The performance of packaging glass recycling in Europe

Insights from a Close the Glass Loop survey

2023

close the glass loop

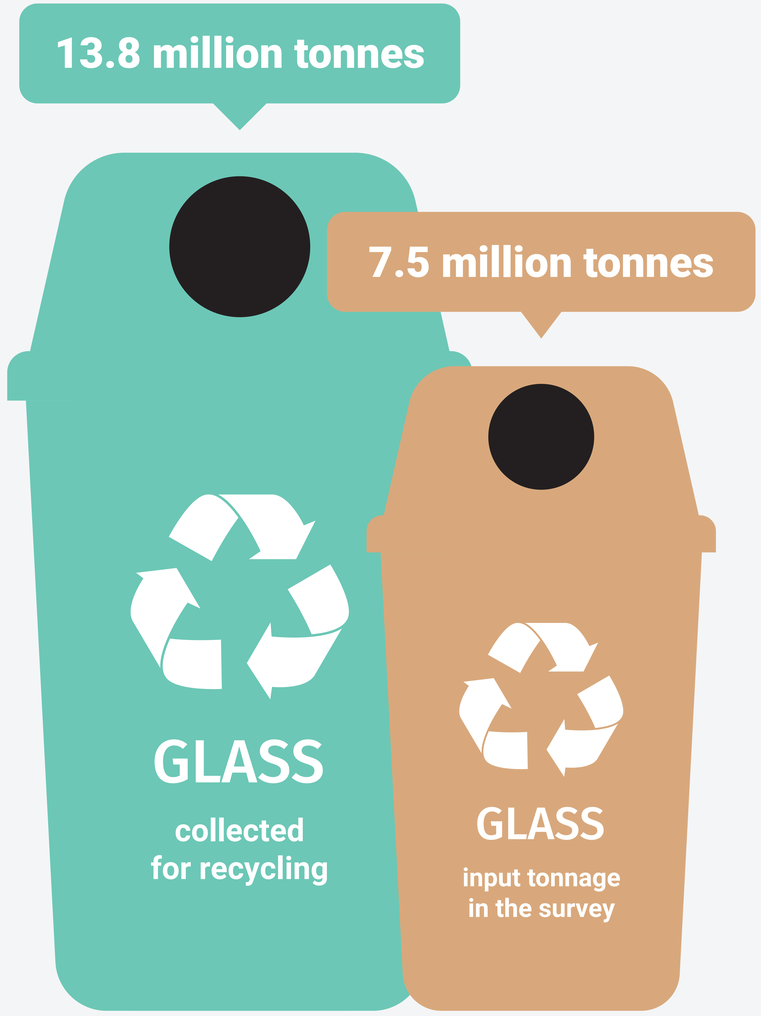
BACKGROUND & METHODOLOGY TO THE REPORT

- Between December 2021 and October 2022, Close the Glass Loop carried out a survey on the performance of glass packaging recycling in Europe.
- The survey was sent to operators within the membership of FERVER (European Glass Recyclers' Federation) and FEVE (European Container Glass Federation), and to the 11 National Platforms of Close the Glass Loop (Austria, Belgium, France, Germany, Ireland, Italy, Poland, Portugal, Spain, Sweden, United Kingdom).
- The survey was conducted online. 30 responses were received in total. The data represented in this report is valid for the year 2019.
- Respondents were asked to aggregate data for all their operations on national level. Operators with operating plants across multiple countries provided individual responses by country.
- Each response was submitted on a voluntary basis and the data gathered was not cross-checked by a third-party. Therefore, the results in this survey are indicative only and may not be used to perform calculations for Life Cycle Assessment or to represent a recycling rate for glass.

A robust survey sample with regard tonnage and geographic scope.

54%

The survey represents 54% of the total available glass collected for recycling in EU+Norway+UK in 2019.



17

countries covered

Total glass collected for recycling in EU + UK + Norway*

Total input tonnage in survey**

* based on 2019 Close the Glass Loop data, which is consistent with Eurostat data for 2019

** based on survey results, for 2019 data

Distribution of input tonnage by acquisition route category: **a massive reliance on municipal waste.**

Acquisition route based on:

92%

Post-consumer glass from municipal waste (accounting towards EU glass recycling rate)

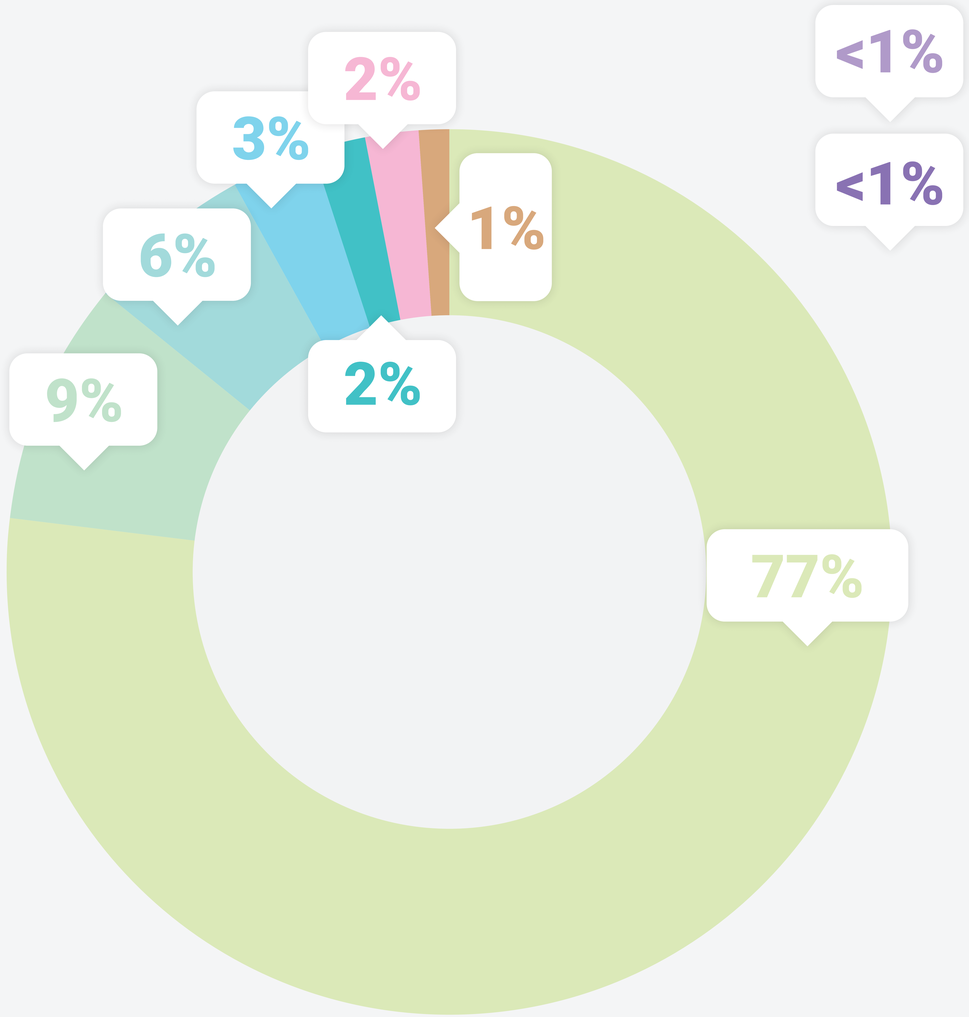
6%

Post-consumer glass other than municipal waste (accounting towards EU glass recycling rate)

2%

Pre-consumer glass (not accounting towards EU glass recycling rate)

Detailed distribution of input tonnage **by acquisition route.**



	Tonnes	Share	
National municipal waste collectors	5,735,941	77%	
Material Recovery Facilities (or pre-sorting plants)	659,030	9%	
Imported material from municipal waste collectors	469,603	6%	
Direct acquisition from consumers	211,600	3%	
End of life refillable glass	171,993	2%	
Direct acquisition from bottlers	113,921	2%	
One-way glass from Deposit Refund Systems	91,600	1%	
Direct acquisition from the glass container industry (e.g. bottle breakage)	24,969	<1%	
Direct acquisition from HORECA (Hotels, Cafés, Restaurants)	18,000	<1%	

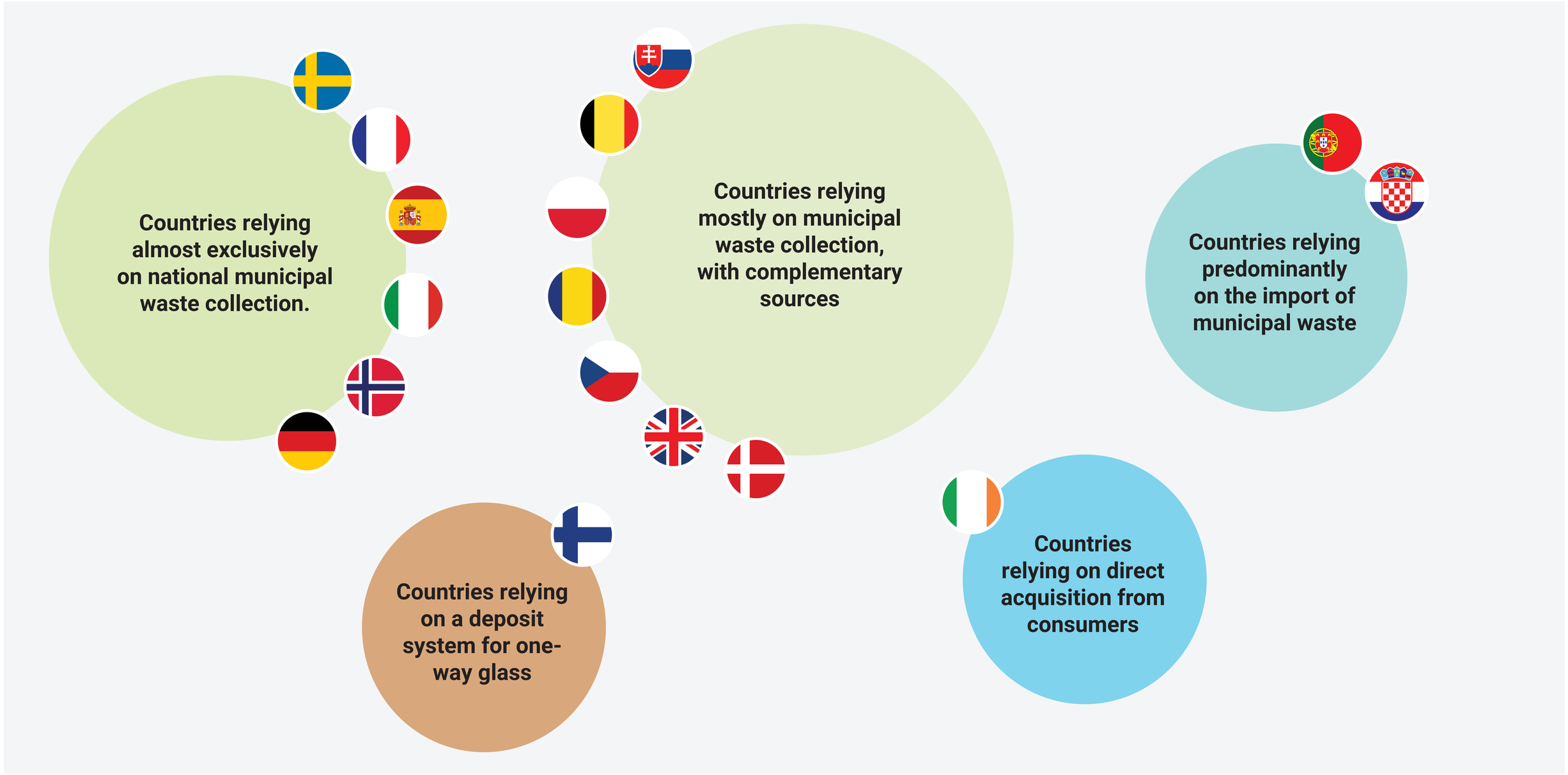
Acquisition route based on:

