Figure 1)[1]:

- Countries and states with 10 cents or less achieve a median return rate of 70%
- A deposit of 20 cents or more is typically needed to achieve return rates of 90% or more. The median return rate in countries/states with 20 cents or more is 90%+.

[1] This is particularly effective in conjunction with other key features of high-performing schemes, like convenient collection models (i.e, return-to-retail collection systems in Europe – see Convenience factsheet).

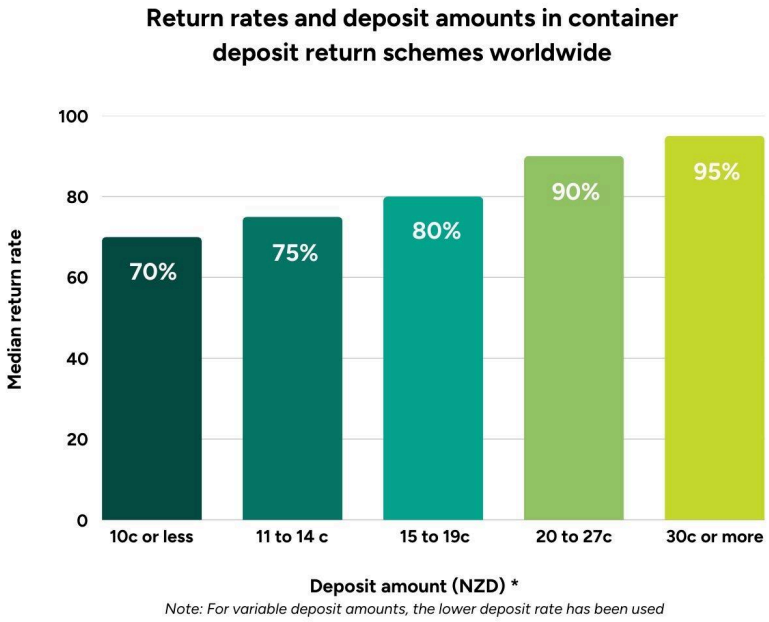

Figure 1: Median return rates for international DRS (if variable deposits are used, the lowest amount has been included). Data sourced from Reloop, 2024. Visual created by Zero Waste Network.

In general, USA, Canada, and Australia have lower average return rates (63%, 76%, and 70%, respectively) and are associated with lower average deposit amounts of 10 - 12 cents. Australian schemes have a deposit amount equivalent to NZD 11 cents, and are an indicator of the ineffectiveness of such a low deposit value as ACT, New South Wales, and Queensland all have return rates below 70%. In contrast, European schemes have significantly higher deposits than 10 cents, ranging from NZD 13 cents (lower end, Croatia) to 73 cents (upper end, Finland and Denmark) and achieve an average return rate of 87% (Reloop, 2024).

The top 10 schemes in the world (Figure 2) all achieve 87% or higher recovery rates, and the median deposit amount is 21 cents. Some schemes have significantly higher deposit amounts, for example Denmark's variable deposit ranges from 25 cents (lower end) to 73 cents (upper end) and Norway's deposit ranges from 31 cents (lower end) to 46 cents (upper end). None of these schemes have deposit amounts as low as 10 cents.

Oregon's experience shows that increasing their deposit amount led to higher return rates. Oregon doubled its deposit amount in 2017 to USD$0.10 minimum deposit value (equivalent to NZD 18 cents). This increase along with improved return options had an immediate and significant impact, boosting the return rate to 73% by the end of 2017 and reaching 87% by 2024, making it the only US state with the highest return rate (Reloop, 2024).

