



FACT SHEET

Deposit return systems: The difference between flat- and variable-rate schemes

January 2023

Deposit return systems: The difference between flat- and variable-rate schemes

According to our knowledge of existing programmes, as well as programmes that are committed to but not yet operational, it is reasonable to predict that by the end of 2026, deposit return systems (DRSs) will be in place in more than 70 jurisdictions worldwide, up from 48 in 2020.

When it comes to the design of a new DRS, one of the key topics of debate is whether the system should adopt a flat-rate (sometimes called ‘fixed-rate) or variable deposit fee. In a **flat-rate** DRS, all drinks containers – regardless of beverage type, volume, or container material – are subject to the same deposit. By contrast, a **variable-rate** system, is one where deposit levels can vary by container volume or material type, or both. In some variable-rate systems, deposit levels can also vary by beverage type.

Table 1 summarises jurisdictions that have implemented a DRS for single-use drinks containers and what type of deposit structure (flat-rate or variable-rate) they use.

Table 1
Jurisdictions with deposit return systems and type of deposit

	Flat-rate DRS	Variable-rate DRS
Europe	Croatia, Estonia, Germany, Iceland, Latvia, Lithuania, Malta, Slovakia	Denmark, Finland, Sweden, the Netherlands, Norway
North America	British Columbia, Oregon, New York, Connecticut, Hawaii, Iowa, Michigan, Massachusetts	Alberta, New Brunswick, Nova Scotia, Newfoundland and Labrador, Saskatchewan, Prince Edward Island, Ontario, Quebec, Maine, Vermont, California
Oceania	Australian Capital Territory, Queensland, Republic of Palau, South Australia, Tuvalu, Western Australia, Northern Territory, New South Wales, Kosrae	
Middle East	Israel	

As presented in Table 2, the deposit levels charged on drinks containers in flat-rate DRSs vary across jurisdictions. The deposit levels in most flat-rate DRS programmes are €0.10 or less, although some programmes – like Germany and Slovakia – have higher deposits at €0.25 and €0.15 (ISK 18.00), respectively.

Table 2
Flat-rate deposit return systems

1 of 2

Jurisdiction	Refund value (national currency)	Refund value (euro) ^[1]	Overall Return Rate ^[2]
Europe			
Croatia	0.5 HRK	€0.07	91%
Estonia	€0.10	€0.10	87%
Germany	€0.25	€0.25	98%
Iceland	ISK 18.00	€0.12	91%
Latvia	€0.10	€0.10	Not available
Lithuania	€0.10	€0.10	90%
Malta	€0.10	€0.10	Not available
Slovakia	€0.15	€0.15	Not available
North America			
British Columbia, Canada	CAD \$0.10	€0.07	80%
Connecticut, United States	USD \$0.05	€0.05	46%
Hawaii, United States	USD \$0.05	€0.05	63%
Iowa, United States	USD \$0.05	€0.05	64%
Massachusetts, United States	USD \$0.05	€0.05	38%
Michigan, United States	USD \$0.10	€0.09	75%
New York, United States	USD \$0.05	€0.05	70%
Oregon, United States	USD \$0.10	€0.09	81%

Note: ^[1] Deposit levels have been converted from national currencies to Euros using exchange rates retrieved on 14 December 2022. ^[2] Return rates represent the latest available data. In most cases this means 2020 or 2021.

Table 2
Flat-rate deposit return systems (continued)

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Jurisdiction	Refund value (national currency)	Refund value (euro) ^[1]	Overall Return Rate ^[2]
Oceania			
Australian Capital Territory, Australia	AUD \$0.10	€0.06	75%
New South Wales, Australia	AUD \$0.10	€0.06	67%
Northern Territory, Australia	AUD \$0.10	€0.06	75%
Queensland, Australia	AUD \$0.10	€0.06	63%
Western Australia, Australia	AUD \$0.10	€0.06	52%
South Australia, Australia	AUD \$0.10	€0.06	78%
Republic of Palau	USD \$0.05	€0.05	84%
Kosrae, Federated States of Micronesia	USD \$0.05	€0.05	86%
Tuvalu	USD \$0.05	€0.05	67%
Middle East			
Israel	ILS 0.30	€0.08	77%

Note: ^[1] Deposit levels have been converted from national currencies to Euros using exchange rates retrieved on 14 December 2022. ^[2] Return rates represent the latest available data. In most cases this means 2020 or 2021.

As mentioned earlier, deposit levels in a variable-rate DRSs can vary by container volume or material type – or both – and in some jurisdictions (mostly in Canada), can also vary by beverage type.

Table 3 illustrates the ways in which the deposit can vary in jurisdictions which have implemented variable-rate systems.

In the Canadian province of Alberta, the deposit levels only vary by volume. Large drinks containers (over 1L) are charged higher deposits than smaller containers (1L or less).

California's DRS is similar; all containers smaller than 24 ounces (710ml) in volume are charged one deposit, and those 24 ounces or greater are charged a higher deposit.

