2024 Report

Performance of Packaging Glass Recycling in Europe

close the glass loop

Publication date
January 2025

Table of Content

CHAPTER

1

BACKGROUND & REPRESENTATIVENESS OF THE REPORT

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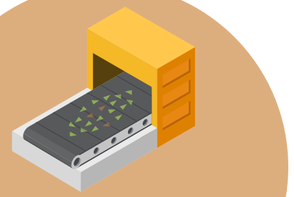
Glass Packaging Recycling in Europe **- a general overview**

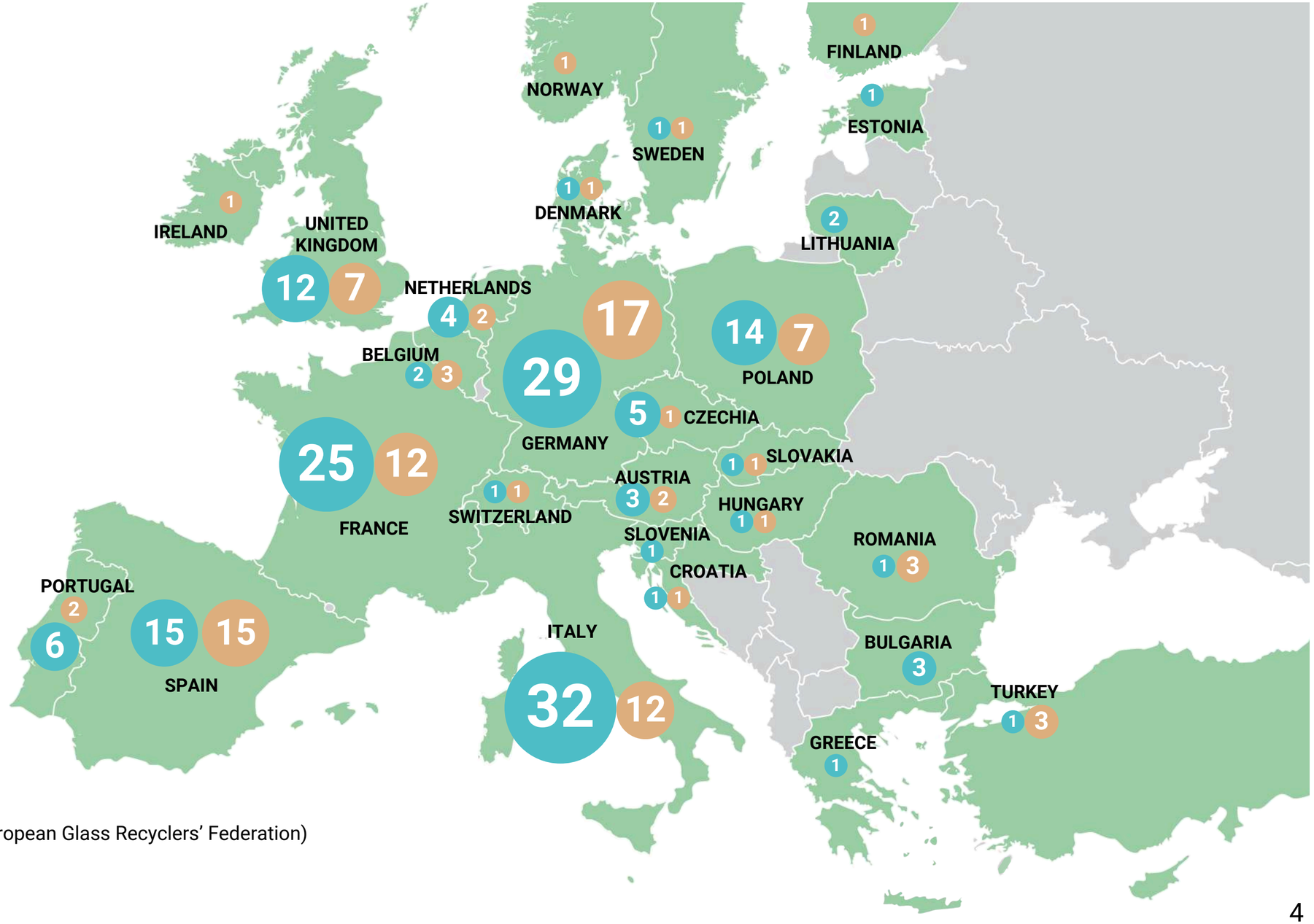
163

Glass packaging manufacturing sites



95

Glass Cullet Recycling Facilities



Figures based on the membership of FERVER (European Glass Recyclers' Federation) & FEVE (European Container Glass Federation).

BACKGROUND & METHODOLOGY TO THE REPORT

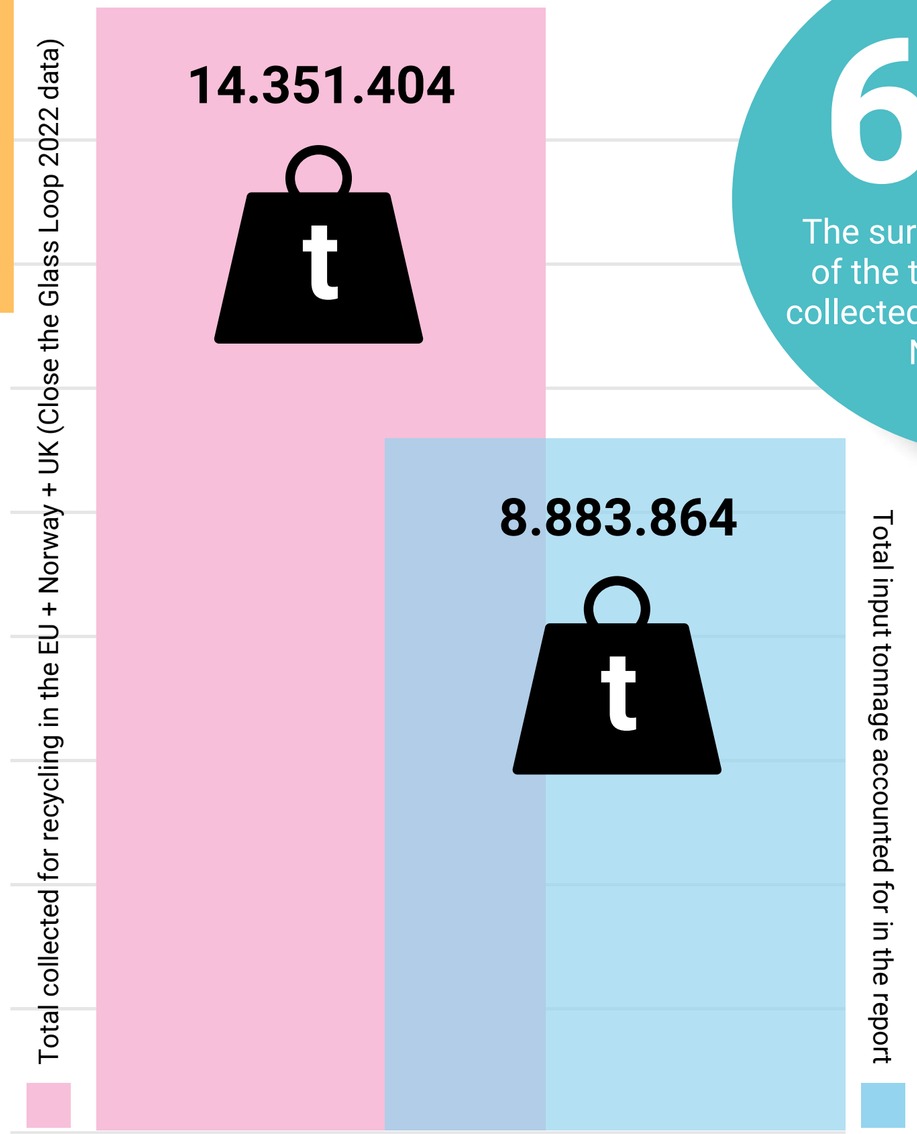
- Between October 2023 and November 2024, Close the Glass Loop carried out a survey of Glass Cullet Recycling Facilities operating in Europe.
- Glass Cullet Recycling Facilities supply secondary raw materials into the economy by processing glass packaging waste materials. Facilities processing other types of glass waste (e.g. flat glass) were excluded from the scope of the survey.
- The survey was sent to operators of Glass Cullet Recycling Facilities within the membership of FERVER (European Glass Recyclers' Federation) and FEVE (European Container Glass Federation), and to the 13 National Platforms of Close the Glass Loop.
- The survey was conducted online. 33 responses were received in total. The data represented in this report is valid for the year 2022.
- Respondents were asked to aggregate data for all their operations on national level. Operators with Glass Cullet Recycling Facilities 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 report are indicative only and intended to provide estimates of the performance of packaging glass recycling in Europe.

Results may not be used to perform calculations for Life Cycle Assessment.

2024: an even more representative report

Compared to the previous report published in 2023, this report is even more representative on all accounts:

- **more countries;**
- **more tonnage;**
- **more Glass Cullet Recycling Facilities.**



62%

The survey represents 62% of the total available glass collected for recycling in EU + Norway + UK in 2022.