Top 10 Container Deposit Return Schemes

Performance

			Performance		
Rank	Country/state	Return rate (%)	Deposit (NZD cents)	Broad scope of containers*	Includes refillables
1	Germany	98	46	✓	✓
2	Finland	97	18 - 73	✓	✓
3	Lithuania	92	18	✓	✓
4	Denmark	92	25 - 73	✓	✓
5	Norway	92	31 - 46	X	✓
6	Slovakia	92	27	X	✓
7	Estonia	89	18	✓	✓
8	Sweden	89	16 - 33	X	✓
9	Iceland	89	24	✓	X
10	Oregon	87	18	✓	✓
Top 10		**92% (average)**	**21 cents (median)**	**70%**	**90%**

*Including plastic, metal and glass. Note, all top 10 schemes include plastic and metal.

Figure 2: Top 10 container deposit return schemes

Overall, a 10 cent deposit:

- is associated with lower return rates (average of 70%)
- Is too low to drive meaningful participation and high performance in New Zealand's scheme
- Is an inadequate incentive to achieve high return rates of 85% or more as shown in international schemes. A 10 cent deposit would likely result in a lower recovery rate (~78%) after five years, based on regression analysis (MfE RIS)
- 10c will quickly de-value and consumers will lose interest in the scheme

In addition, if the deposit is set too low or devalues over time due to inflation, consumers may experience "return fatigue," questioning the effort required to return empty containers for minimal reward. This was apparent in New Zealand consumer research carried out in 2022, where less than half (only 45%) of respondents said they would be willing to return empty containers for a refund if the deposit was set at 10 cents (Reloop, 2022).

Why we support 20 cents

We support a 20 cent refundable deposit because it is:

1. a stronger incentive for container recovery, reducing litter, and improving recycling. It is more likely to reduce beverage container litter - a container worth 20 cents creates a stronger incentive to return the container for the refund, and if it has been littered is

more likely to be picked up and returned (most New Zealanders support a deposit amount of 20 cents)
2. expected to achieve higher return rates of 85% or more, as shown in international schemes and MfE CRS RIS)[2]
3. strikes a balance between ensuring an effective scheme while managing increased costs to consumers.

The 20 cent deposit would need to be combined with other design features, in particular high network convenience (i.e. regulated return-to-retail) and mandated return rate targets of 85% from year three and 90% from year five to ensure high return rates.

A broad scope of containers

New Zealand's container deposit return scheme should cover all beverage types and container materials including plastic (PET, HDPE, PP), glass (all colours), metal, and liquid paperboard between 100mL and 3L in size. Exempting certain materials (like glass), or beverages (like milk or reusable beverages), creates an uneven playing field for different industries, increases system costs, and would make the CRS less effective overall.

The intention is to ensure that all containers collected through the CRS are sent to recycling markets (if not reused), both domestic and export. Ideally, these materials should be recycled into food-grade, 'container-to-container' products whenever possible, as outlined in the Cabinet Paper (MfE, 2022).

A report from Eunomia and Zero Waste Europe (2023) on the decarbonisation of single-use beverage containers found that all three common beverage container materials - aluminium, glass and PET - face significant challenges in decarbonisation. Key findings included:

- **Glass -** Glass has the highest proportional impact, mainly due to its energy-intensive manufacturing process, with GHG emissions 3-4 times higher than aluminum and PET. Recycled glass still uses about 75% of the energy needed for virgin production, compared to about 10% for aluminum. Reducing glass demand is challenging, as weight reduction alone doesn't address its high energy use. The report suggests that reuse is the most effective solution to reduce glass mass and carbon impact.

- **PET and aluminium** – From a purely climate change perspective, switching to PET and aluminum may be more suitable for single-use beverage containers. Both PET and aluminium offer more compelling options compared to glass in single use applications,

[2] PwC regression analysis outlined in MfE CRS Regulatory Impact Statement was based on modelling across 37 schemes, and noted that a 20 cent deposit is expected to achieve a higher recovery rate of 85%.

and enhancing recycling and circularity practices appears to be of utmost importance for aluminium and PET.