In other jurisdictions, deposit levels vary by material type (i.e. metal cans, glass bottles and plastic bottles), even if they have the same volume. In Denmark, for instance, the small plastic bottles (1L or smaller) are subject to a higher deposit (1.5 DKK) than glass bottles and cans of the same volume (1 DKK).

In Finland and Sweden, deposit levels vary by material type, and in the case of plastic bottles, they also vary by volume. The deposits applied to plastic bottles are higher for large bottles, even though cans (in Sweden and Finland) and glass bottles (in Finland only) are charged the same rates across all container sizes.

In some North American programmes, the deposit charged on a container depends on its content (i.e. beverage type) as well as volume. In Ontario, for example, wine and spirits containers are subject to different deposits than beer containers, and in each of those beverage categories, larger bottles carry higher deposits. In Nova Scotia, non-alcohol beverages are subject to a flat-rate deposit while the deposit charged on alcohol beverages depends on the size of the container.

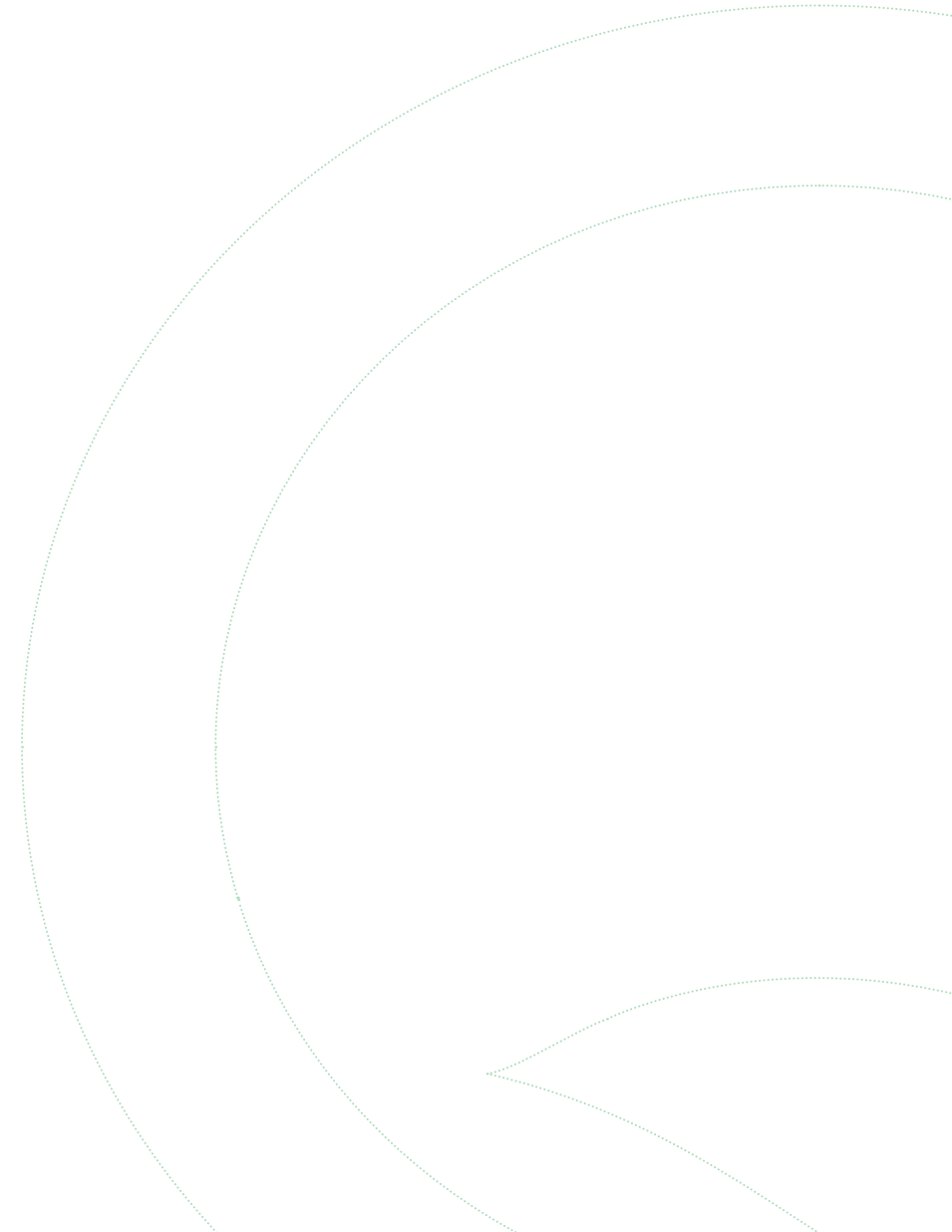


Table 3
Variable-rate deposit return systems

1 of 3

Jurisdiction	Type of variable-rate system	Refund value (national currency)	Refund value (euro) ^[1]	Overall Return Rate ^[2]
Europe				
Denmark	Deposit levels vary by volume and material type. The deposit on containers <1L are higher for plastic bottles than for other material types, but the deposit for large containers (>1L) is the same across all material types.	Metal, glass <1L: 1 DKK Plastic <1L: 1.5 DKK Metal, glass, plastic 1-20L: 3 DKK	Metal, glass <1L: €0.13 Plastic <1L: €0.20 Metal, glass, plastic 1-20L: €0.40	93%
Finland	Deposit levels vary by material type, and in the case of plastic bottles, by volume. All metal cans have the same deposit, as do all glass bottles. For plastic, there are three different deposit levels depending on container size.	Plastic ≤350ml: €0.10 Plastic 351ml to 999ml: €0.20 Plastic ≥1L: €0.40 Metal: €0.15 Glass: €0.10		96%
The Netherlands	Deposits levels vary by volume only. *When cans are added to the system as of 31 Dec 2022, the deposit on all cans (regardless of volume) will be the same as that on small plastic bottles.	Plastic <1L: €0.15 Plastic 1-3L: €0.25	Plastic <1L: €0.15 Plastic 1-3L: €0.25	70%
Norway	Deposit levels vary by volume only. Small plastic and metal containers have the same deposit, which is lower than the deposit charged on large plastic and metal containers.	Plastic, metal <0.5L: 2 NOK Plastic, metal ≥ 0.5L: 3 NOK	Plastic, metal <0.5L: €0.20 Plastic, metal ≥ 0.5L: €0.30	92%