Post-consumer glass from municipal waste (accounting towards EU glass recycling rate)

Post-consumer glass other than municipal waste (accounting towards EU glass recycling rate)

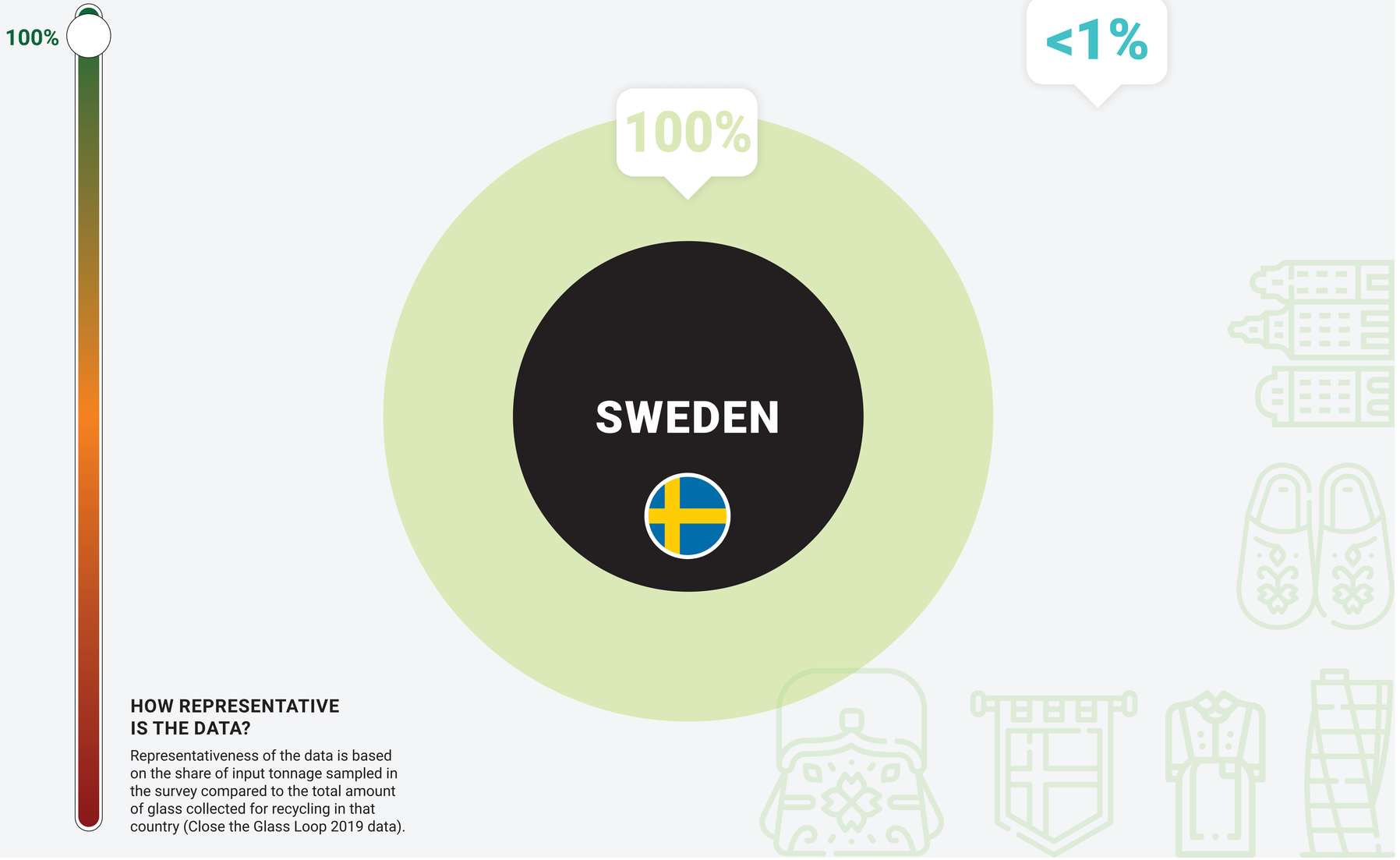
Pre-consumer glass (not accounting towards EU glass recycling rate)

The situation is **quite diverse across countries.**



Countries relying almost exclusively on national municipal waste collection.

Sweden – a recycling system operating exclusively with national municipal waste collectors.



HOW REPRESENTATIVE IS THE DATA?

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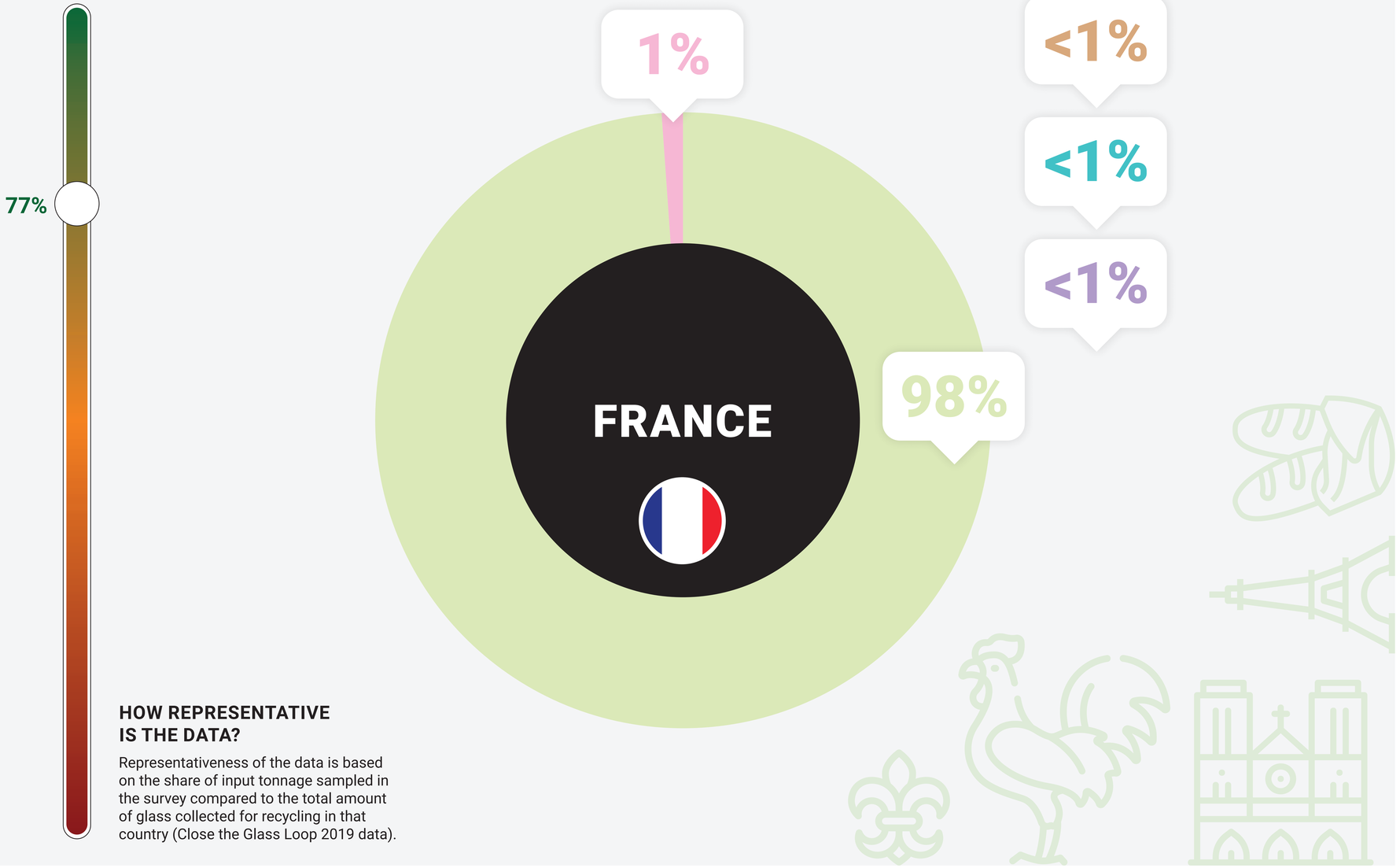
Countries relying almost exclusively on national municipal waste collection.

France – a recycling system operating almost exclusively with national municipal waste collectors, and complemented by several (but insignificant) other sources.



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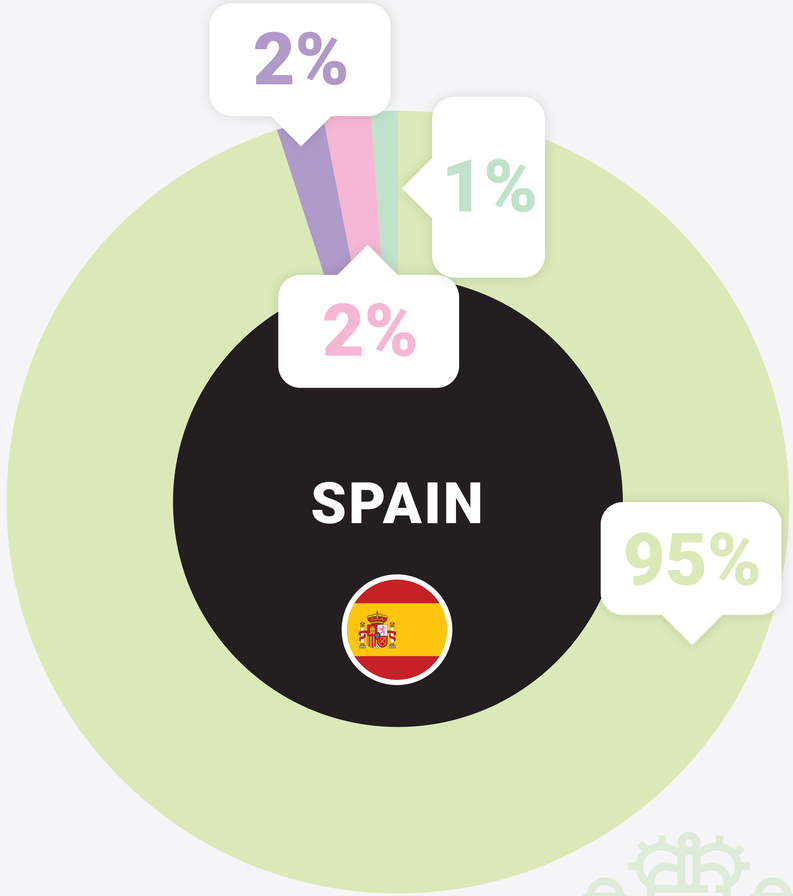
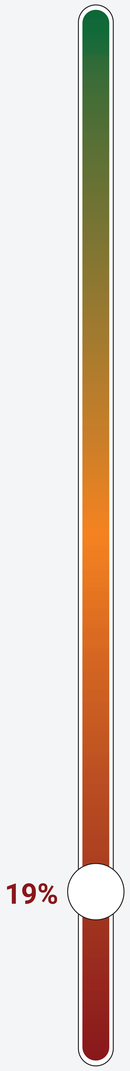
Spain – a recycling system operating almost exclusively with national municipal waste collectors and complemented by several minor sources.