54%
IN THE 2023 REPORT

81 Glass Cullet Recycling Facilities

64
IN THE 2023 REPORT

CHAPTER

2

ANALYSIS OF INPUT MATERIALS TO GLASS CULLET RECYCLING FACILITIES

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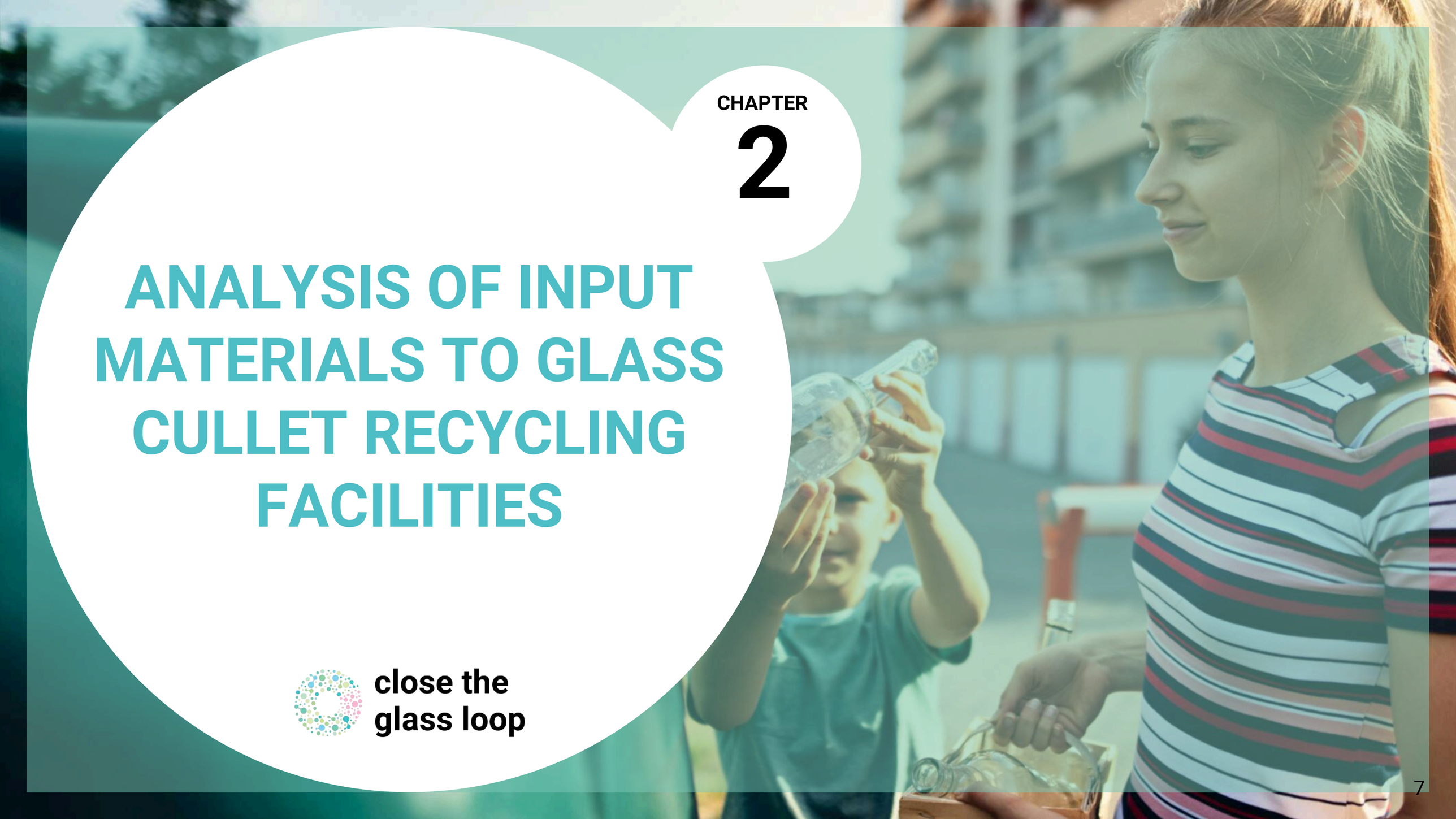
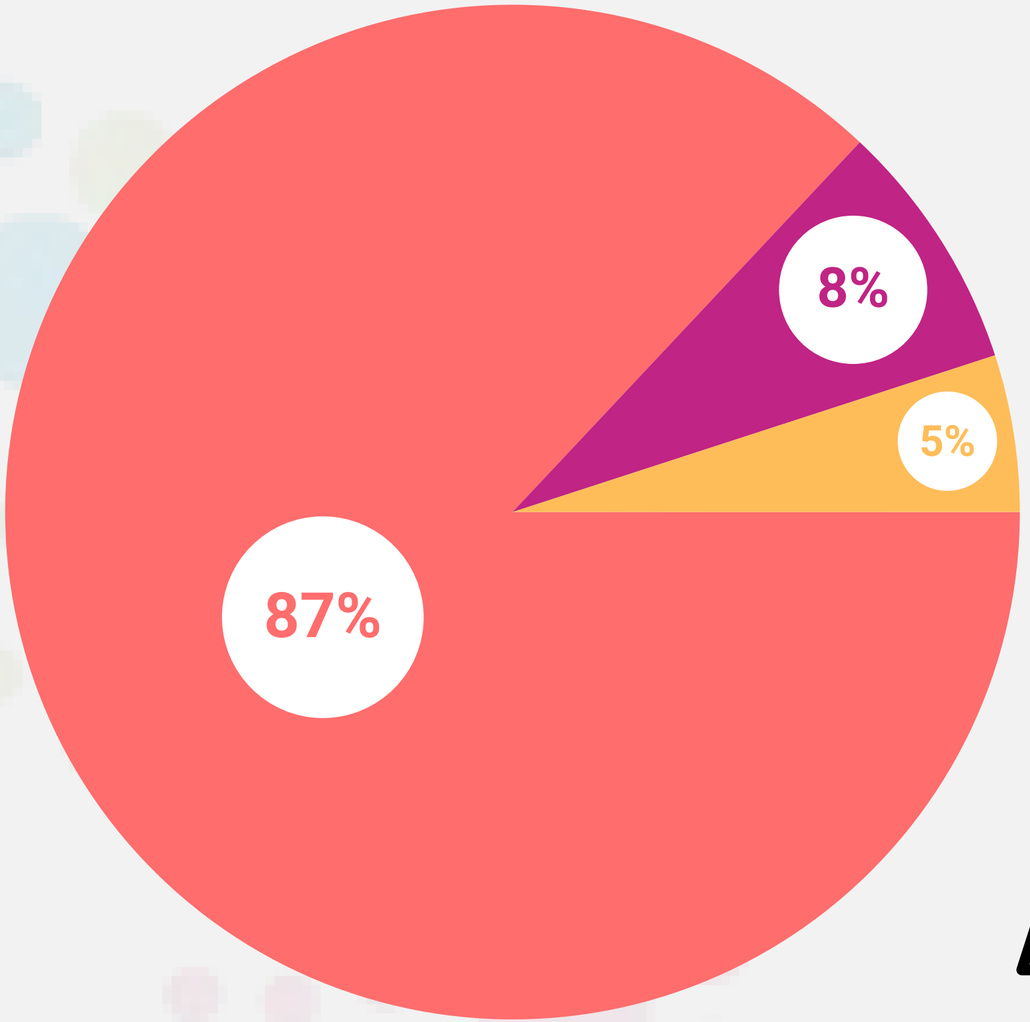


Distribution of input tonnage by category: **a massive reliance on municipal waste**



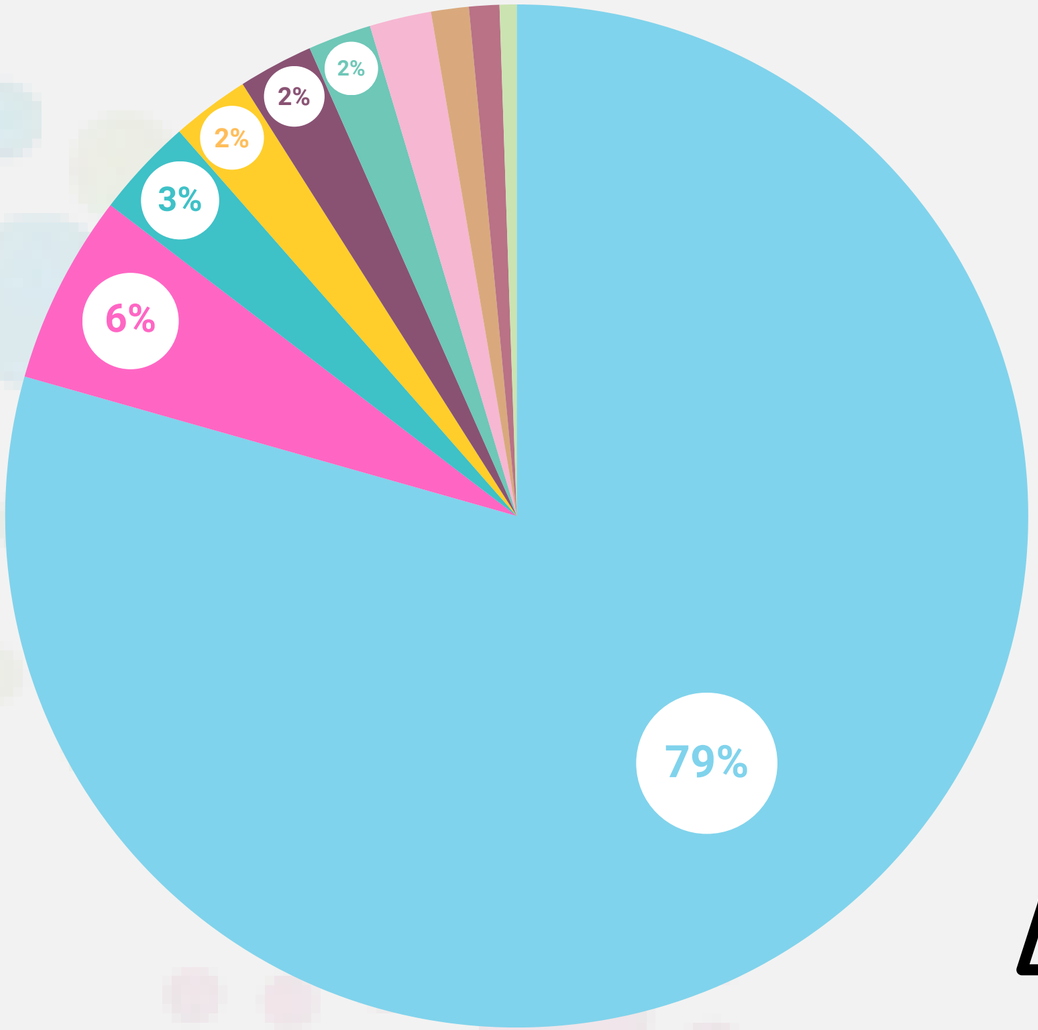
There are 3 types of input material categories:

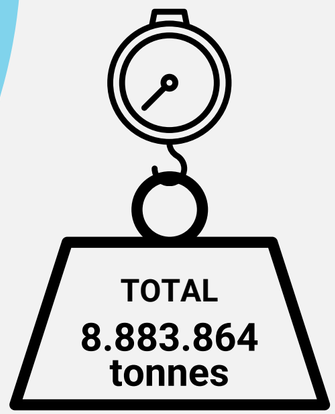
Post-consumer glass from municipal waste (accounting towards EU glass recycling rate)

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

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

Detailed distribution of input tonnage by type:





- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- Direct acquisition from HORECA (Hotels, restaurants, cafés)
- Direct acquisition from the glass industry other than container glass
- Direct acquisition from consumers
- End of life refillable glass
- <2% Direct acquisition from bottlers
- <2% Glass recovered from mixed waste or residual waste
- <1% One-way glass collected through Deposit-Return System
- <1% Direct acquisition from glass container industry
- <1% Glass recovered from incineration plants (after incineration)

Input material categories:

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)