Sweden	Deposit levels vary by material type, and in the case of plastic bottles, by volume. All metal cans have the same deposit, but the deposit fees on plastic bottles vary by volume.	Metal: 1 SEK Plastic ≤1L: 1 SEK Plastic >1L: 2 SEK	Metal: €0.10 Plastic ≤1L: €0.10 Plastic >1L: €0.19	88%

Note: ^[1] Deposit levels have been converted from national currencies to Euros using exchange rates retrieved on 14 December 2022. ^[2] Return rates represent the latest available data. In most cases this means 2020 or 2021.

Table 3
Variable-rate deposit return systems (continued)

2 of 3

Jurisdiction	Type of variable-rate system	Refund value (national currency)	Refund value (euro) ^[1]	Overall Return Rate ^[2]
North America				
Alberta	Deposit levels vary by volume only.	Containers ≤1L: CAD\$0.10 Containers >1L: CAD\$0.25	Containers ≤1L: €0.08 Containers >1L: €0.19	84%
California	Deposit levels vary by volume only.	Containers <24oz (710ml): USD\$0.05 Containers ≥24oz (710ml): USD\$0.10	Containers <24oz (710ml): €0.10 Containers ≥24oz (710ml): €0.10	61%
Maine	Deposit levels vary by volume and beverage type. The deposit on wine and spirits containers >50ml is higher than it is for other drinks (including wine and spirits 50ml or less). The deposit on all 'other drinks' is the same.	Wine and spirits >50ml: USD\$0.15 Other drinks (incl. wine and spirits ≤50ml): USD\$0.05	Wine and spirits >50ml: €0.15 Other drinks (incl. wine and spirits ≤50ml): €0.05	76%
Newfoundland and Labrador	Deposit levels vary by beverage type. The deposits on non-alcohol beverages, as well as beer cans and imported bottles equal to or greater than 1L, are lower than wine and spirit containers.	Non-alcohol: CAD\$0.05 Wine and spirits: CAD\$0.10 Beer cans and imported bottles ≤1L: CAD\$0.05	Non-alcohol: €0.04 Wine and spirits: €0.08 Beer cans and imported bottles ≤1L: €0.04	71%
New Brunswick	Deposit levels vary by beverage type and container size. The deposits on all non-alcohol beverages are the same, but the deposits on alcohol beverages vary by volume.	Non-alcohol ≤5L: CAD\$0.05 Alcohol ≤500ml: CAD\$0.05 Alcohol >500ml: CAD\$0.10	Non-alcohol ≤5L: €0.04 Alcohol ≤500ml: €0.04 Alcohol >500ml: €0.08	70%
Nova Scotia	Deposit levels vary by beverage type and container size. The deposits on all non-alcohol beverages are the same, but the deposits on alcohol beverages vary by volume.	Non-alcohol <5L: CAD\$0.05 Alcohol ≤500ml: CAD\$0.05 Alcohol >500ml: CAD\$0.10	Non-alcohol <5L: €0.04 Alcohol ≤500ml: €0.04 Alcohol >500ml: €0.08	82%

Note: ^[1] Deposit levels have been converted from national currencies to Euros using exchange rates retrieved on 14 December 2022. ^[2] Return rates represent the latest available data. In most cases this means 2020 or 2021.