Including plastic, metal, glass and liquid paperboard beverage materials in New Zealand's scheme will:

- capture clean, separate streams of high-quality beverage container materials—such as glass, PET, HDPE, and aluminium—driving high recovery and recycling rates and and contamination
- Reduce litter across different beverage container materials and types
  Provide a system that is easy for New Zealanders to understand and use
- Align with international best practice (Figure 3)

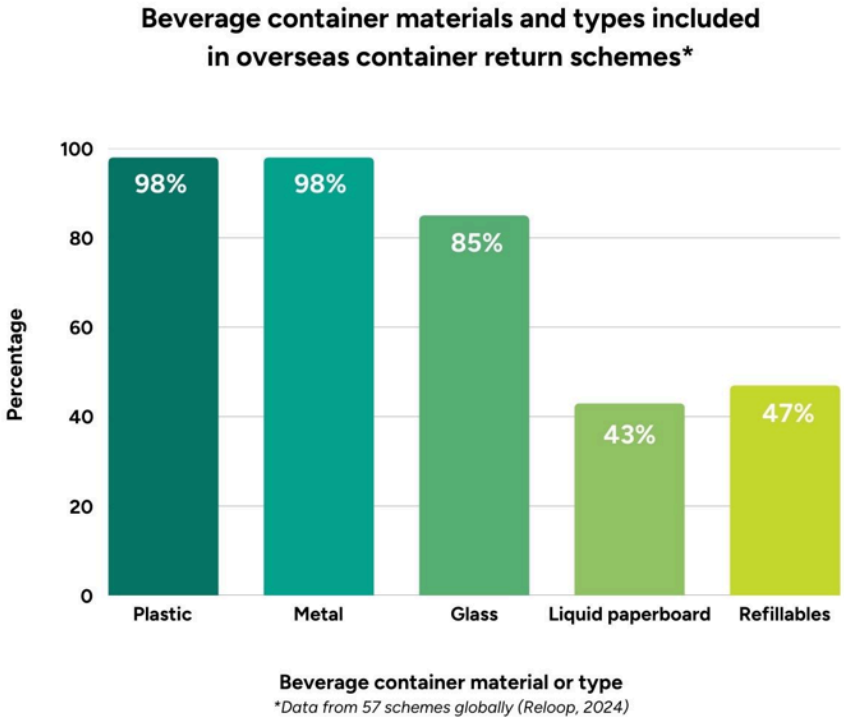

Figure 3: Beverage container materials or types included in international schemes

Why include plastic?

Including plastic is best practice: 98% of the world's schemes include plastic beverages (mainly PET, sometimes HDPE). It is also crucial for addressing our low recovery rates – only 33% of PET and HDPE beverage containers are recovered for recycling in New Zealand (commercial and kerbside recovery). The CRS offers an opportunity to increase recovery rates, collecting higher quantities and cleaner streams of PET and HDPE and reducing litter. Plastic containers,

particularly PET (#1), HDPE (#2), and PP (#5), are highly recyclable and have high market demand both onshore and offshore.

New Zealand's onshore plastic reprocessing industry is still growing, and we import significantly more virgin plastic material than we process into recycled content onshore. (Eunomia, 2021).[3] By increasing the recovery of clean, separated, and high-value plastic, the CRS can support our onshore plastic reprocessing, local recycling and manufacturing industries. Reducing the use of virgin material in container manufacture also reduces emissions.

Why include metal?

Metal beverage containers are included in 98% of beverage container return schemes globally (Reloop, 2024). Including metal containers in the CRS will help to address our relatively low recovery rates - currently, only about 45% of metal beverage containers are recovered via existing systems in New Zealand (based on 2019 data - kerbside and commercial recovery).

Aluminium cans require significant energy to be manufactured but can be recycled indefinitely, as reprocessing does not change its structure (Reclaim, n.d). Producing aluminum from recycled content has a significantly lower climate impact than using virgin materials (Zero Waste Europe & Eunomia, 2023). In addition, there are good offshore recycling markets for aluminium - most collected aluminium is exported for recycling[4] – aluminium has high demand and is a valuable material, with a market value of approximately $1,250 per tonne.