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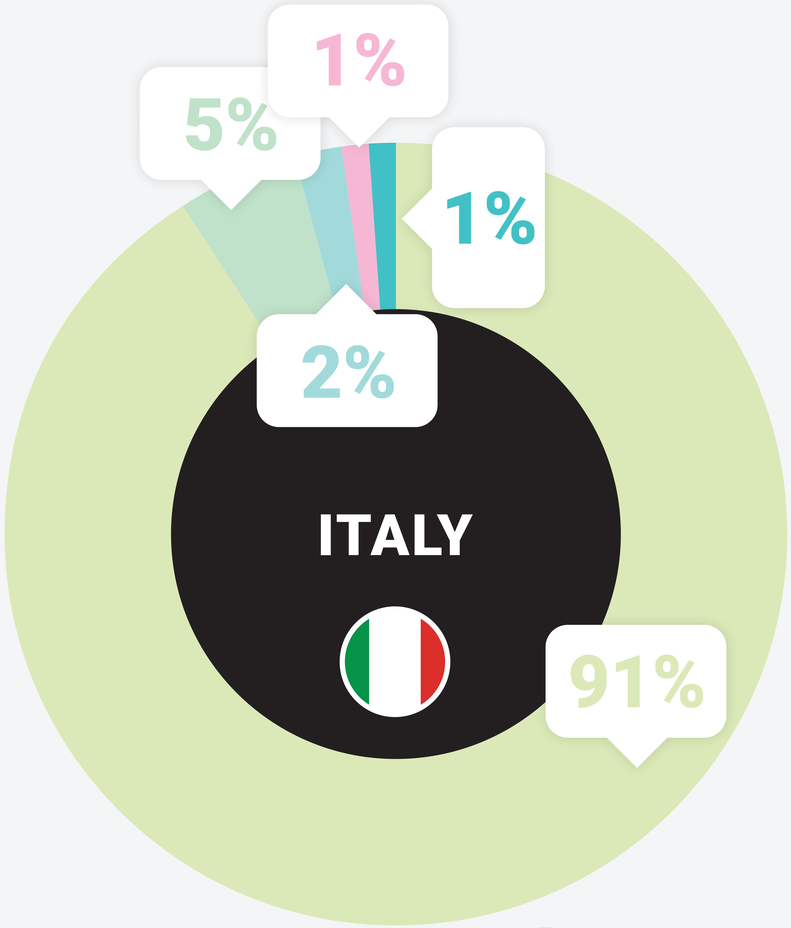
Countries relying almost exclusively on national municipal waste collection.

Italy – a recycling system operating almost exclusively with national municipal waste collectors, complemented for a small fraction by material from pre-sorting plants.

47%



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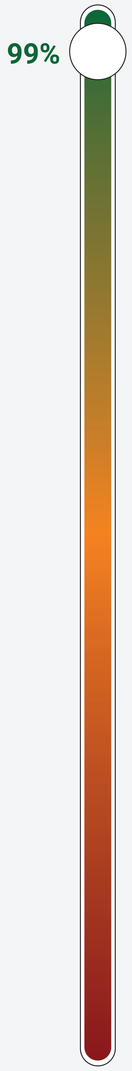
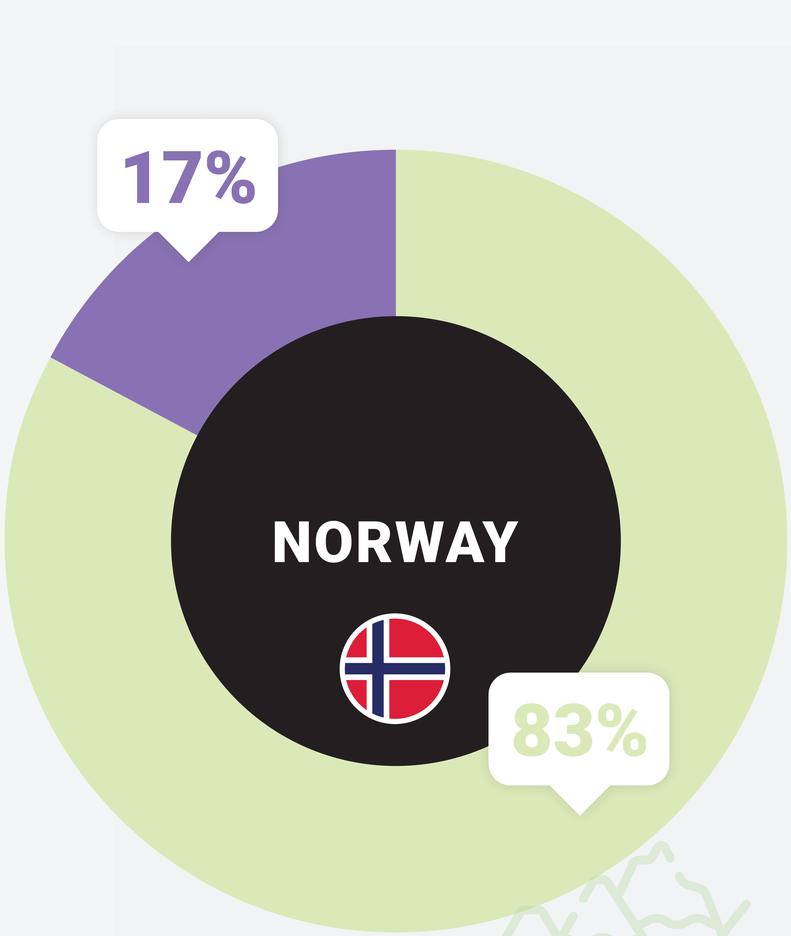
Norway – the only national recycling system survey that complements national municipal waste collection with direct acquisition from the HORECA channel.





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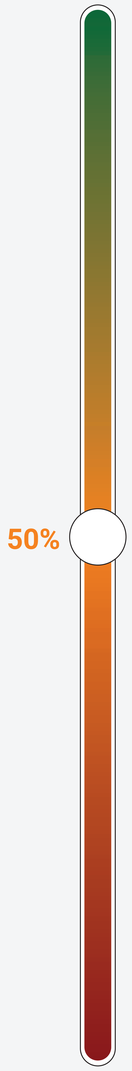
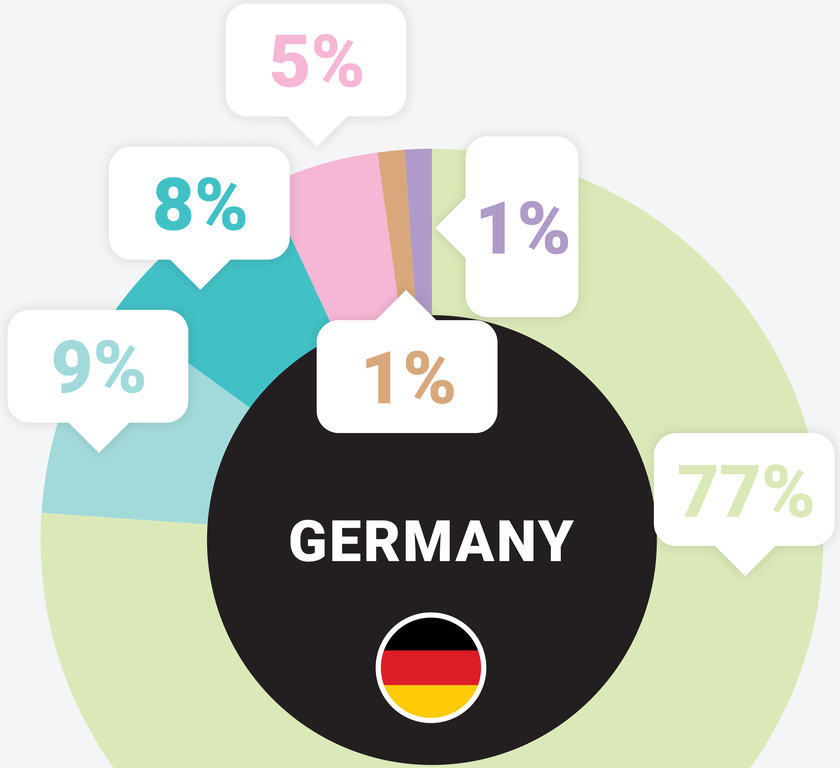
Countries relying almost exclusively on national municipal waste collection.

Germany – a recycling system complementing national municipal waste collection with several significant other sources including imported materials, end-of-life refillables and direct acquisition from bottlers.





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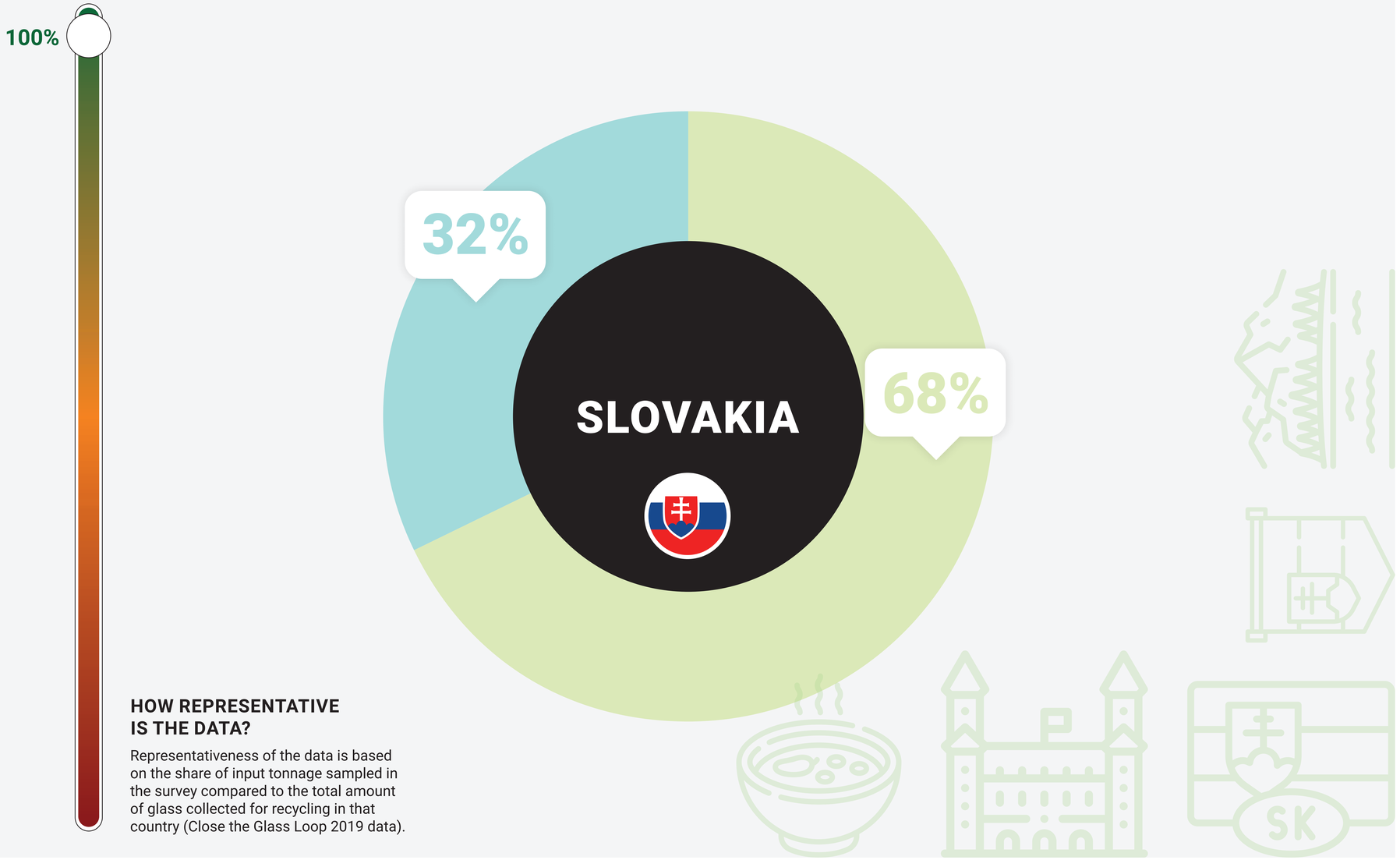
Countries relying mostly on municipal waste collection, with complementary sources.