Table 3
Variable-rate deposit return systems (continued)

3 of 3

Jurisdiction	Type of variable-rate system	Refund value (national currency)	Refund value (euro) ^[1]	Overall Return Rate ^[2]
North America				
Ontario	Deposit levels vary by volume and beverage type. The deposits on wine and spirit containers vary by volume, as is the case for beer containers.	Wine and spirits ≤ 630ml: CAD\$0.10 Wine and spirits >630ml: CAD\$0.20 Beer ≤1L: CAD\$0.10 Beer >1L: CAD\$0.20	Wine and spirits ≤ 630ml: €0.08 Wine and spirits >630ml: €0.15 Beer ≤1L: €0.08 Beer >1L: €0.15	74%
Prince Edward Island	Deposit levels vary by beverage type and container size. The deposits on all non-alcohol beverages are the same, but the deposits on alcohol beverages vary by volume.	Non-alcohol: CAD\$0.05 Alcohol ≤500ml: CAD\$0.05 Alcohol >500ml: CAD\$0.10	Non-alcohol: €0.04 Alcohol ≤500ml: €0.04 Alcohol >500ml: €0.08	85%
Quebec	Deposit levels vary by beverage type, material type, and volume. The deposit on all soft drinks is the same, but the deposit on beer containers varies by material and volume. *Under the new regulations, set to come into force on 1 Nov 2023, it will no longer be the type of beverage that determines if a deposit is required or not, but the material type. With the exception of glass bottles, whose deposit will vary by volume, all container material types will have the same deposit.	Soft drinks: CAD\$0.05 Beer cans ≤ 450ml: CAD\$0.05 Beer cans > 450ml: CAD\$0.20 Beer glass ≤ 450ml: CAD\$0.10 Beer glass > 450ml: CAD\$0.20	Soft drinks: €0.04 Beer cans ≤450ml: €0.04 Beer cans >450ml: €0.15 Beer glass ≤450ml: €0.08 Beer glass >450ml: €0.15	67%
Saskatchewan	Deposit levels vary by volume and material type. There are three different deposit levels for glass containers, which vary by volume. The deposit on plastic, metal, and gable top/aseptic containers under 1L is the same (regardless of material type), but is lower than it is for plastic, metal, and gable top/aseptic containers 1L or more	Plastic, metal, gable top/aseptic <1L: CAD\$0.10 Plastic, metal, gable top/aseptic ≥1L: CAD\$0.25 Glass ≤300ml: CAD\$0.10 Glass 301-999ml: CAD\$0.20 Glass ≥1L: CAD\$0.40	Plastic, metal, gable top/aseptic <1L: €0.08 Plastic, metal, gable top/aseptic ≥1L: €0.19 Glass ≤300ml: €0.08 Glass 301-999ml: €0.15 Glass ≥1L: €0.31	82%
Vermont	Deposit levels vary by beverage type. The deposit on liquor containers is higher than it is for other drinks. All drinks - other than liquor - have the same deposit.	Liquor >50ml: USD\$0.15 (€0.14) Other drinks: USD\$0.05 (€0.05)	Liquor >50ml: €0.15 Other drinks: €0.05	78%

Note: ^[1] Deposit levels have been converted from national currencies to Euros using exchange rates retrieved on 14 December 2022. ^[2] Return rates represent the latest available data. In most cases this means 2020 or 2021.

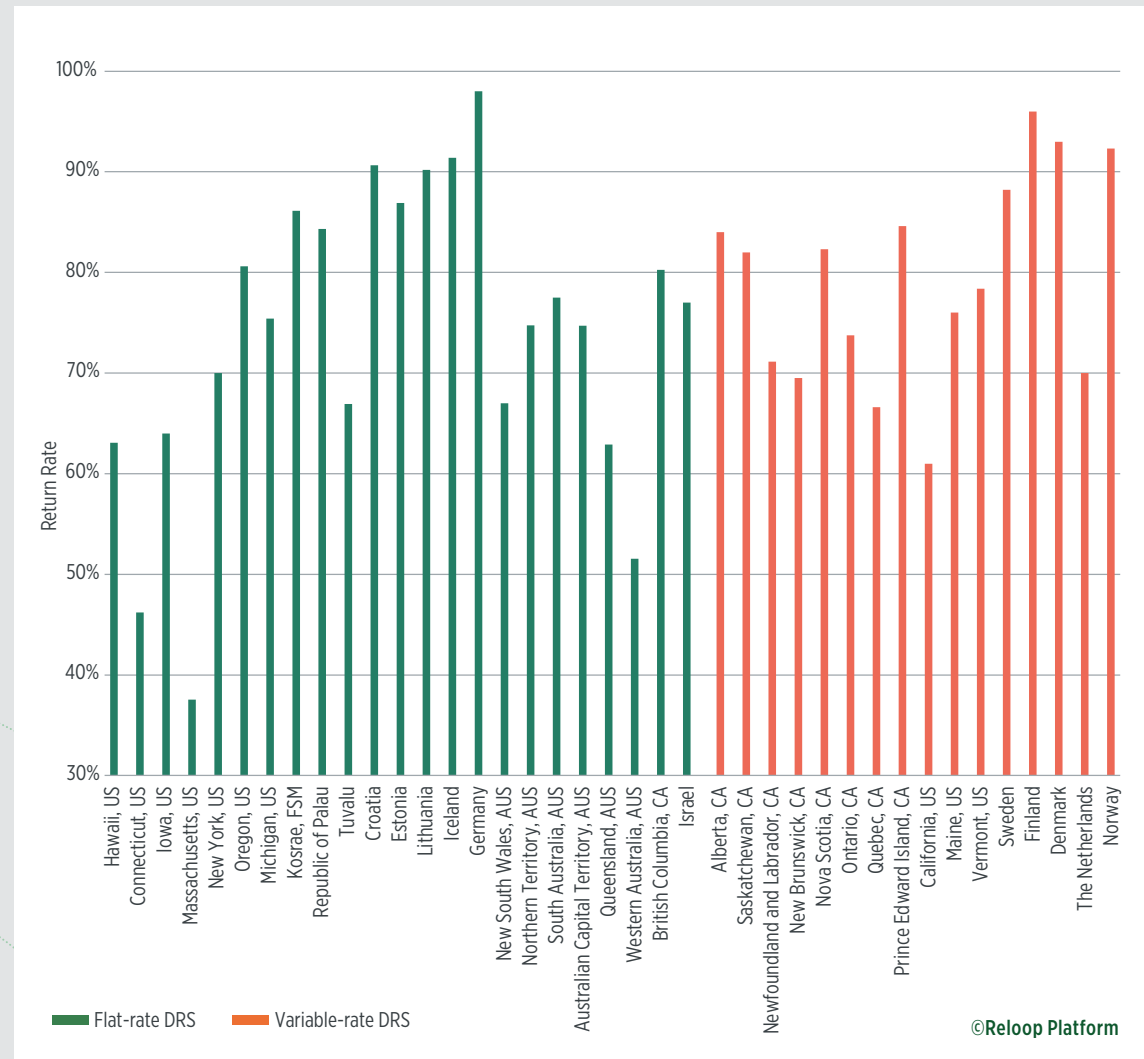
Performance of flat- and variable-rate DRSs