Why include liquid paperboard?

Although liquid paperboard (LPB) accounted for just 7% of the New Zealand beverage container market in 2020/21 (approximately 167 million containers sold), it is a growing market which needs onshore collection systems. Given LPB is no longer included in New Zealand's kerbside collection systems, it is important for the CRS to provide the means to address collection gaps by capturing beverage LPB, and subsequently preventing litter and landfill disposal. There is onshore demand for collected LPB (i.e, the SaveBOARD Plant in Hamilton).

Not including LPB beverage containers would create an uneven playing field for beverage producers. In fact, 43% of beverage container return schemes in countries like Canada and the USA include LPB containers, making it a common practice globally (Reloop, 2024).

[3] The total tonnes of plastic managed and reprocessed into products onshore (for domestic and export markets) represent only a fraction of the total economy-wide virgin plastic input weight, because finished products generally contain a proportion of virgin plastic.

[4] While Recorp Aluminium recently opened a beverage can manufacturing plant in South Auckland, they currently source aluminium from China (NZ does not have an aluminium rolling mill).

Why do we need to include glass?

Glass must be included in New Zealand's container return scheme for several key reasons. Including glass would help to address our low recovery rates for beverage glass, reduce litter and kerbside contamination and collection costs, would result in more net benefits, and would help to pave the way for reuse. Glass is included in 85% of global container return schemes (Reloop, 2024).

Key limitations for the Visy Beneficiation Plant in Auckland (New Zealand's only glass beneficiation plant) are contamination issues, co-mingled collection challenges (eg, broken or colour-mixed glass delivered through the kerbside system) and capacity constraints. Including glass in the CRS will help to deliver high quality, clean streams of separated beverage glass to the beneficiation plant in Auckland (our current beverage glass recovery is around 60%, or 48% bottle-to-bottle recycling). Including glass will reduce kerbside contamination and collection costs, including reducing costs to ratepayers (Sapere, 2022).[5]

A CRS provides several viable solutions to ensure that there are circular outcomes for increased recovery of beverage glass, preventing stockpiling or downcycling into products like roading (given the aforementioned capacity issues at the Visy Beneficiation Plant). For example, legislation (primary or secondary) could:

1. **Set reuse targets and allow refillable beverage bottles to opt into the scheme**, to help shift from single-use to reusable glass bottles - as well as economic incentives for reusable beverages. As outlined, reuse is the best way to reduce glass mass and emissions impacts for glass (Zero Waste Europe & Eunomia, 2023). Including glass would help to pave the way for reuse because glass is the material of choice for reusable packaging.
2. **Specify that collected beverage materials must be recycled into food-grade, 'container-to-container' products wherever possible** (as signalled in the CRS Cabinet paper - MfE, 2022)
3. **Include recycled content targets for all glass containers** (and other materials), including for imports, to increase the use of recycled glass and bottle-to-bottle recycling

Additional end-markets for glass could involve expanding domestic reprocessing capacity or exploring alternative markets like Australia or Asia for bottle-to-bottle recycling.

[5] Including glass is expected to cut kerbside collection costs by $91 million by removing bulky glass and plastic bottles, and reduce kerbside recycling contamination by $30 million. The CDRS should lower contamination rates by about 50%, from the current 12% (broken glass is a common contaminant in kerbside recycling)

Glass is highly suitable for reuse. Adopting a system that includes and promotes reuse for glass is likely to have the best carbon reduction outcome for glass, significantly decreasing glass demand in terms of mass (but maintaining unit use) and decreasing emissions (Zero Waste Europe & Eunomia, 2023).

Increasing the recovery of glass through a CRS will also tackle New Zealand's significant glass litter problem. Glass beer bottles are a major source of litter.[6] Major beverage producers like Asahi, Lion, and DB Breweries are the leading producers of littered alcoholic beverages in NZ (Keep New Zealand Beautiful, 2022), and provide many of their beverages in glass. A CRS would ensure producers take responsibility for their packaging through extended producer responsibility.