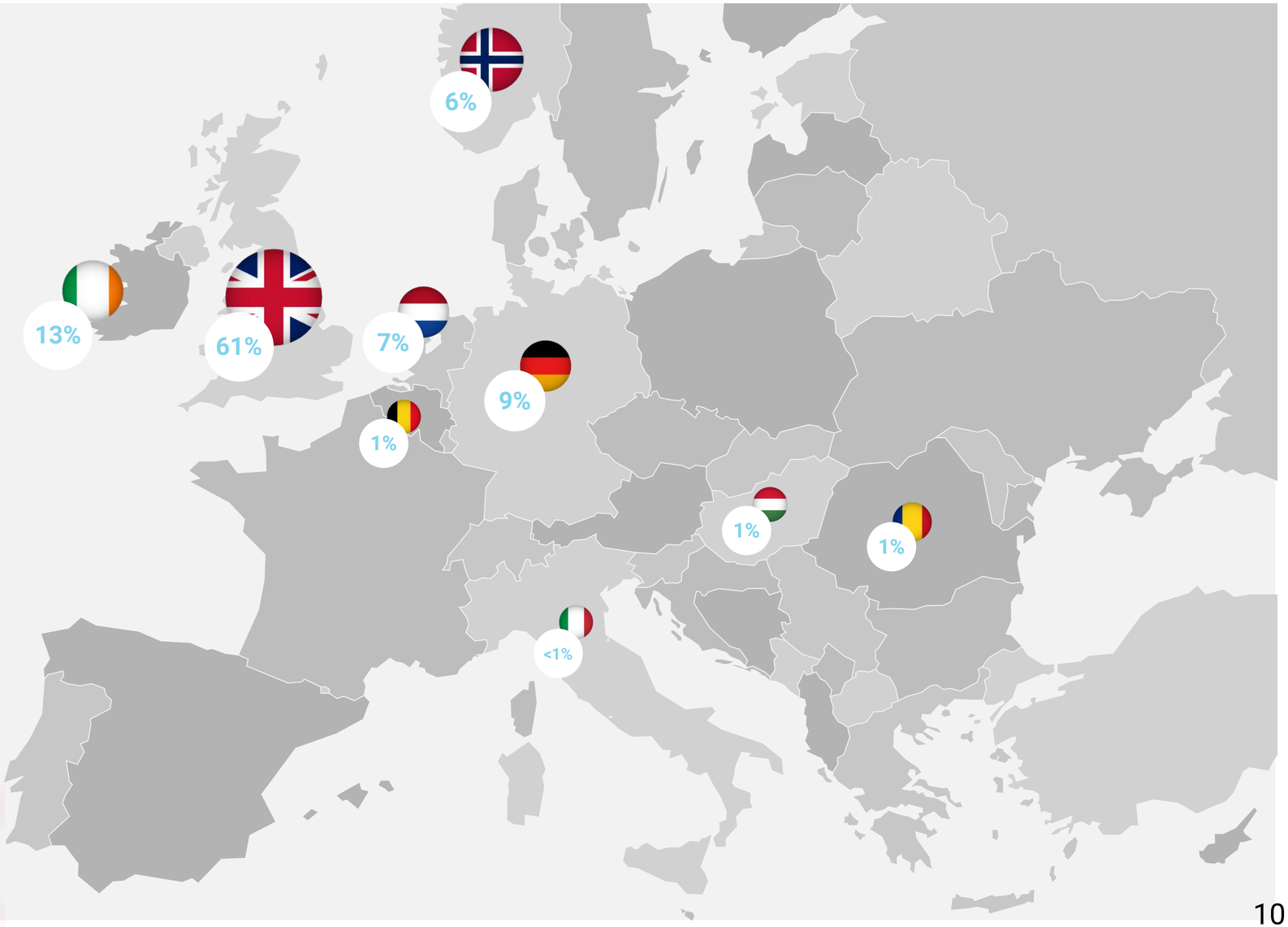
Focus on the share of input materials directly acquired from the HORECA channel

TOTAL
279.415
tonnes

Glass directly acquired from the HORECA sector accounts for **3,15%** of the total inputs.

Glass Cullet Recycling Facilities in **9 different countries** reported acquiring glass directly from the HORECA sector. In other countries, glass from the HORECA sector is collected together with municipal waste.

The UK represents **61%** of all the glass acquired directly from the HORECA sector in the survey sample.



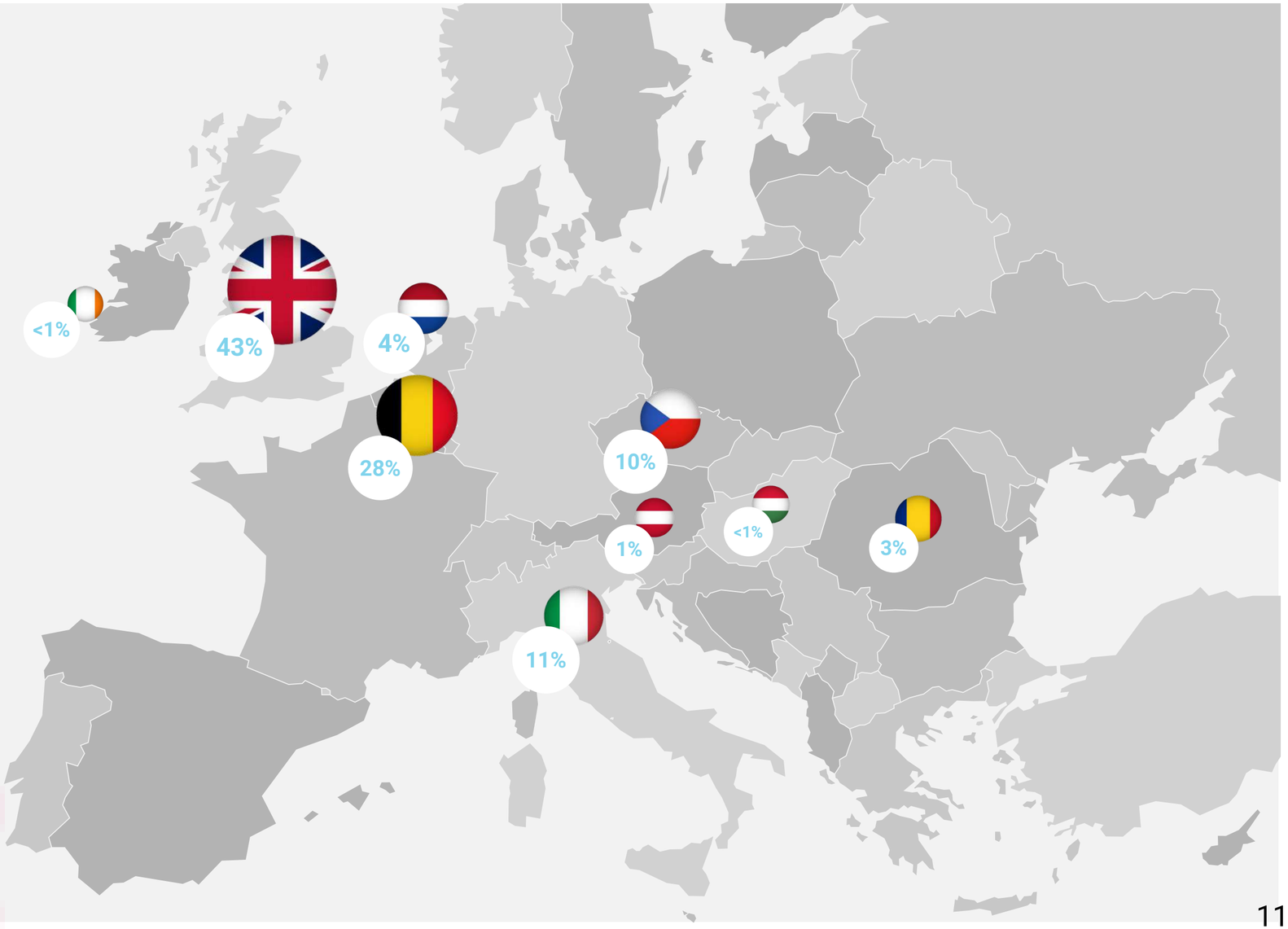
Focus on the share of input materials coming from Material Recovery Facilities (or pre-sorting plants)

TOTAL
532.743
tonnes

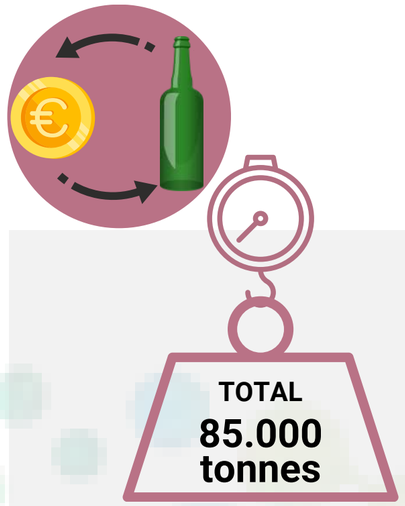
Glass acquired from Material Recovery Facilities or pre-sorting plants accounts for **6%** of the total inputs.

Glass Cullet Recycling Facilities in **9 different countries** reported acquiring glass directly from Material Recovery Facilities. This also includes imported materials.

The UK represents **43%** of all the glass recovered from Material Recovery Facilities in the survey sample, followed by Belgium at **28%.**



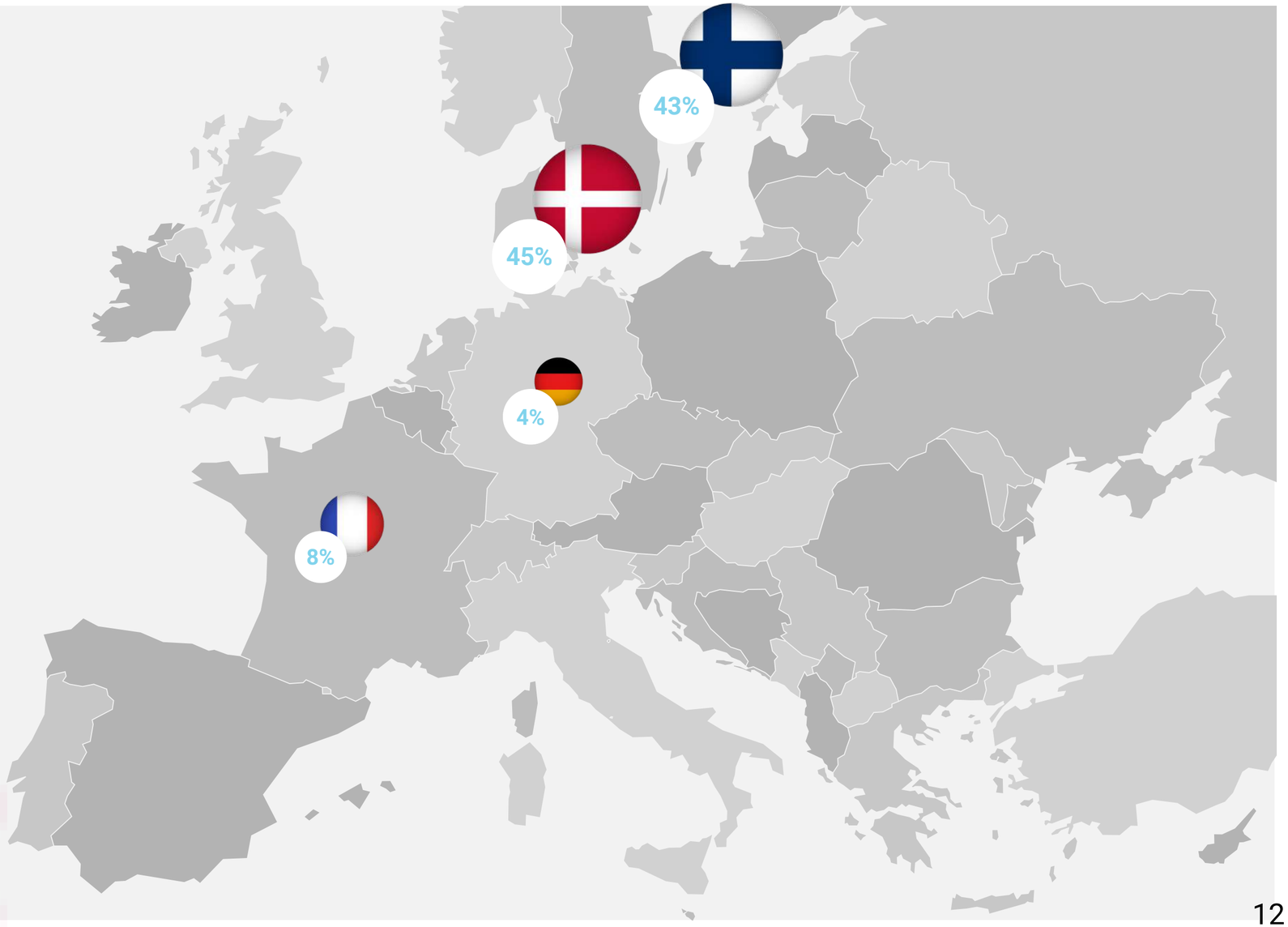
Focus on the share of input materials coming from Deposit Return Systems for glass packaging recycling



Glass acquired from Deposit Return Systems for glass packaging recycling accounts for **0,96%** of the total inputs.