A key indicator of how well a DRS is performing is its return rate. The **return rate** represents the amount of drinks container material that is collected expressed as a percentage of the amount of drinks container material placed on the market, excluding exports. It is important to note that the way in which the return rate is measured or reported on can vary between jurisdictions. While some system operators may report out a 'collection rate', others report a 'recycling rate' or 'redemption rate.' For the sake of consistency, Reloop uses 'return rate' as a catch-all term.

Figure 1 summarises the overall return rates in DRS jurisdictions with fixed- and variable-deposits. The return rates shown are for the latest years for which data are available (typically 2021 or 2020).

Our analysis shows that the average overall return rate recorded across variable-rate systems is 79%, while the average in flat-rate schemes' is 74%. While it may appear that variable-rate systems are higher performing, it's important to note that several of the flat-rate DRSs (i.e., Tuvalu, all of the Australian systems except for South Australia and Northern Territory) are relatively new, having been implemented in the last five years. We know from international experience that return rates generally increase over the lifetime of a DRS, as awareness of the programme grows and as the public becomes accustomed to returning their containers. If we exclude New South Wales, Australian Capital Territory, Western Australia, Queensland and Tuvalu from the analysis, the average overall return rate for variable-rate schemes increases to 76%. These results suggest that both types of schemes are capable of delivering high return rates.

Figure 1
Latest return rates in flat- vs. variable-rate deposit return systems



As shown in Figure 1, the highest return rates are shown in European countries. In addition to publishing overall return rates, most European programmes report out material-specific return rates, which allows for comparison of performance between in-scope container types. Figure 2 presents overall return rates for European DRSs by type of system (i.e. flat- or variable-rate DRS). Where data is available, Figures 3, 4, and 5 show material-specific return rates by country and DRS type.