Lastly, the cost-benefit analysis clearly shows the substantial benefits of including glass in the scheme. With glass, CRS would result in society being better off than a business as usual scenario by more than 1 billion. In contrast, excluding glass drops the benefits to just $68million (Sapere, 2022).[7]

Reuse should be able to "opt in" and be supported by additional measures

Reusable beverage packaging (returnable bottles) providers should be able to "opt-in" to the container deposit return scheme and hook into the network, rather than be exempt from the scheme. The container deposit return scheme can pave the way towards increasing reusable beverage packaging by:

1. internalising the costs of single-use packaging (the scheme fee will require beverage producers to cover the costs of recovering and recycling their packaging)
2. including measures directly aimed at incentivising reusable beverage packaging and supporting the growth of associated infrastructure and logistics (Reuse Aotearoa, 2022a)
3. providing nationwide infrastructure and networks that can also be leveraged for reusable beverage packaging.

Globally, nearly half (47%) of container deposit return schemes integrate returnable bottles alongside single-use packaging, recognising the environmental benefits of reusable containers (Reloop, 2024). Notably, Wales recently exited the UK deposit return scheme, to pursue a more ambitious scheme that includes glass and reuse, helping to support the transition to reuse for

[6] Glass beer bottles (less than 750ml, in all colours) are are the leading material of any single material type found in national litter weight

[7] When glass is included, the Benefit-Cost Ratio (BCR) is 1.47. If glass is excluded, the BCR decreases to 1.10.

all drink containers, with Welsh ministers citing that reuse will use less energy and carbon than recycling (The Standard, 2024; BBC, 2024). Polling in 2022 found that 71% of New Zealand consumers supported the reintroduction of refillable containers in the scheme, stating they would buy drinks in this format (Reloop, 2022).

In practice, the 'front-end' of the CRS system is the same for both single-use and reusable packaging, where consumers return empty bottles for a refund. Recyclable bottles, cans, and cartons are then sent to re-processors to be turned into recycled content. The 'back-end' differs for refillable containers, requiring specialised reverse logistics to clean, sterilise, and refill bottles, rather than recycling them. By allowing reusable packaging to 'opt-in' to the network, beverage companies and third-party operators can overcome infrastructure and logistical challenges[8], by being able to connect into the nationwide CRS return network.

New Zealand's container deposit return scheme needs to include additional measures to further overcome barriers to support a greater uptake of reusable beverage packaging, including (Reuse Aotearoa, 2022b):

- **Include glass:** Glass is ideal reuse and is often favoured by reusable producers. Reusing glass has a greater impact on carbon reductions than recycling and helps reduce the mass of single-use glass (Zero Waste Europe & Eunomia, 2023), thereby helping to address New Zealand's challenges with onshore reprocessing capacity.

- **Product Stewardship Organisation (PSO) role**: Legislation should make the PSO responsible for supporting reusable packaging, including reinvesting unredeemed deposits into reusable packaging infrastructure, standardising bottles, and funding research on reusable systems.

- **Reuse targets**: Legislation should require beverage producers, retailers, and hospitality outlets to adopt reusable packaging through binding refillable targets, tailored to their current reuse levels.

- **Financial incentives**: CRS scheme fees could incentivise reuse by offering lower fees for reusable producers or applying a one-off fee for returnable bottles. Lower scheme fees could also help to incentivise a shift away from single-use glass beverages to reusable glass bottles, which is important given that glass reprocessing in New Zealand is at capacity in NZ. A consistent 20c refundable deposit for both single-use and reusable containers would also help to level the playing field.

Allowing reusables to "opt in" to the network, along with additional measures including those mentioned above, will encourage the beverage industry to adopt and increase the use of reusable packaging.

[8] Barriers to reusable beverage packaging are detailed in several Reuse Aotearoa reports (eg, Blumhardt & Brownlee, 2024; Reuse Aotearoa, 2022b).

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