Glass Cullet Recycling Facilities in **4 different countries** reported acquiring glass directly from Deposit Return Systems. This also includes imported materials.

Denmark and Finland represent **88%** of all the glass recovered from Deposit Return Systems in the survey sample, with Germany far behind at **4%.**



CHAPTER

3

ANALYSIS OF IMPORTED MATERIALS INTO GLASS CULLET RECYCLING FACILITIES

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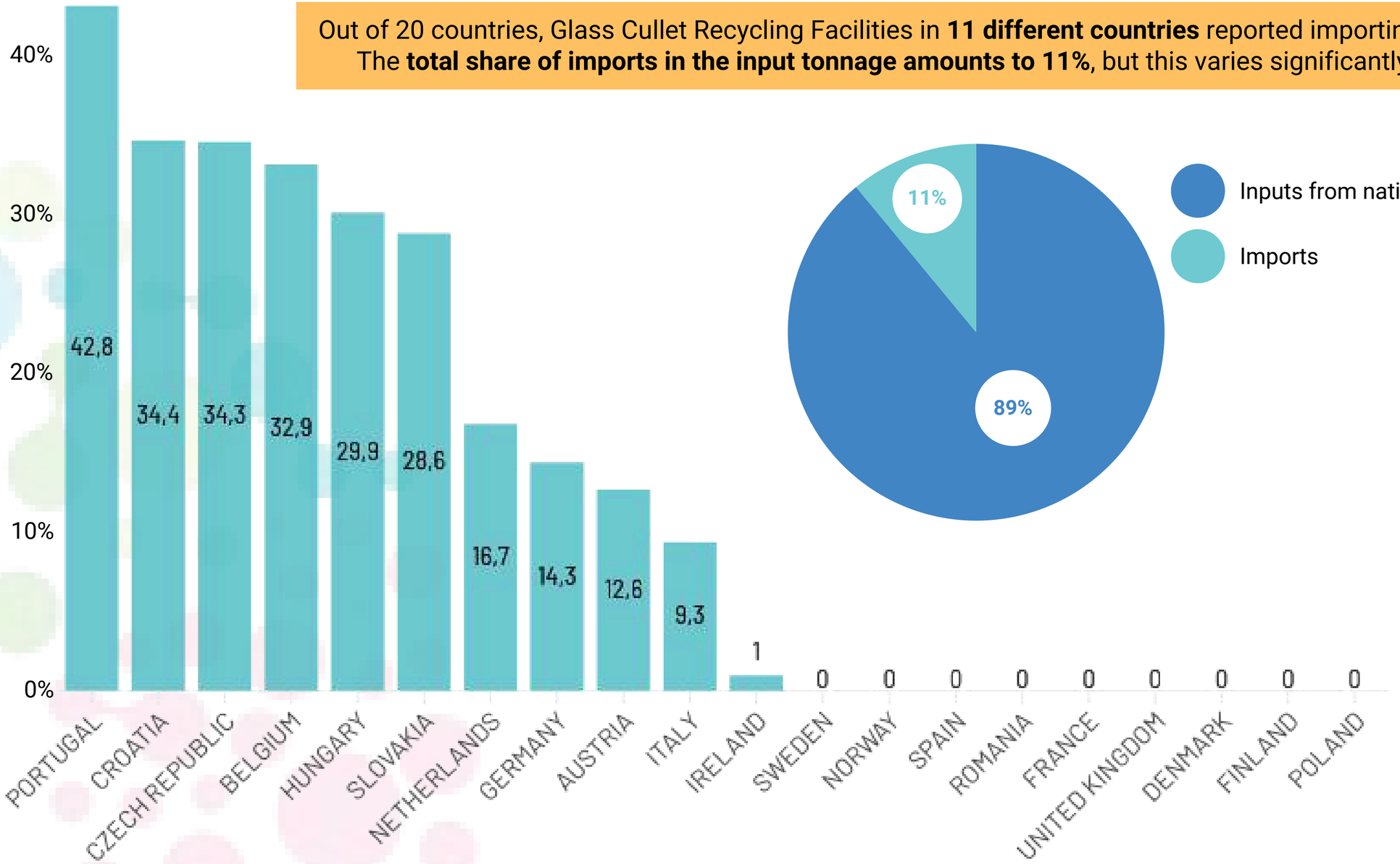
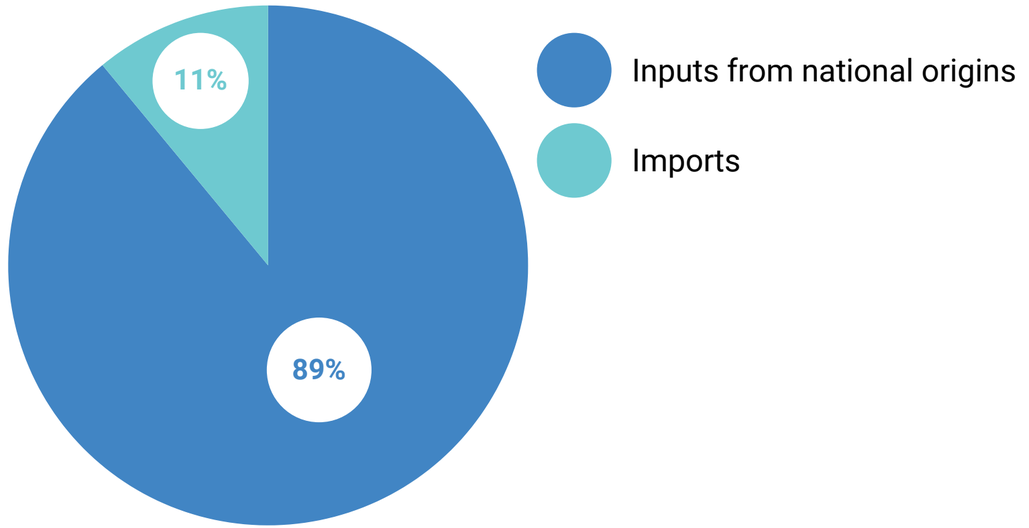
Share of imports in the total input tonnage of Glass Cullet Recycling Facilities

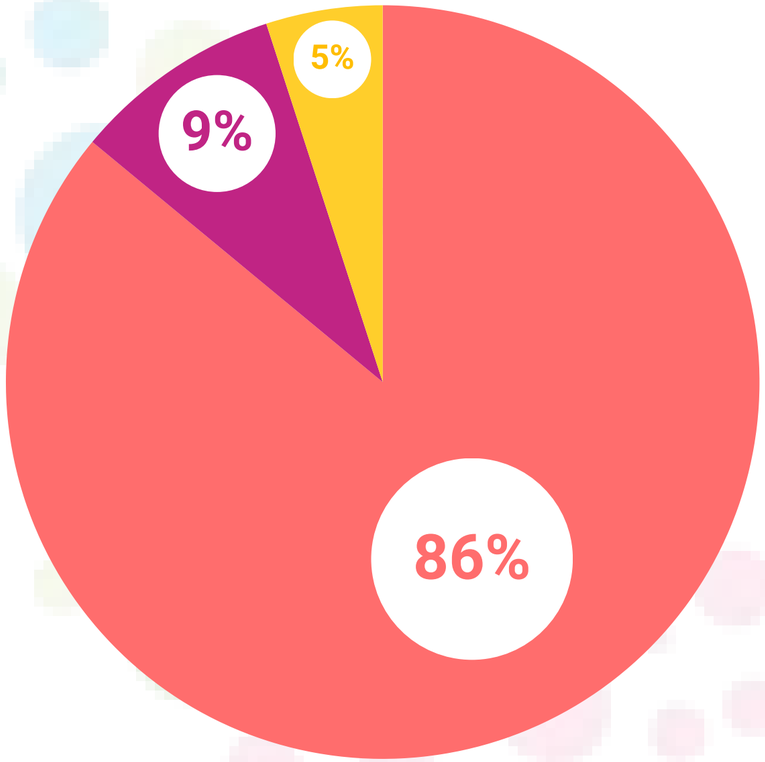
Out of 20 countries, Glass Cullet Recycling Facilities in **11 different countries** reported importing materials. The **total share of imports in the input tonnage amounts to 11%**, but this varies significantly by country.



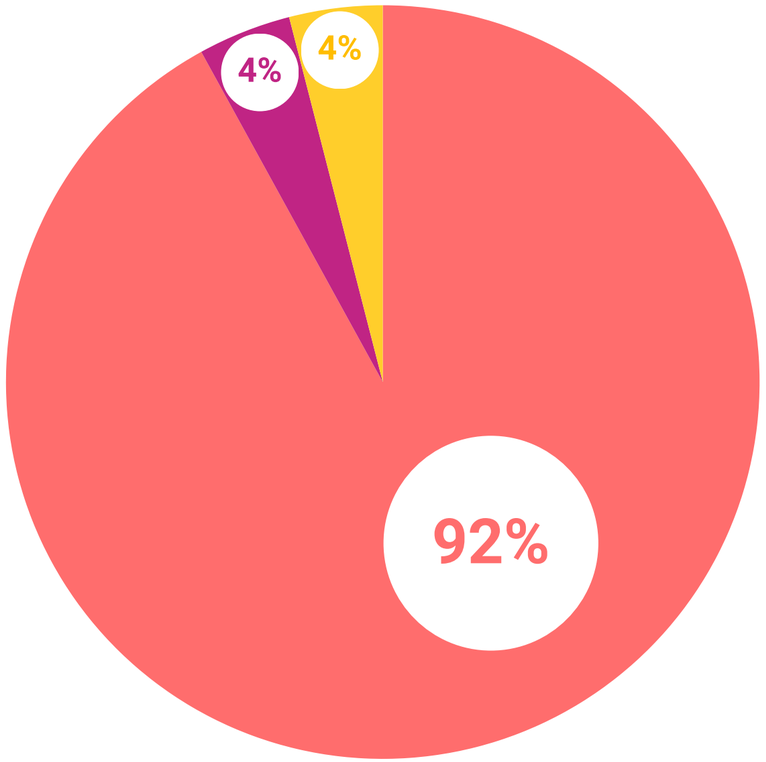


Comparison of input tonnage by category: national inputs v. imports

Distribution by category (national inputs)



Distribution by category (imports)