Figure 2
Latest overall return rates in European countries by type of deposit

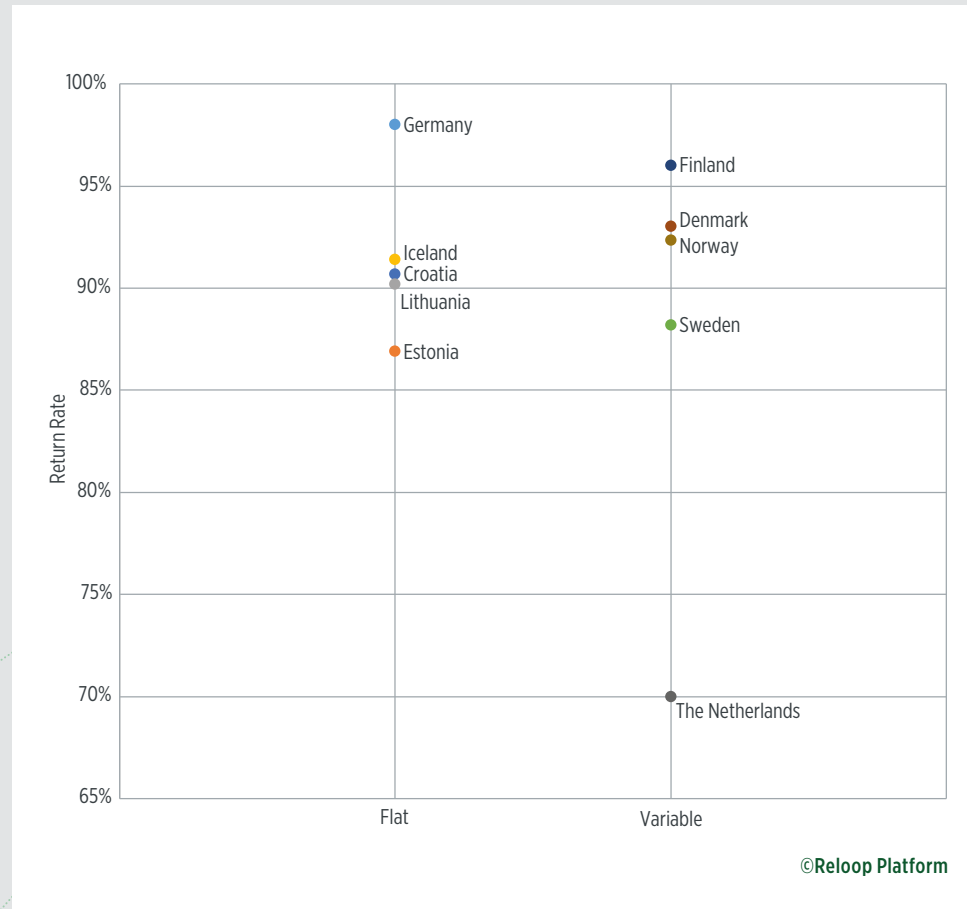


Figure 3
Latest return rates for metal cans in European countries by type of deposit

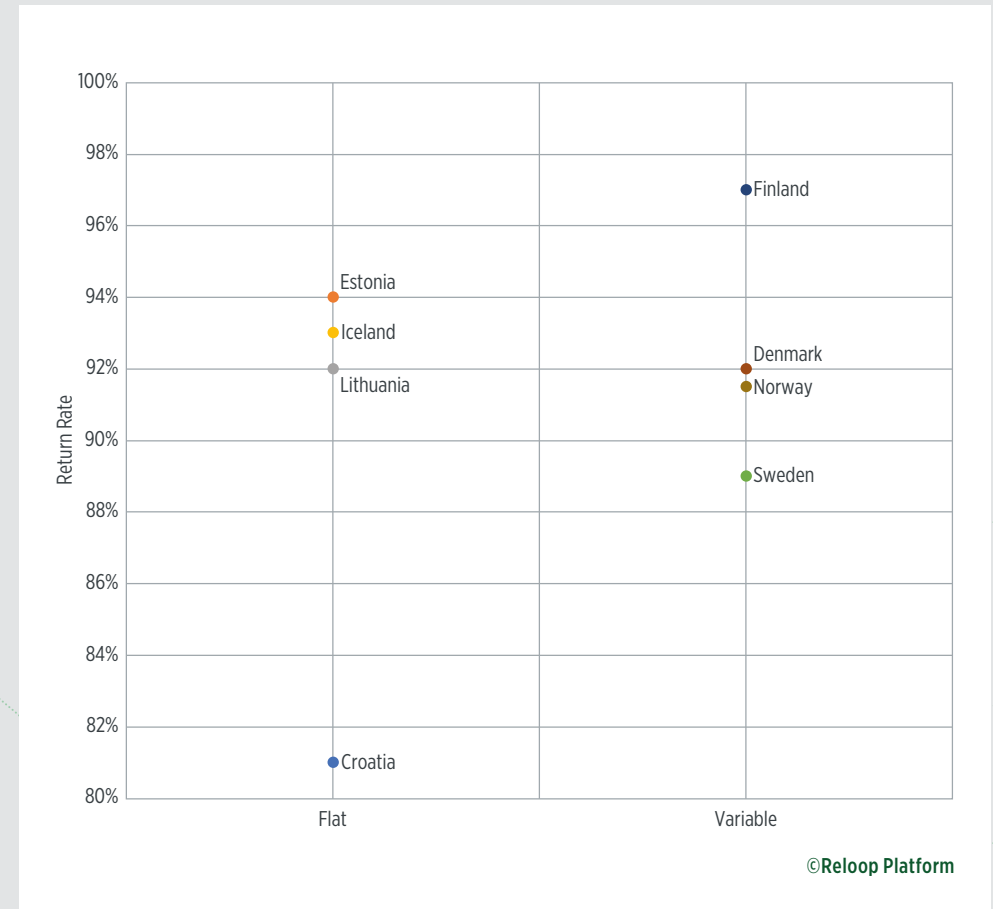


Figure 4
 Latest return rates for plastic bottles in European countries by type of deposit