Slovakia – a recycling system mostly based on national municipal waste collection, but strongly complemented by imported materials.



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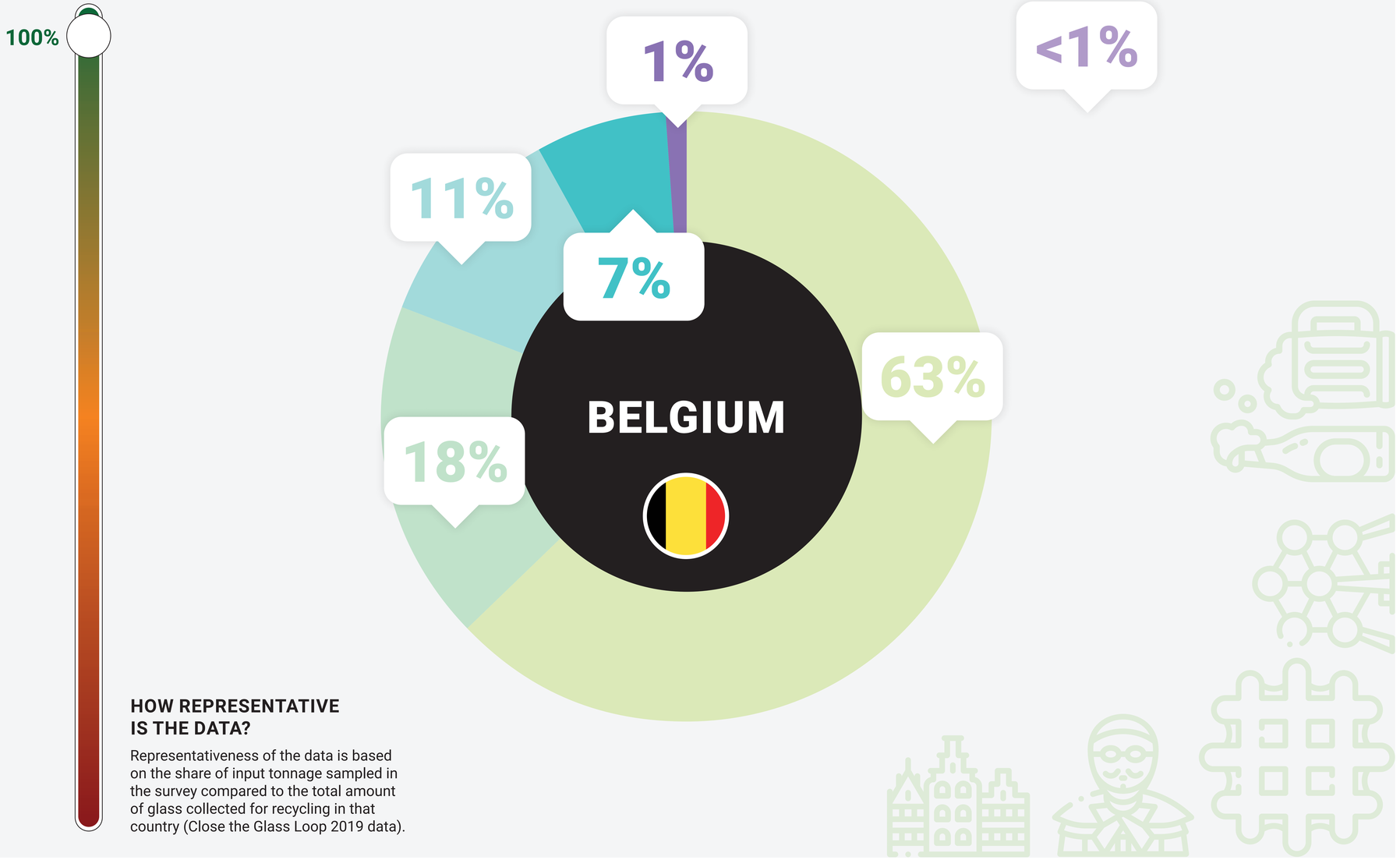
Belgium – a recycling system complementing national municipal waste collection with several significant other sources including material from pre-sorting plants, imports and end-of-life refillable glass.



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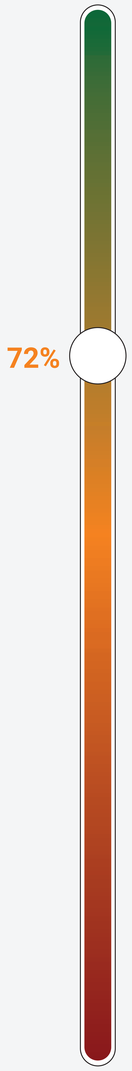
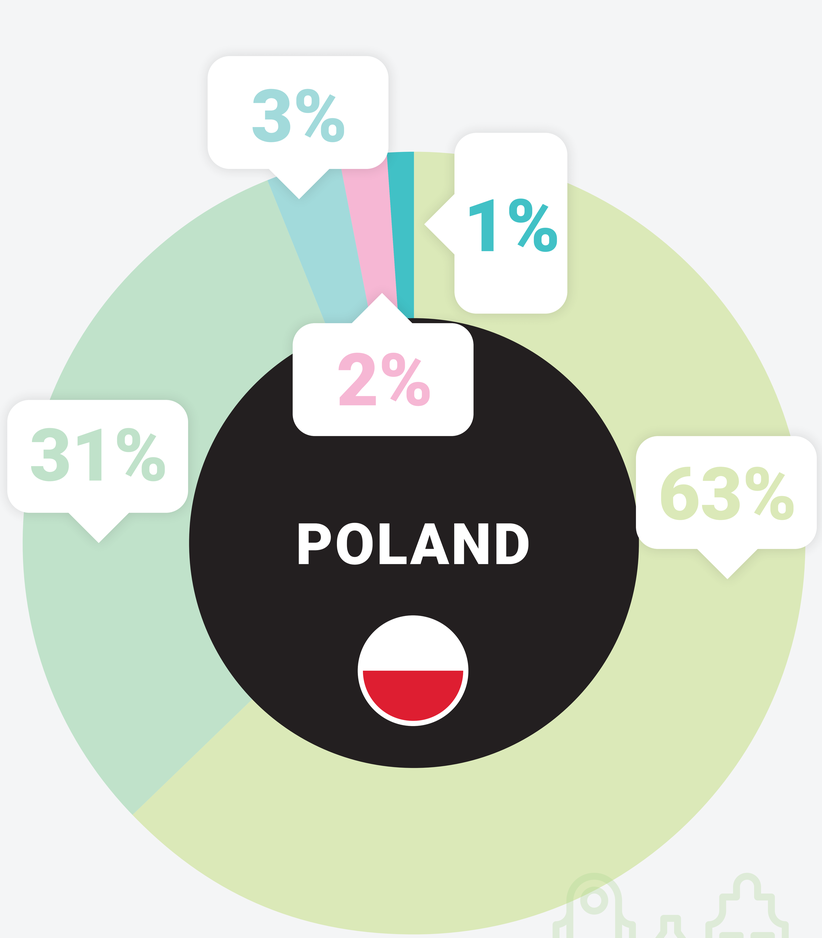
Poland – a recycling system mostly based on a combination of national municipal waste collection and material coming from pre-sorting plants.





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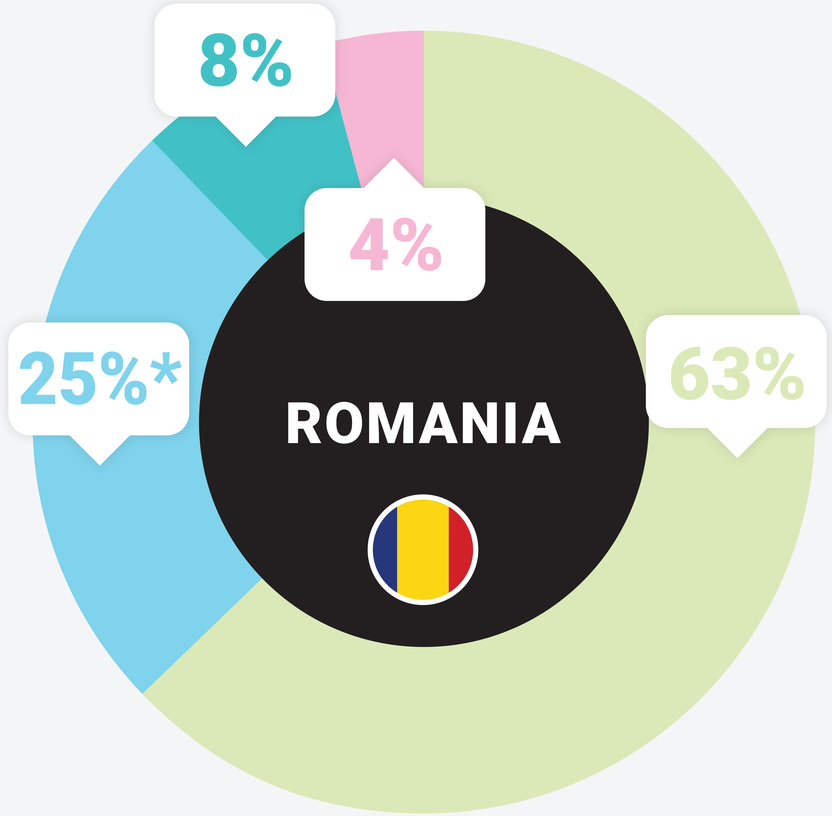
Countries relying mostly on municipal waste collection, with complementary sources.

Romania – a recycling system mostly based on national municipal waste collection, but relying also significantly on direct acquisition from consumers and end of life refillable glass.