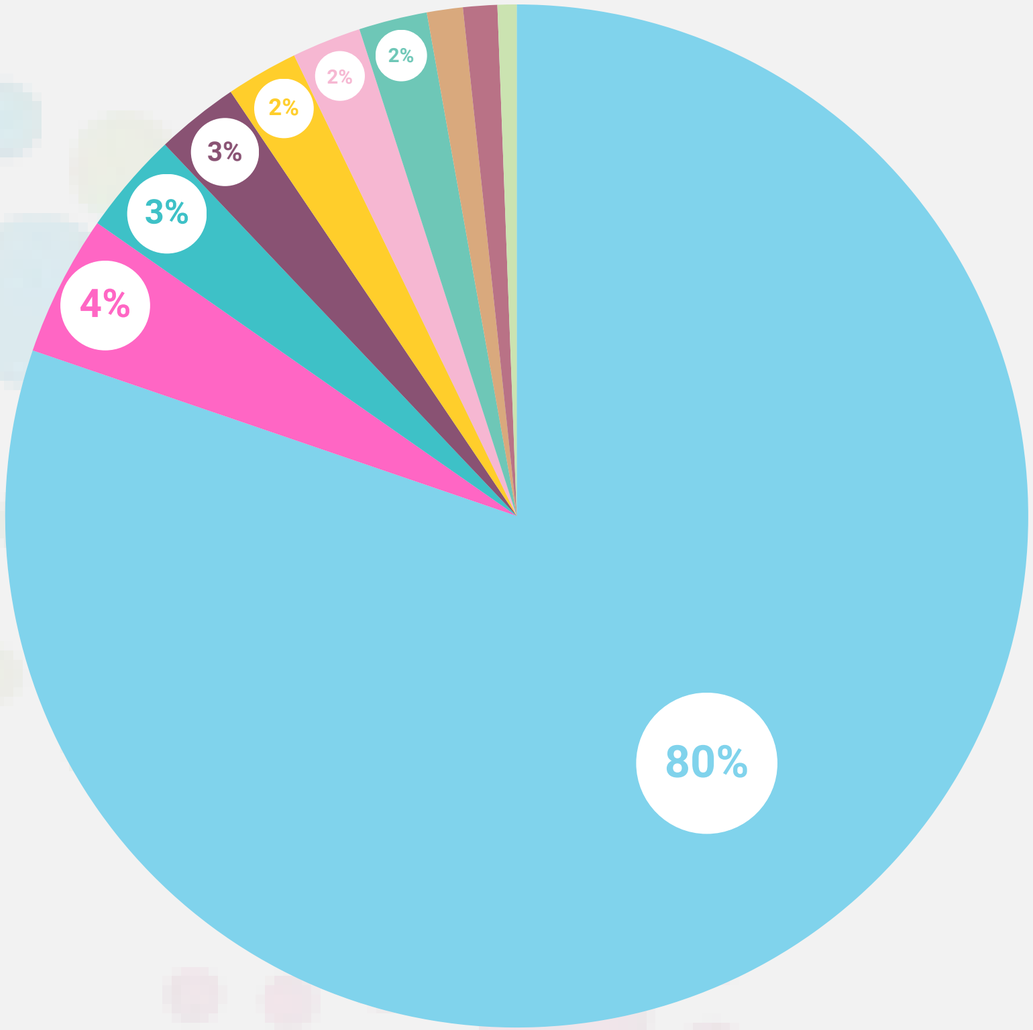


Post-consumer glass from municipal waste (accounting towards EU glass recycling rate)

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

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

Detailed distribution of input tonnage by type: materials sourced nationally only.



Municipal waste collectors

Glass recovered from Material Recovery Facilities

Direct acquisition from HORECA (Hotels, restaurants, cafés)

Direct acquisition from consumers

Direct acquisition from the glass industry other than container glass

Direct acquisition from bottlers

End of life refillable glass

1% Glass recovered from mixed waste or residual waste

1% One-way glass collected through Deposit-Return System

<1% Direct acquisition from glass container industry

<1% Glass recovered from incineration plants (after incineration)

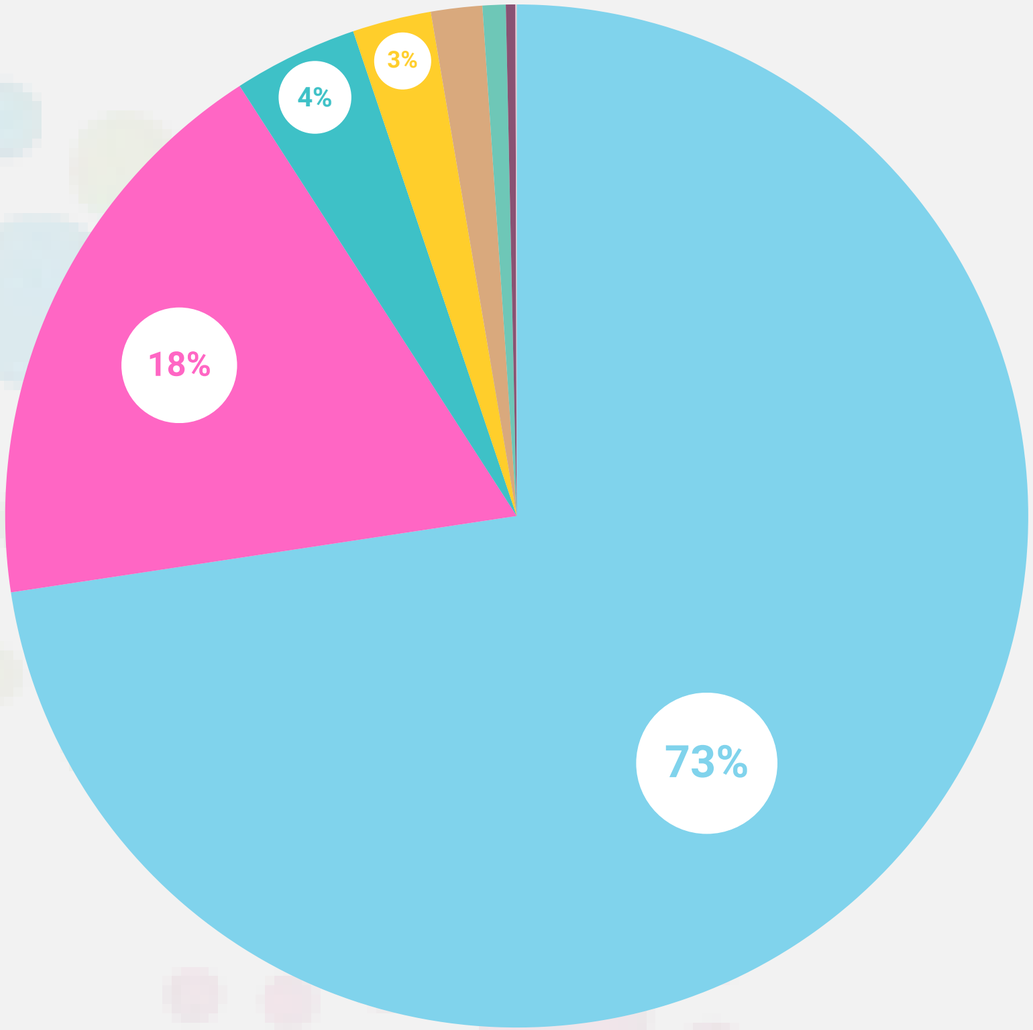
Input material categories:

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)

Detailed distribution of input tonnage by type: imported materials only.



- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- Direct acquisition from HORECA (Hotels, restaurants, cafés)
- Direct acquisition from the glass industry other than container glass
- <2% Glass recovered from mixed waste or residual waste
- <1% End of life refillable glass
- <1% Direct acquisition from consumers
- <1% Direct acquisition from bottlers
- <1% Direct acquisition from glass container industry
- 0% One-way glass collected through Deposit-Return System
- 0% Glass recovered from incineration plants (after incineration)

Input material categories:

- **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)**

CHAPTER

4

DETAILED OVERVIEW OF INPUTS BY COUNTRY

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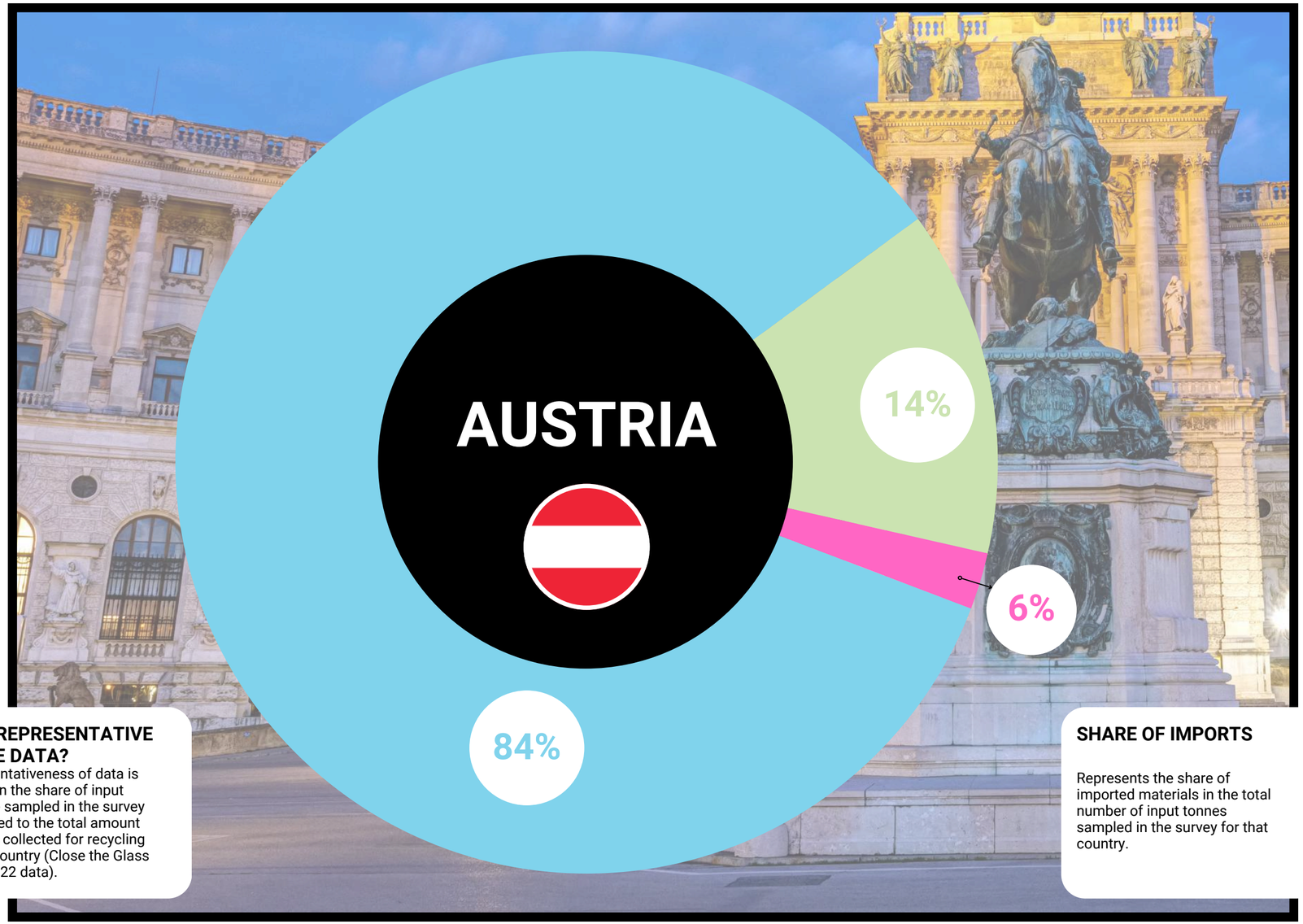
Austria - a recycling system mostly based on municipal waste collection.