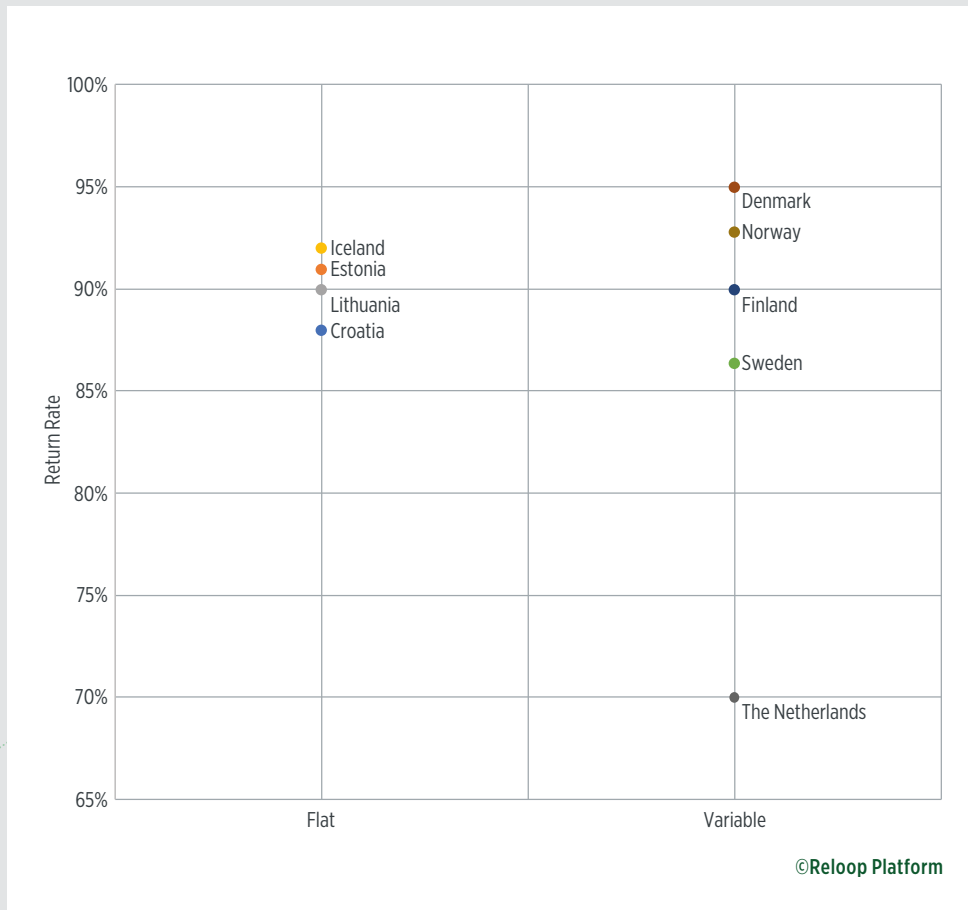
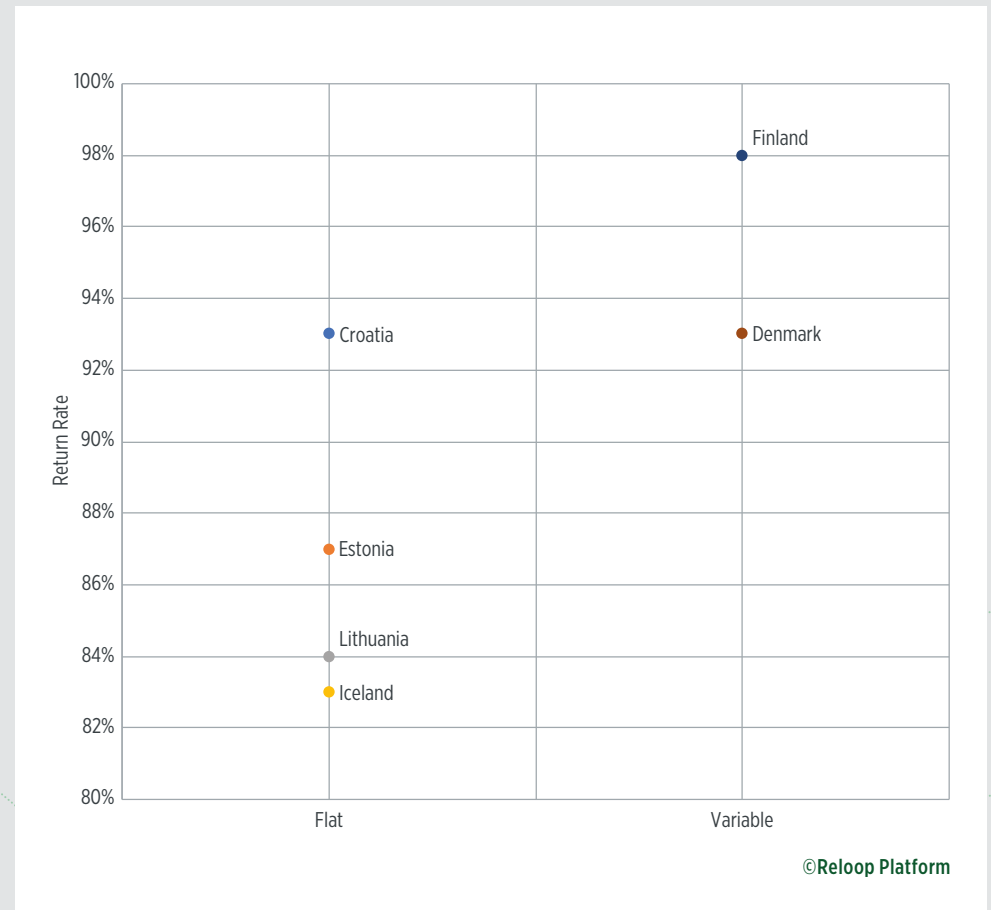


Figure 5
 Latest return rates for glass bottles in European countries by type of deposit