22%

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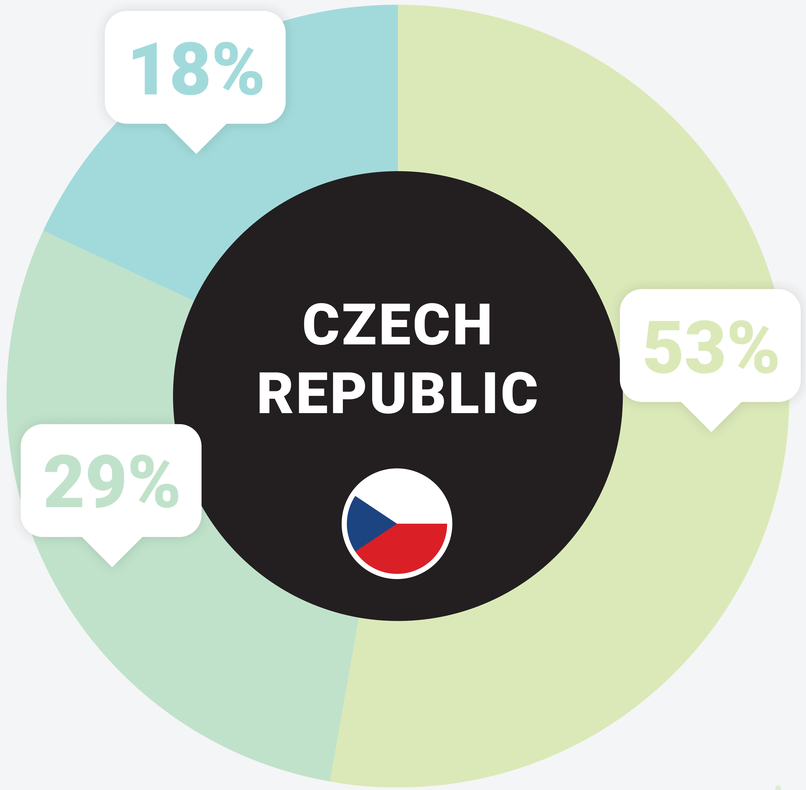
Countries relying mostly on municipal waste collection, with complementary sources.

Czech Republic – a recycling system operating on municipal waste collection on national level, complemented by material from pre-sorting plants and imports.

66%



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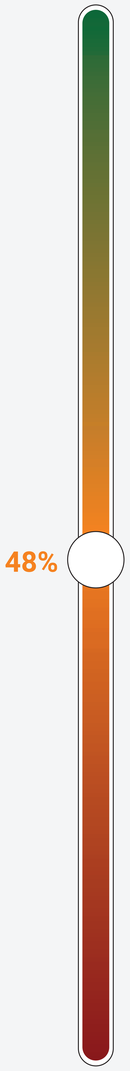
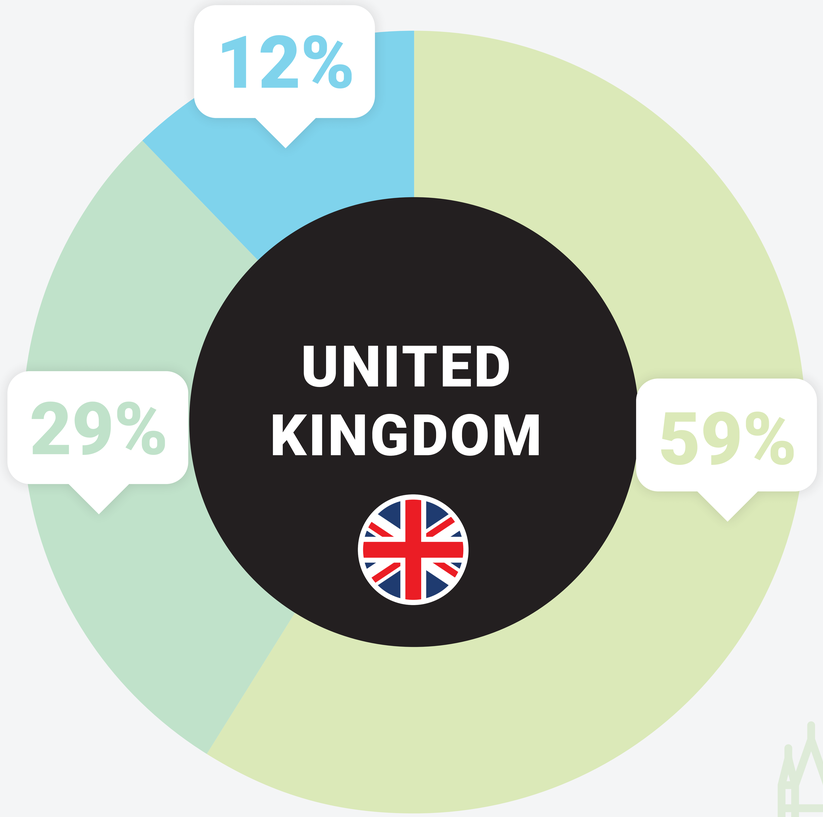
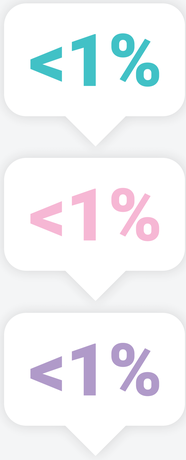
Countries relying mostly on municipal waste collection, with complementary sources.

United Kingdom – a recycling system operating mostly with national municipal waste collection and material from pre-sorting plants.







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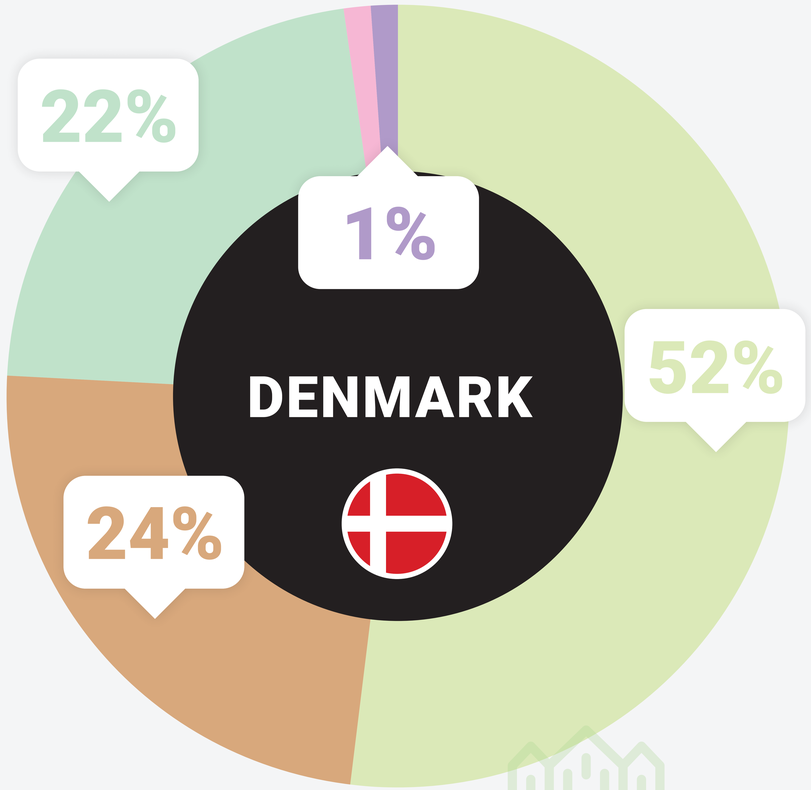
Countries relying mostly on municipal waste collection, with complementary sources.

Denmark – a recycling system mostly based on municipal waste collection, complemented by glass from deposit refund systems and material from pre-sorting plants.

74%



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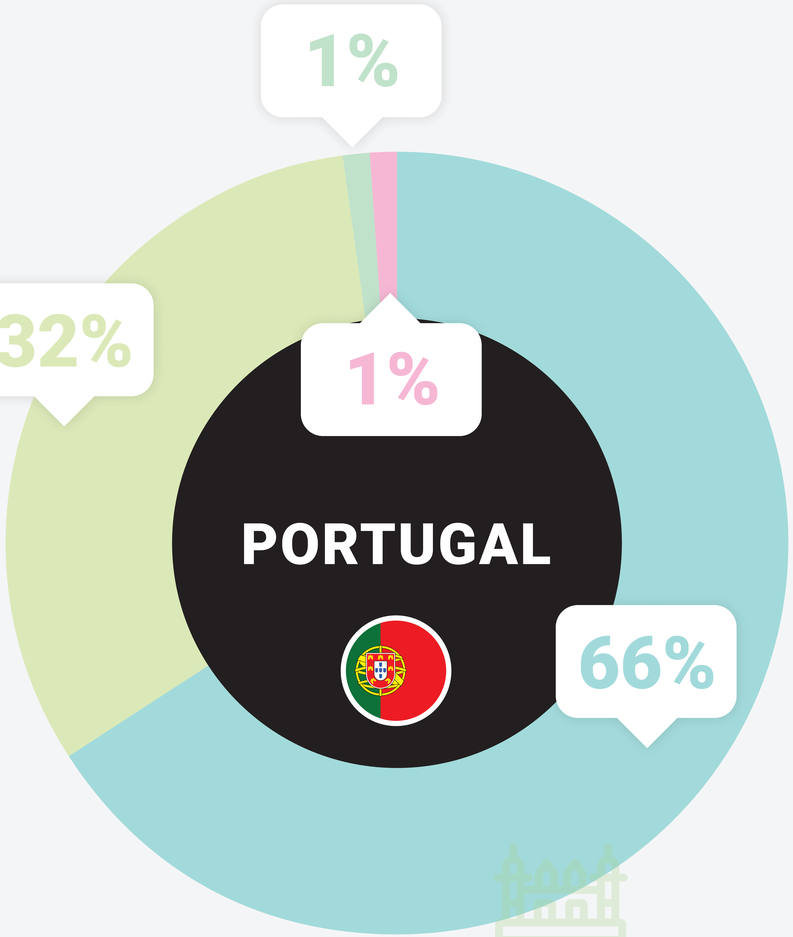
Countries relying predominantly on the import of municipal waste.

Portugal – the recycling system that is most reliant on imports of municipal waste, complemented by national municipal waste.