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HOW REPRESENTATIVE IS THE DATA?
Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

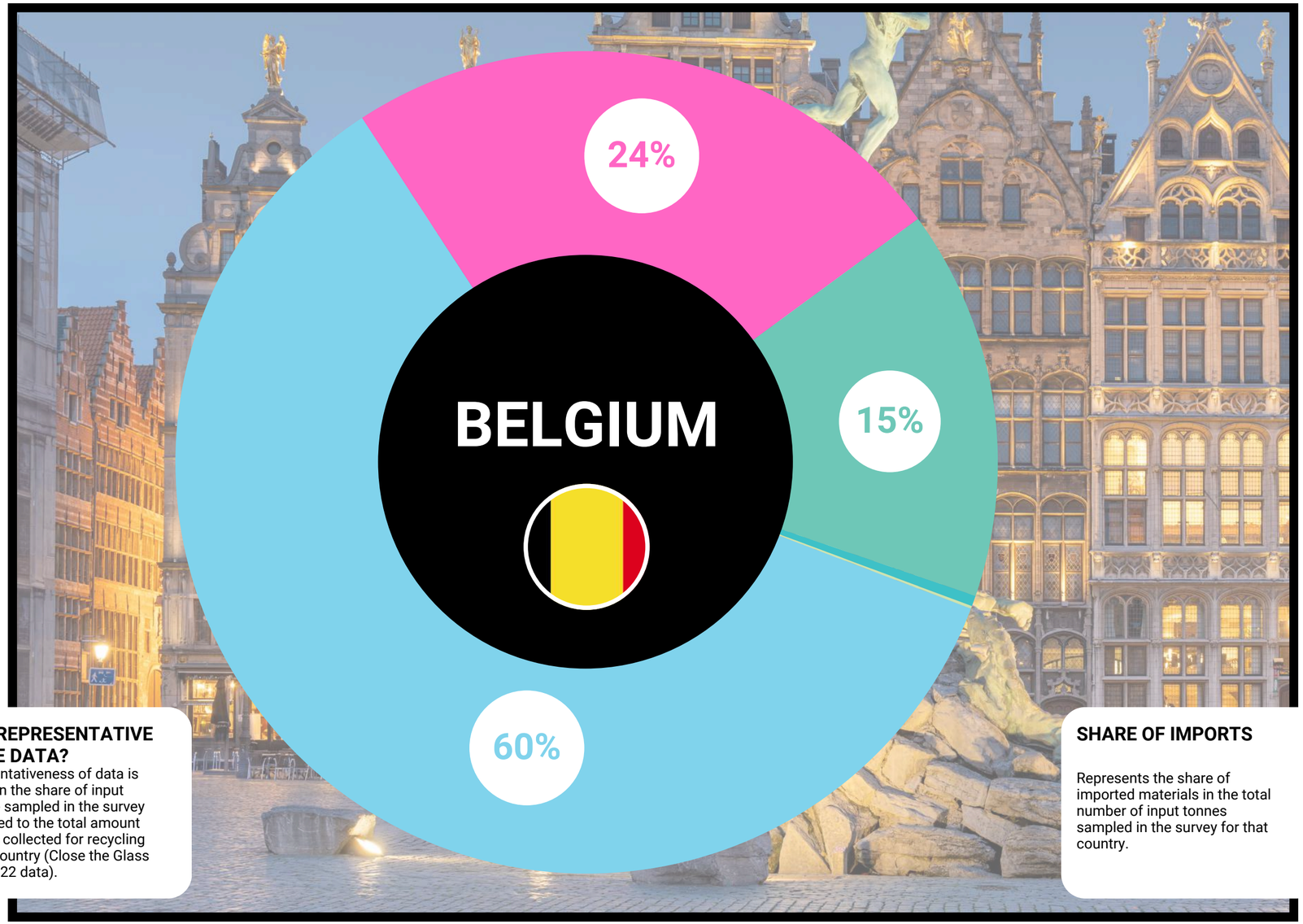
13%

- Municipal waste collectors
- Direct acquisition from glass container industry
- Glass recovered from Material Recovery Facilities (or pre-sorting plants)

Input material categories:

- **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)**

Belgium - a recycling system with a large share of imports, mostly based on municipal waste collection, glass recovered from Material Recovery Facilities and end-of-life refillable glass.



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HOW REPRESENTATIVE IS THE DATA?
Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

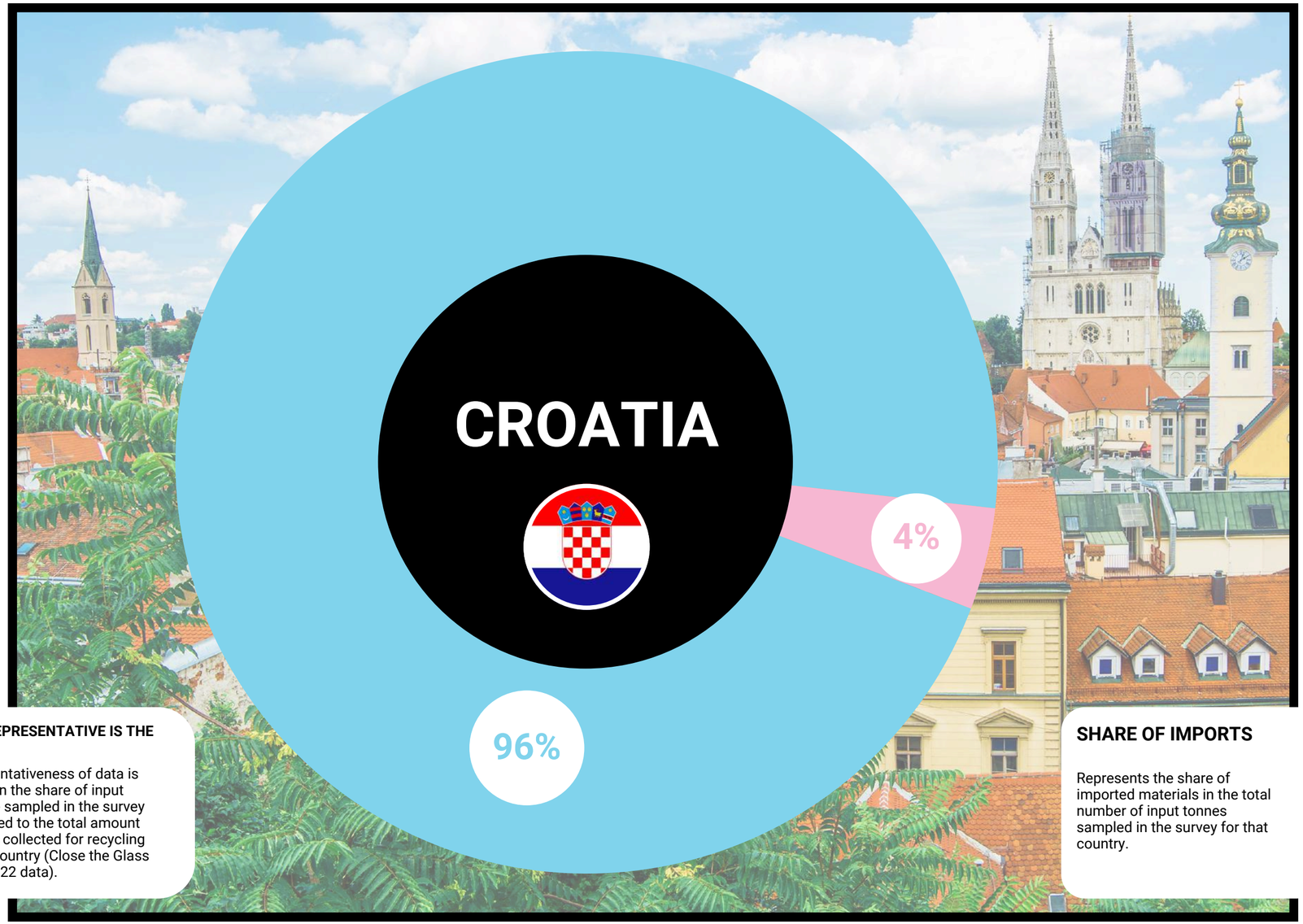
33%

- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- End of life refillable glass
- <1% Direct acquisition from HORECA (Hotels, restaurants, cafés)
- <1% Direct acquisition from glass container industry

Input material categories:

- **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)**

Croatia - a recycling system with a large share of imports, based on municipal waste collection.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

34%

Municipal waste collectors

Direct acquisition from bottlers

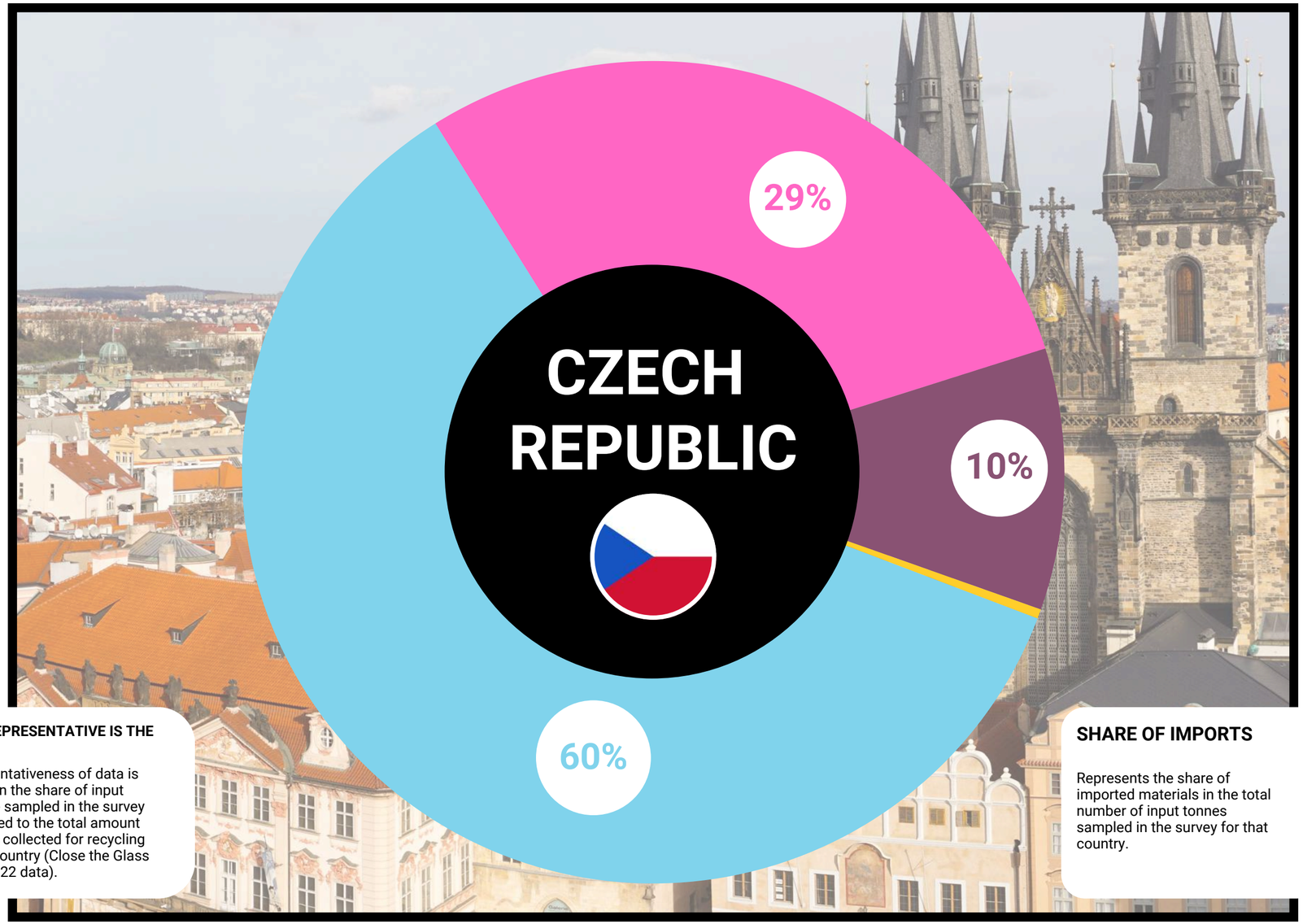
Input material categories:

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)

Czech Republic - a recycling system with a large share of imports, mostly based on municipal waste collection, glass recovered from Material Recovery Facilities and direct acquisition from consumers.