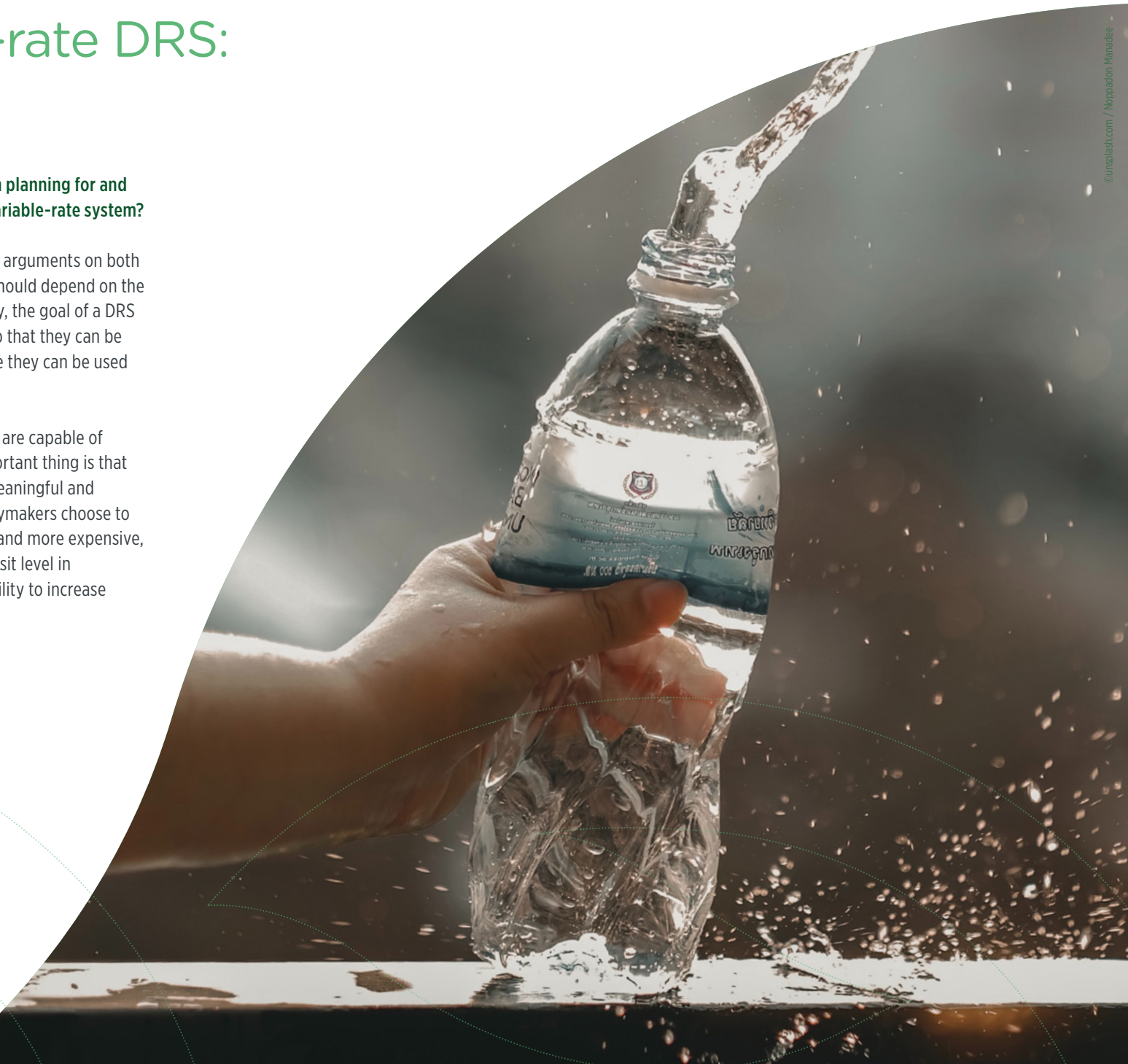


Flat- or variable-rate DRS: Which is better?

It's a question that most policymakers will face when planning for and designing a new DRS – should we pursue a flat- or variable-rate system?

While there are credible – and often very passionate – arguments on both sides of the debate, Reloop believes that the answer should depend on the objective that the DRS is seeking to achieve. Ultimately, the goal of a DRS is to collect the highest number of drinks containers so that they can be directed into closed-loop recycling applications, where they can be used again and again.

Reloop believes that both flat- and variable-rate DRSs are capable of producing high rates of return, and that the most important thing is that policymakers set a minimum deposit level(s) that is meaningful and effective. In some markets, this might mean that policymakers choose to set higher deposit levels on containers that are larger and more expensive, while in others it might mean setting a minimum deposit level in legislation (e.g., €0.10) but giving producers the flexibility to increase the fee on certain containers if they see the need.



The logo for 'reloop' is displayed in white. The word 'reloop' is in a lowercase, sans-serif font. The 'o' in 'loop' is stylized as a circular arrow with a leaf-like shape at its top. To the right of 'reloop', the tagline 'resources remain resources' is written in a smaller, lowercase, sans-serif font, stacked in three lines.

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