100%



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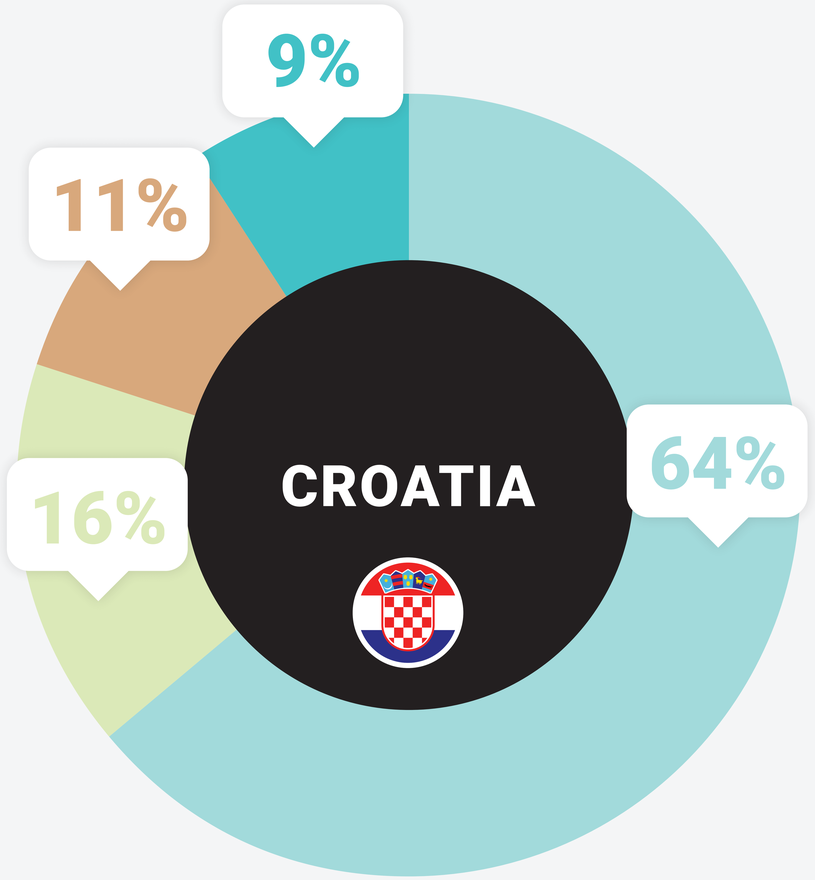
Countries relying predominantly on the import of municipal waste.

Croatia – a recycling system mostly based on imports of municipal waste, complemented by several complementary sources.

100%



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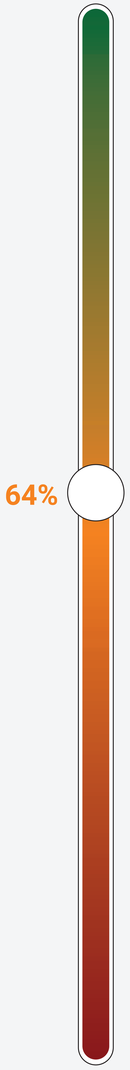
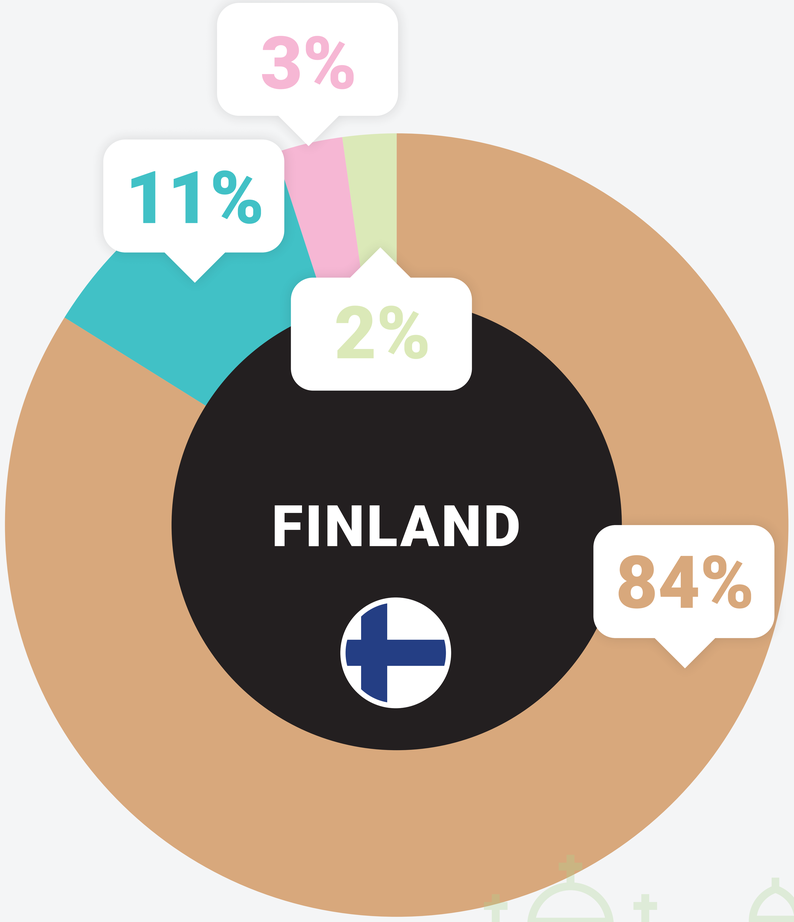
Countries relying on a deposit system for one-way glass.

Finland – the only recycling system where glass is predominantly sourced from a Deposit Refund System.





HOW REPRESENTATIVE IS THE DATA?

Representativeness of the data is based on the share of input tonnage sampled in the survey compared to the total amount of glass collected for recycling in that country (Close the Glass Loop 2019 data).

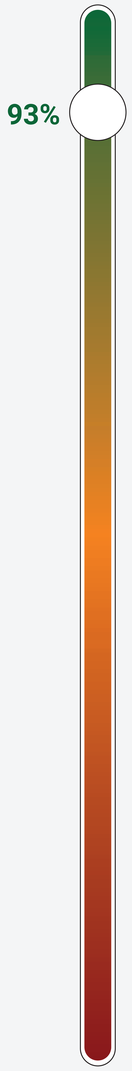
- National municipal waste collectors
- Material Recovery Facilities (or pre-sorting plants)
- Imported material from municipal waste collectors
- Direct acquisition from consumers
- End of life refillable glass
- Direct acquisition from bottlers
- One-way glass from Deposit Refund Systems
- Direct acquisition from the glass container industry (e.g. bottle breakage)
- Direct acquisition from HORECA (Hotels, Cafés, Restaurants)

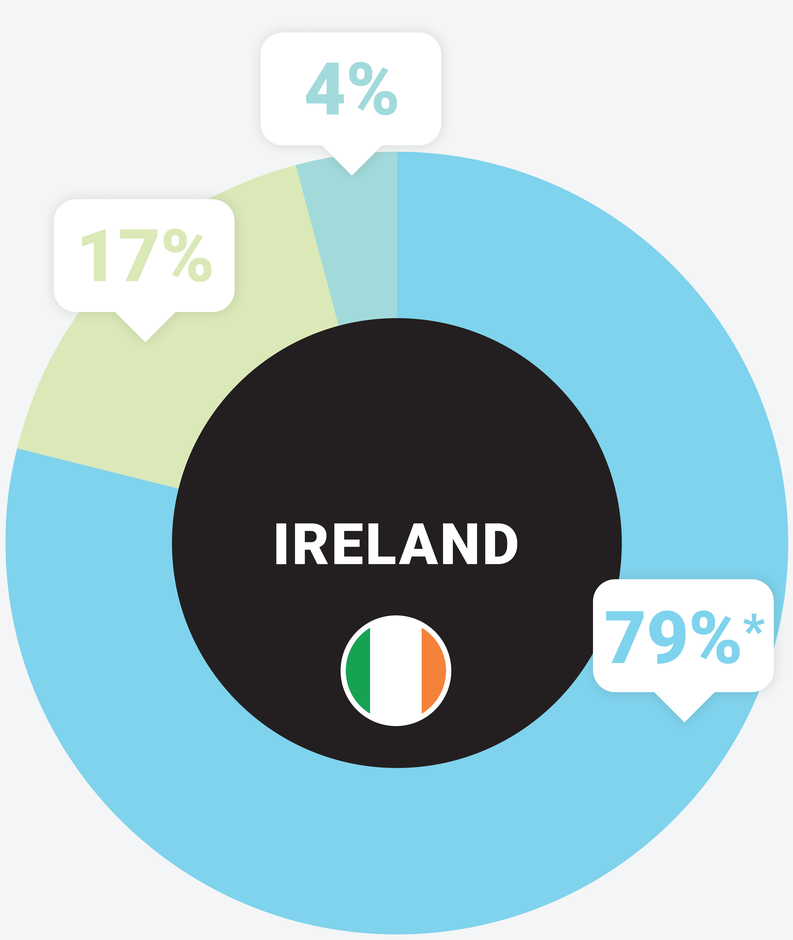
Acquisition route based on:

- **Post-consumer glass from municipal waste (accounting towards EU glass recycling rate)**
- **Post-consumer glass other than municipal waste (accounting towards EU glass recycling rate)**
- **Pre-consumer glass (not accounting towards EU glass recycling rate)**

Countries relying on direct acquisition from consumers.

Ireland – the only recycling system relying predominantly on direct acquisition from consumers, although this reflects a privatised collection scheme handling municipal waste management.





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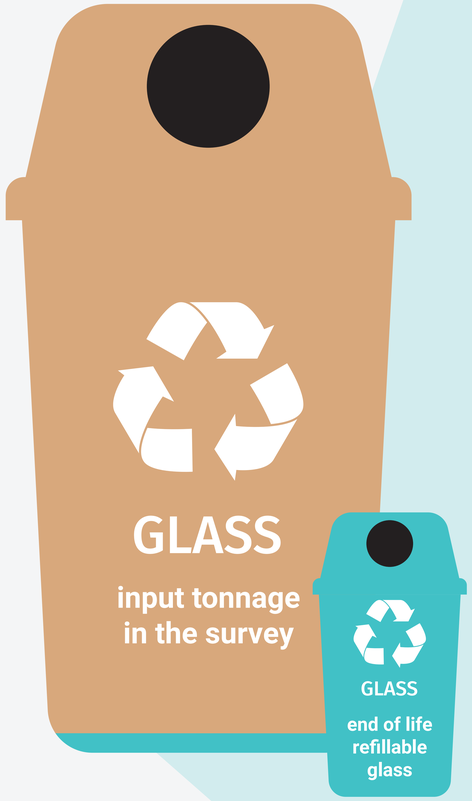
HOW REPRESENTATIVE IS THE DATA?

Representativeness of the data is based on the share of input tonnage sampled in the survey compared to the total amount of glass collected for recycling in that country (Close the Glass Loop 2019 data).

* In the case of Ireland, we understand “direct acquisition from consumers” to mean access to glass material via a privatised collection system - - but nevertheless based on a form of municipal waste management.

Refillable glass bottles also **get recycled at end-of-life.**

7.5 million tonnes



170 thousand tonnes

2.3%

(end of life refillable glass represents 2.3% of the total input tonnage)

10

10 countries report sourcing end of life refillable glass.