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34%

Municipal waste collectors

Glass recovered from Material Recovery Facilities

Direct acquisition from consumers

<1%

Direct acquisition from the glass industry other than container glass

HOW REPRESENTATIVE IS THE DATA?

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SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

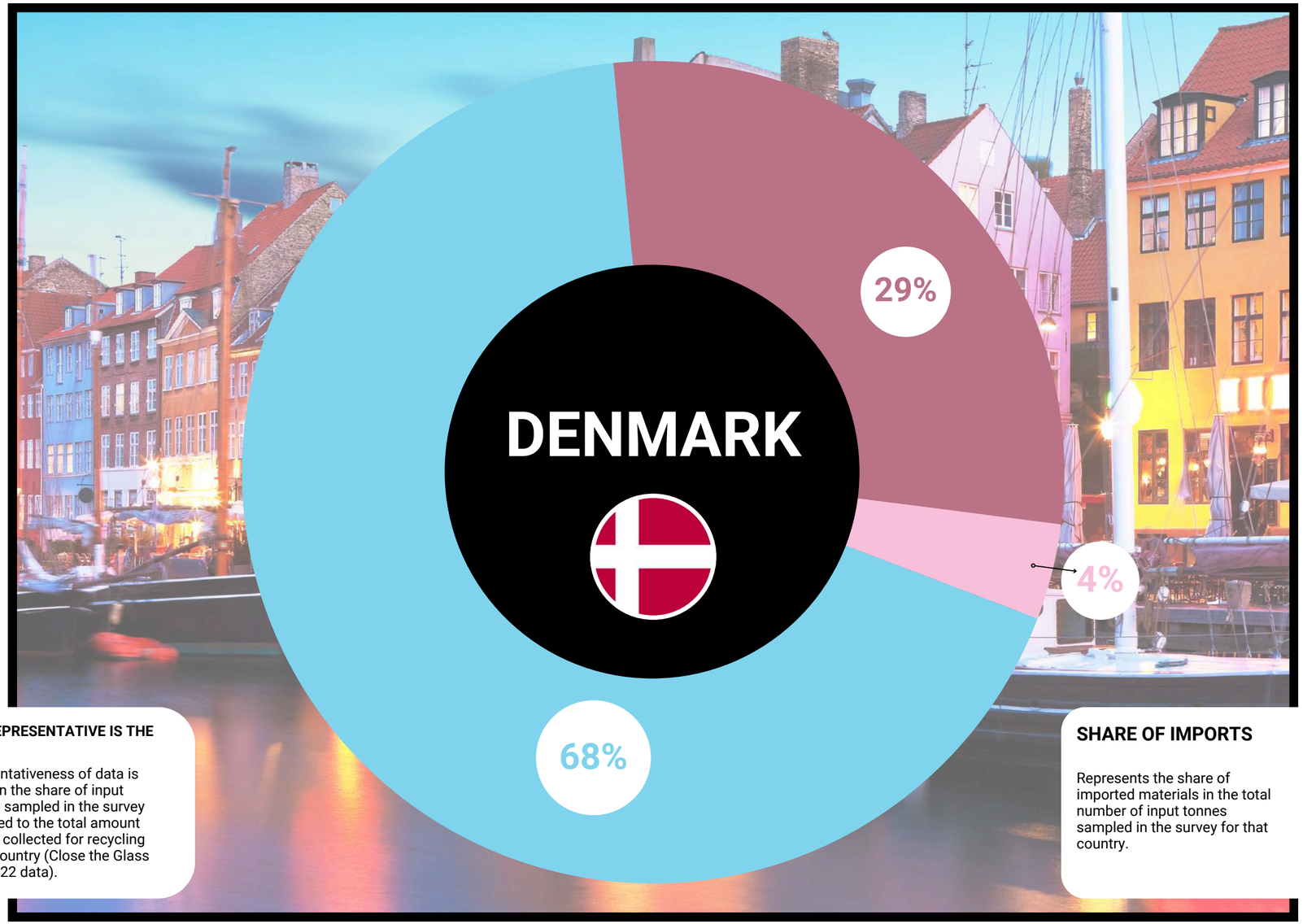
Input material categories:

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)

Denmark - a recycling system where municipal waste collection is complemented by one-way glass collected through a Deposit Return System.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

- Municipal waste collectors
- One-way glass collected through Deposit-Return System
- Direct acquisition from bottlers

Input material categories:

- **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)**

Finland – a recycling system where glass is predominantly sourced from a Deposit Return System.

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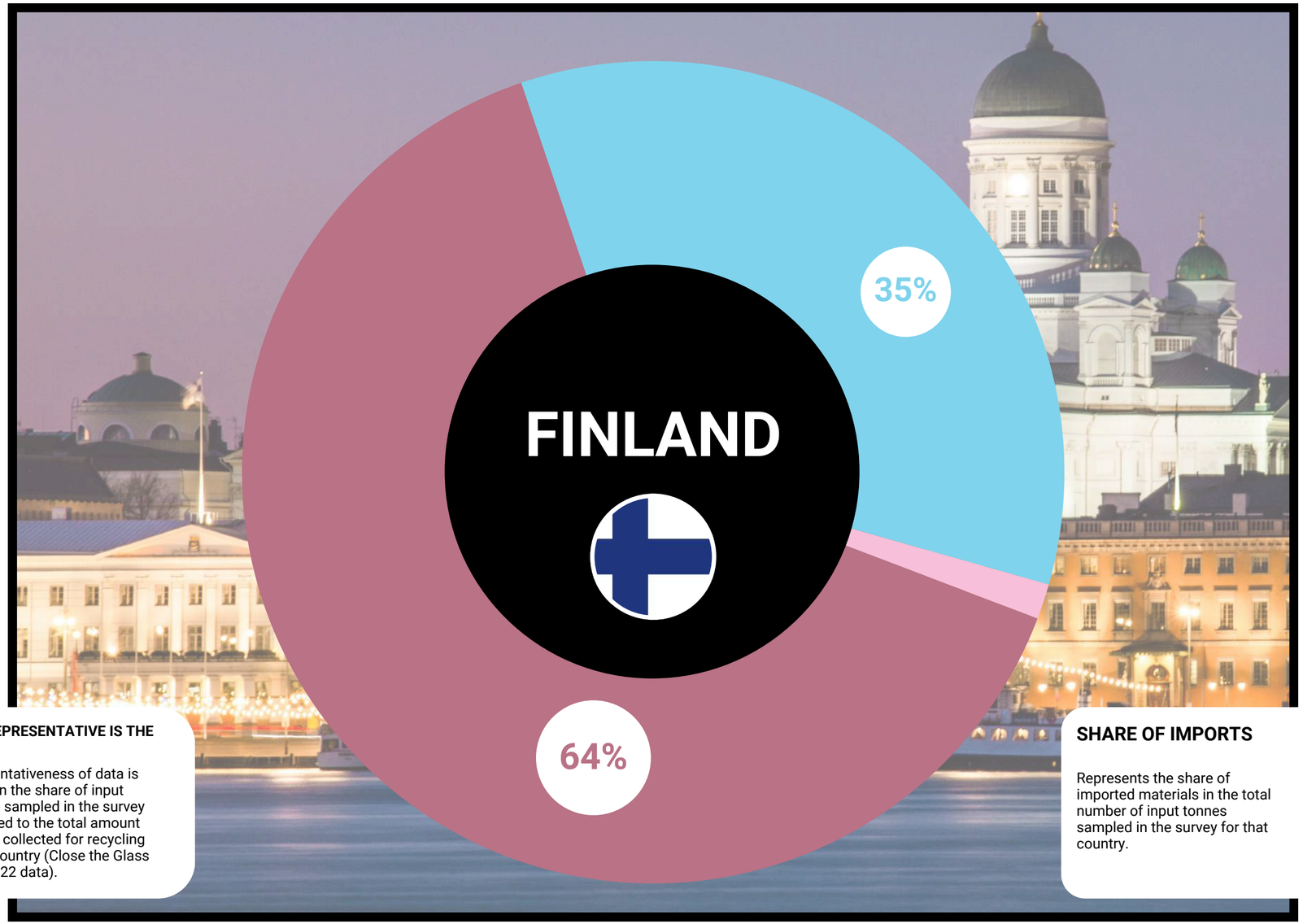

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SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