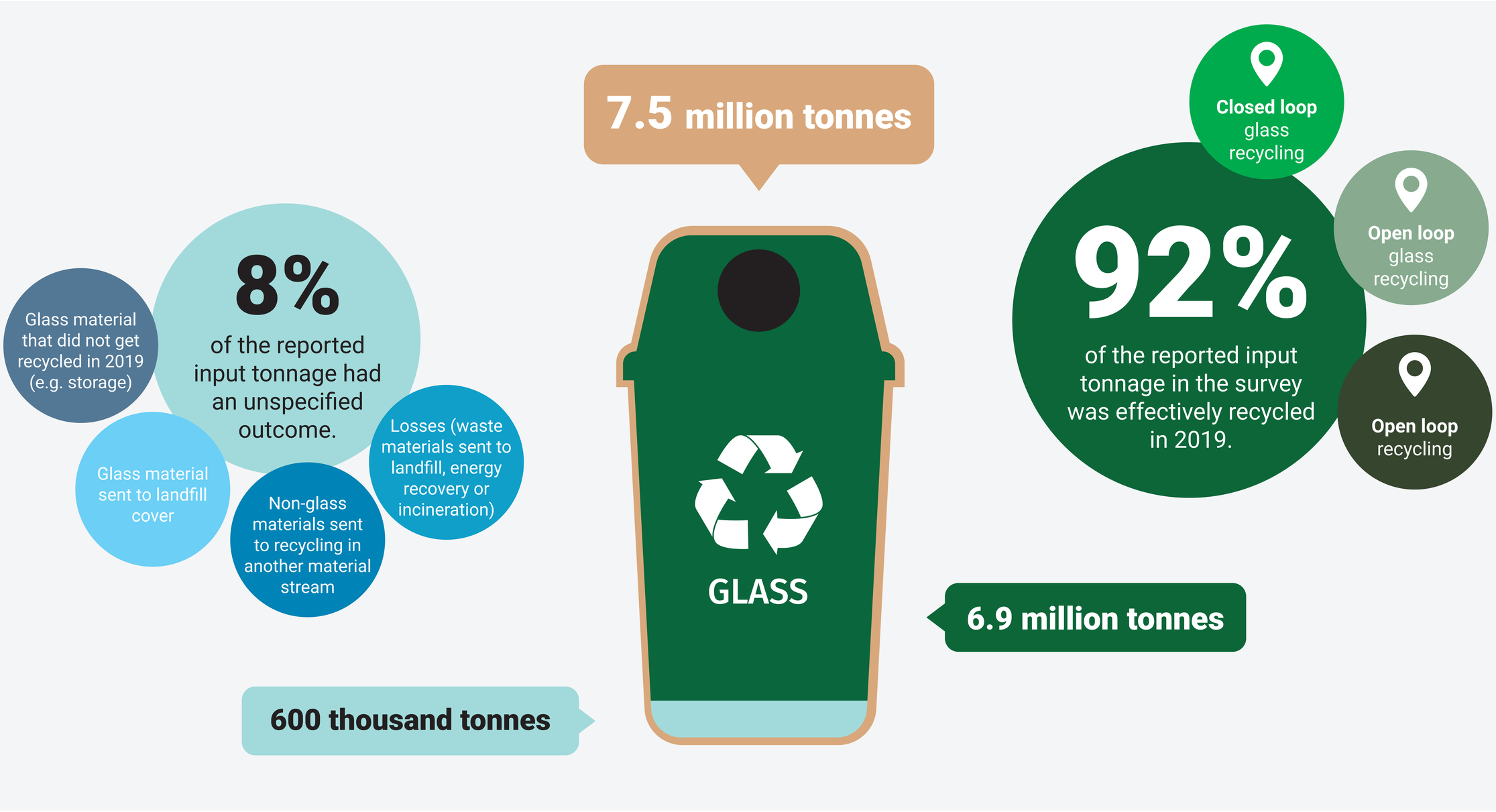
Detailed share of end of life refillable glass tonnage by country

Germany	**58%**
Belgium	**21%**
Italy	**5%**
France	**4%**
Finland	**3%**
Croatia	**3%**
Poland	**3%**
Romania	**2%**
United Kingdom	**1%**
Sweden	**<1%**

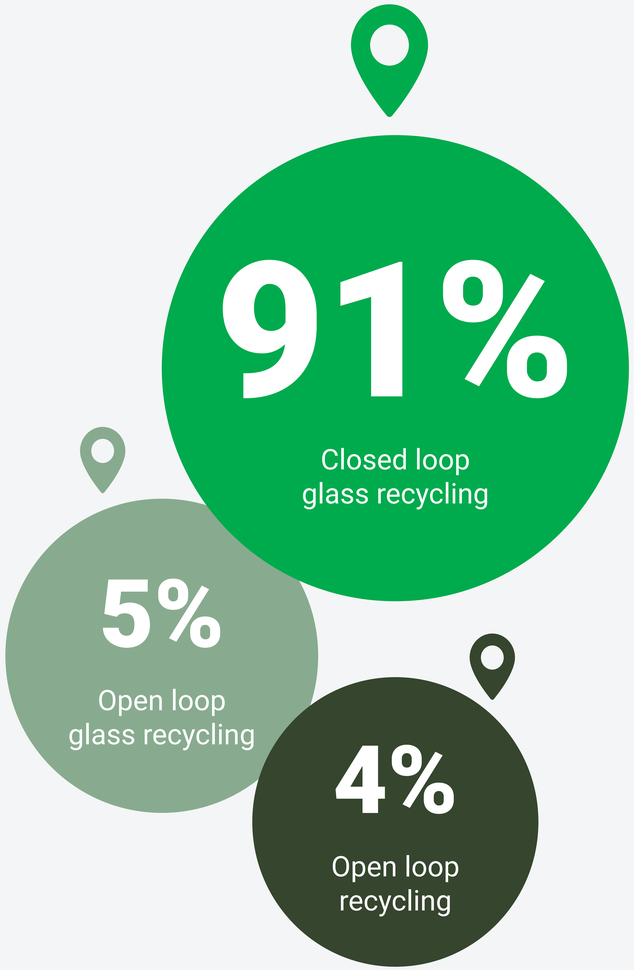
80%

Germany and Belgium together recycle almost 80% of all post-consumer refillable glass at end-of-life.

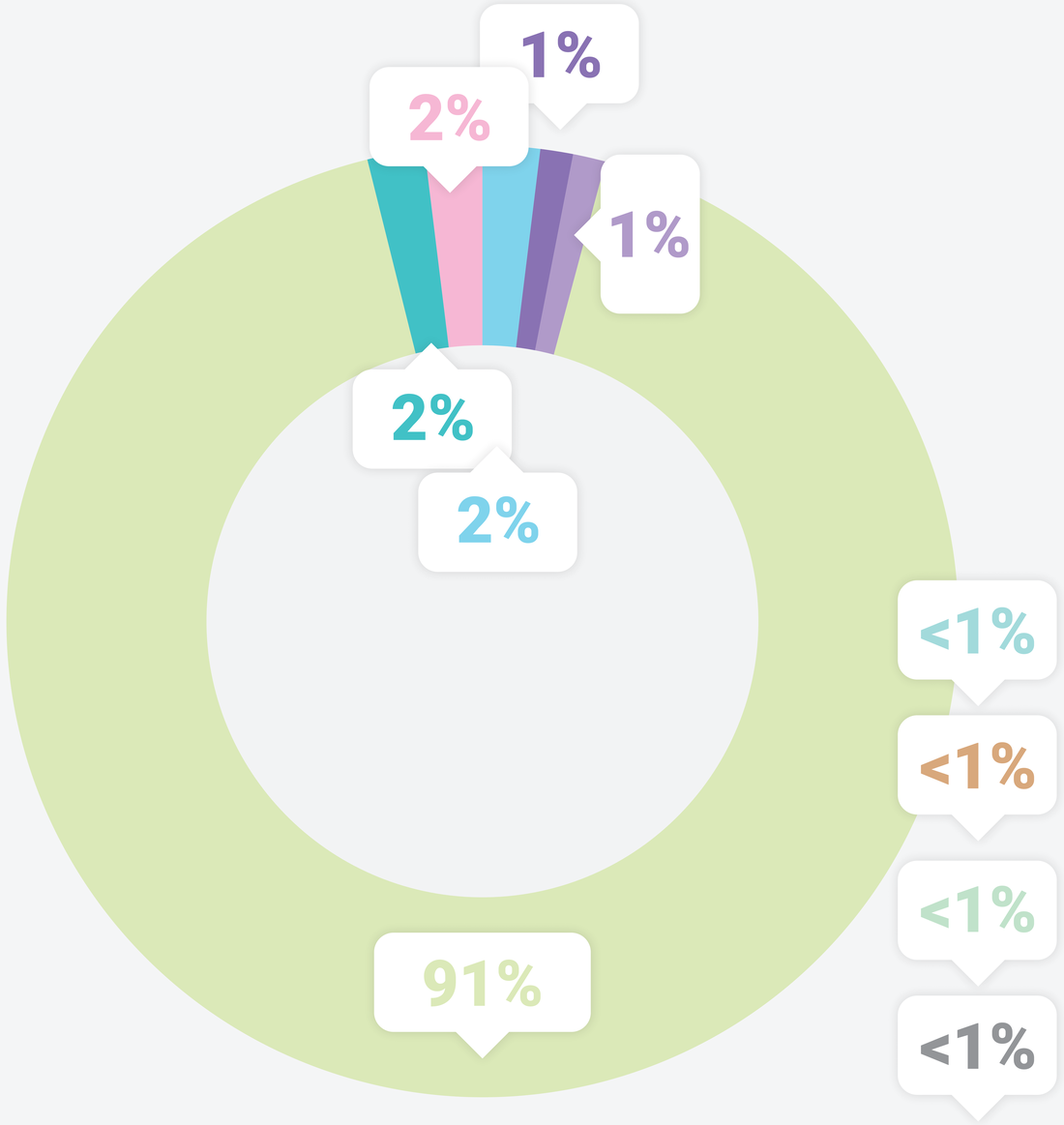
From input to output, the glass collection & recycling value chain has **a high degree of traceability.**



Distribution of the tonnage recycled in 2019 by recycling destination category:
the closed loop is a reality.



Detailed distribution of the **tonnage recycled in 2019 by destination route.**



	Tonnes	Share	
Glass packaging manufacturing	6,289,652	91%	Closed loop
Glass foam manufacturing	166,000	2%	Open loop
Glass wool manufacturing	134,200	2%	Open loop
Brick-making	110,100	2%	Open loop recycling
Backfilling	65,000	1%	Open loop recycling
Construction materials	59,844	1%	Open loop recycling
Filtration media	24,200	<1%	Open loop recycling
Special Glass manufacturing	18,703	<1%	Open loop
Abrasive materials	7,346	<1%	Open loop recycling
Glass sand substitute	200	<1%	Open loop recycling

There are 3 categories for glass recycling:

Closed loop glass recycling

Open loop glass recycling

Open loop recycling

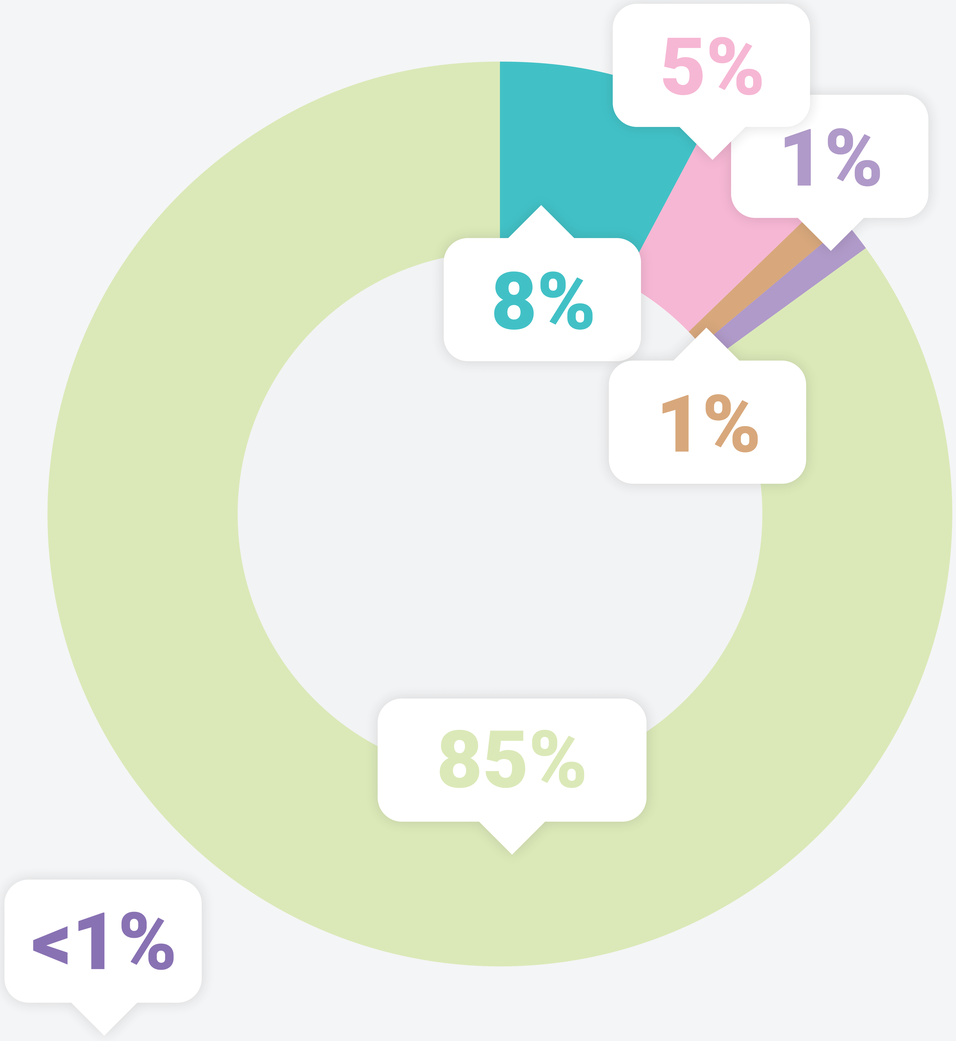
Recycling performance of Europe's North Region:
the closed loop is a reality complemented by several other recycling applications.

NORTH

(Denmark, Finland, Germany, Norway, Sweden)

94% recycled

6% unspecified



- Glass packaging manufacturing
- Glass foam manufacturing
- Glass wool manufacturing
- Brick-making
- Backfilling
- Construction materials
- Filtration media
- Special Glass manufacturing
- Abrasive materials
- Glass sand substitute

There are 3 categories for glass recycling:

- **Closed loop glass recycling**
- **Open loop glass recycling**
- **Open loop recycling**

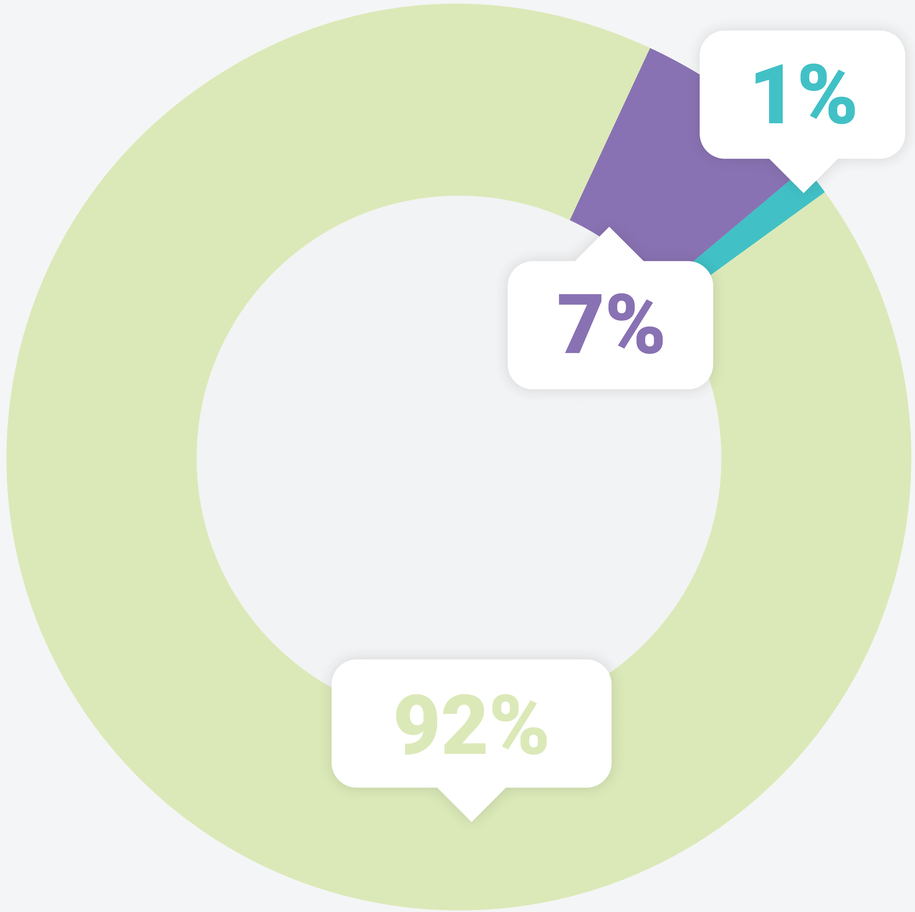
Recycling performance of Europe's East Region: **the closed loop is a reality complemented by backfilling.**

EAST

(Czech Republic, Poland, Romania, Slovakia)

94% recycled

6% unspecified



- Glass packaging manufacturing
- Glass foam manufacturing
- Glass wool manufacturing
- Brick-making
- Backfilling
- Construction materials
- Filtration media
- Special Glass manufacturing
- Abrasive materials
- Glass sand substitute

There are 3 categories for glass recycling:

- **Closed loop glass recycling**
- **Open loop glass recycling**
- **Open loop recycling**

Recycling performance of Europe's West Region:

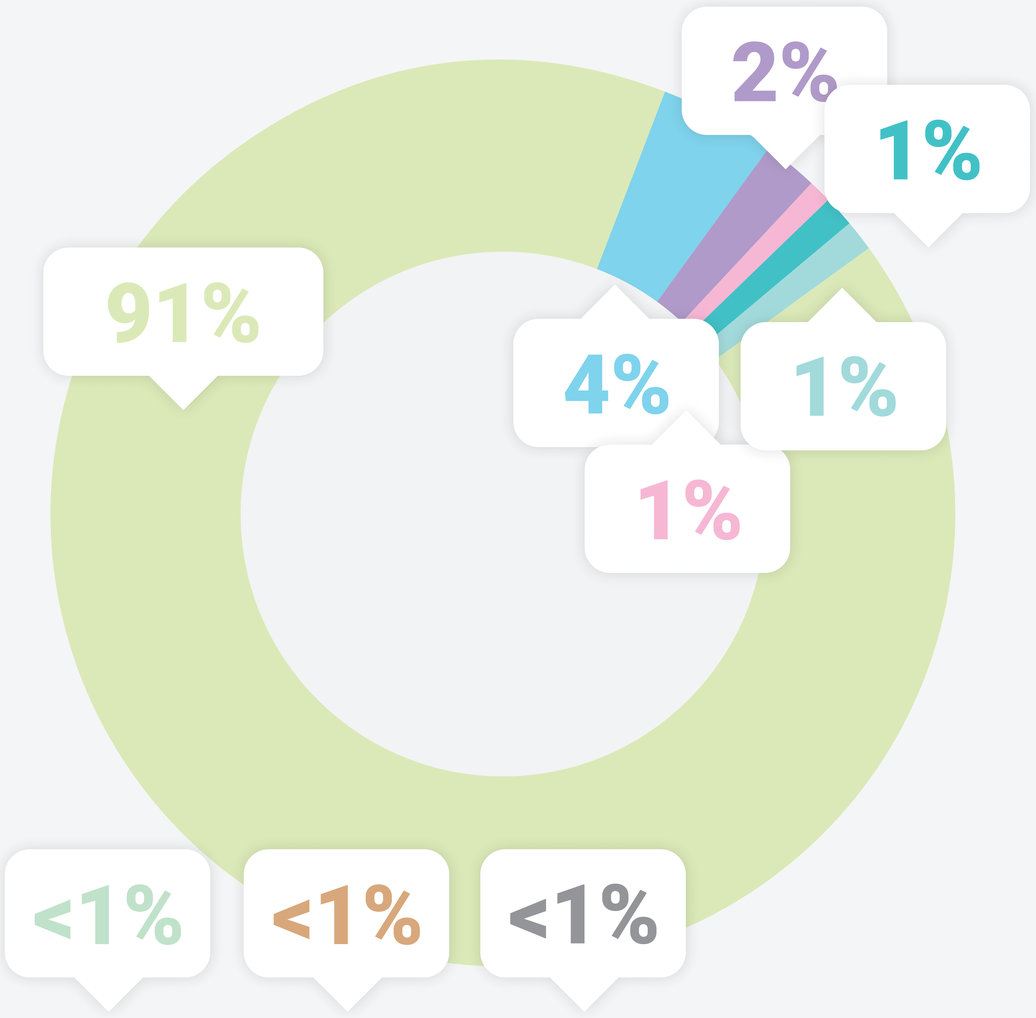
the closed loop is a reality complemented by a wide variety of other recycling applications.

WEST

(Belgium, France, Ireland, United Kingdom)

95% recycled

5% unspecified



- Glass packaging manufacturing
- Glass foam manufacturing
- Glass wool manufacturing
- Brick-making
- Backfilling
- Construction materials
- Filtration media
- Special Glass manufacturing
- Abrasive materials
- Glass sand substitute

There are 3 categories for glass recycling:

- **Closed loop glass recycling**
- **Open loop glass recycling**
- **Open loop recycling**

Recycling performance of Europe's South Region:

the lowest share of glass effectively recycled but the closed loop is the only recycling destination.

SOUTH

(Croatia, Italy, Portugal, Spain)

82% recycled

18% unspecified

- Glass packaging manufacturing
- Glass foam manufacturing
- Glass wool manufacturing
- Brick-making
- Backfilling
- Construction materials
- Filtration media
- Special Glass manufacturing
- Abrasive materials
- Glass sand substitute

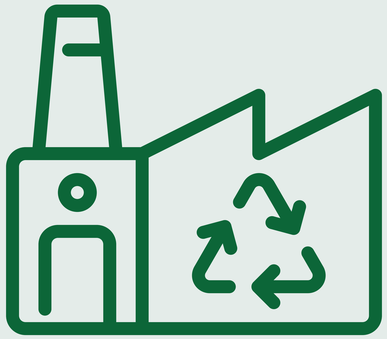
There are 3 categories for glass recycling:

- **Closed loop glass recycling**
- **Open loop glass recycling**
- **Open loop recycling**

Glass recycling is a **highly integrated system from post-consumer waste to high quality product for manufacturing new bottles & jars.**

92%

of the total reported input tonnage in the survey **was sourced from municipal waste.**



92%

of the total reported input tonnage in the survey **was effectively recycled in 2019.**

96%

of the total tonnage effectively recycled in 2019 **was recycled in a glass manufacturing process.**

91%

of the total tonnage effectively recycled in 2019, **was recycled in a closed loop glass packaging manufacturing process.**


close the
glass loop