One-way glass collected through Deposit-Return System

Municipal waste collectors

1%

Direct acquisition from bottlers

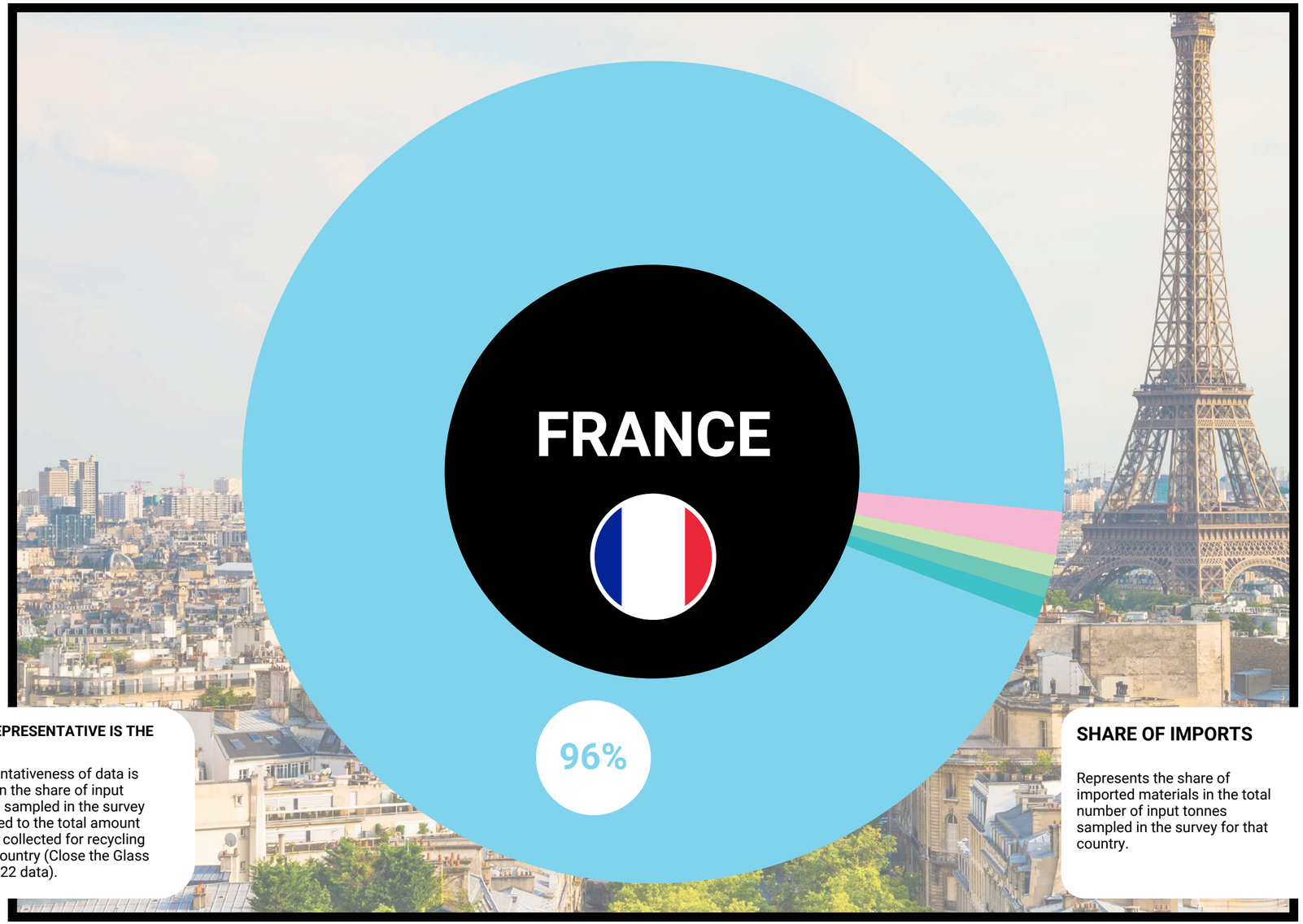
Input material categories:

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)

France - a recycling system largely based on municipal waste collection complemented by several less significant other sources.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

Municipal waste collectors

2% Direct acquisition from bottlers

<1% Direct acquisition from glass container industry

<1% End of life refillable glass

<1% One-way glass collected through Deposit-Return System

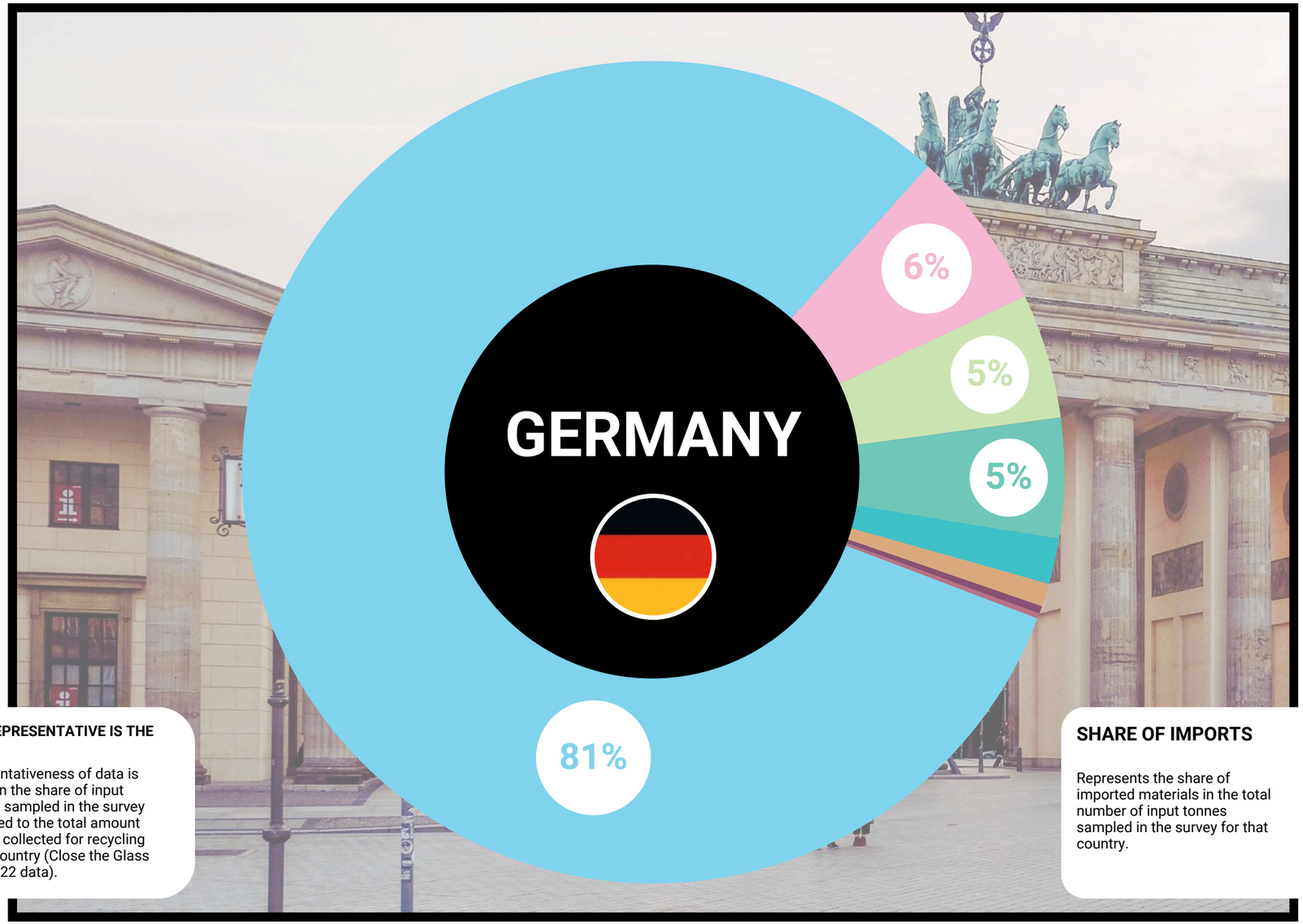
Input material categories:

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)

Germany - a recycling system with some imports, mostly based on municipal waste collection and several significant other sources such as end-of-life refillable glass.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

14%

- Municipal waste collectors
- Direct acquisition from bottlers
- Direct acquisition from glass container industry
- End of life refillable glass
- 2% Direct acquisition from HORECA (Hotels, restaurants, cafés)
- 2% Glass recovered from mixed waste or residual waste
- <1% Direct acquisition from consumers
- <1% One-way glass collected through Deposit-Return System

Input material categories:

- **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)**

Hungary - a recycling system where more than half of the materials used for recycling do not account towards the EU glass packaging recycling rate.

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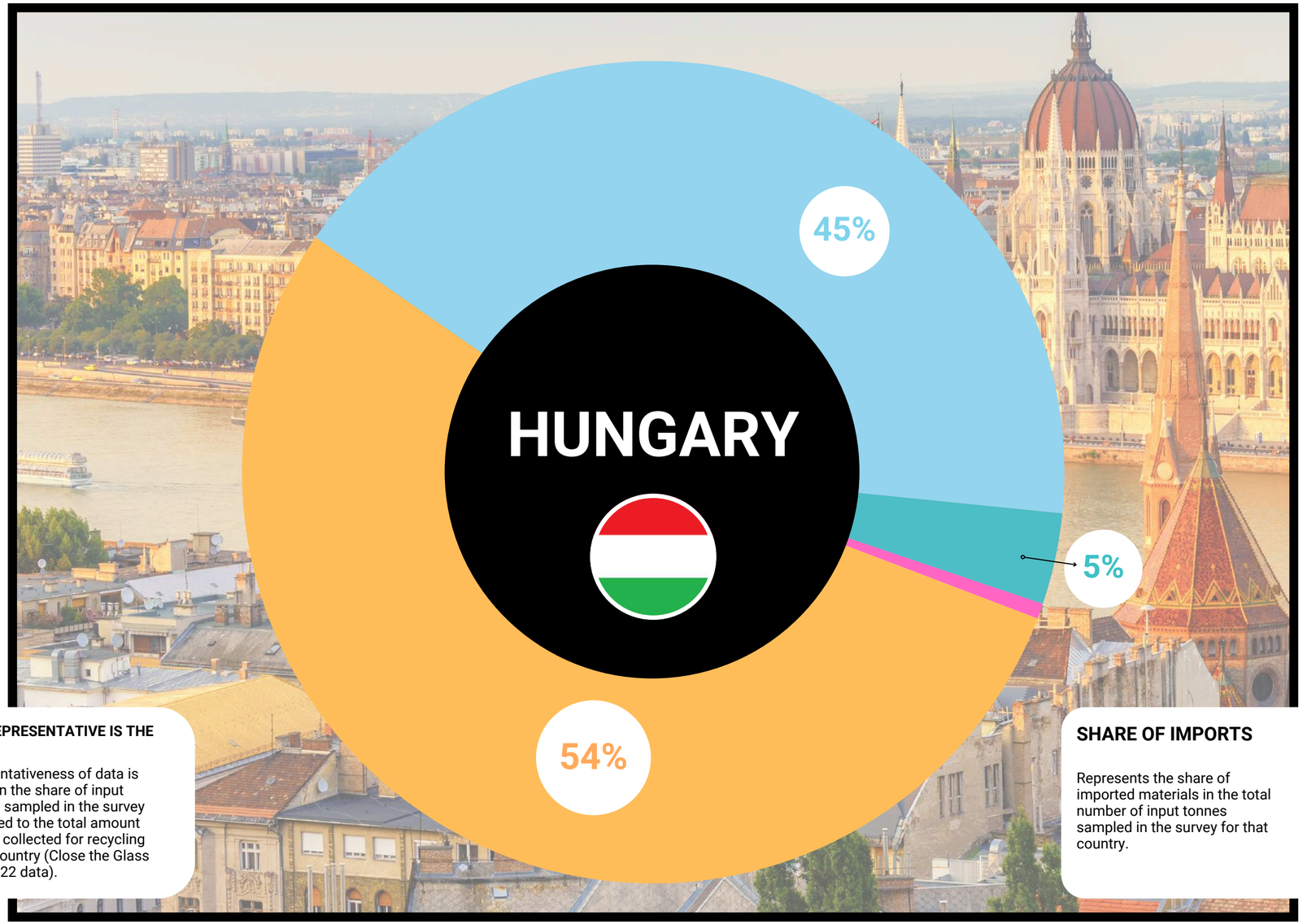


30%

Direct acquisition from the glass industry other than container glass

Municipal waste collectors

Direct acquisition from HORECA (Hotels, restaurants, cafés)

<1% Glass recovered from Material Recovery Facilities

HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

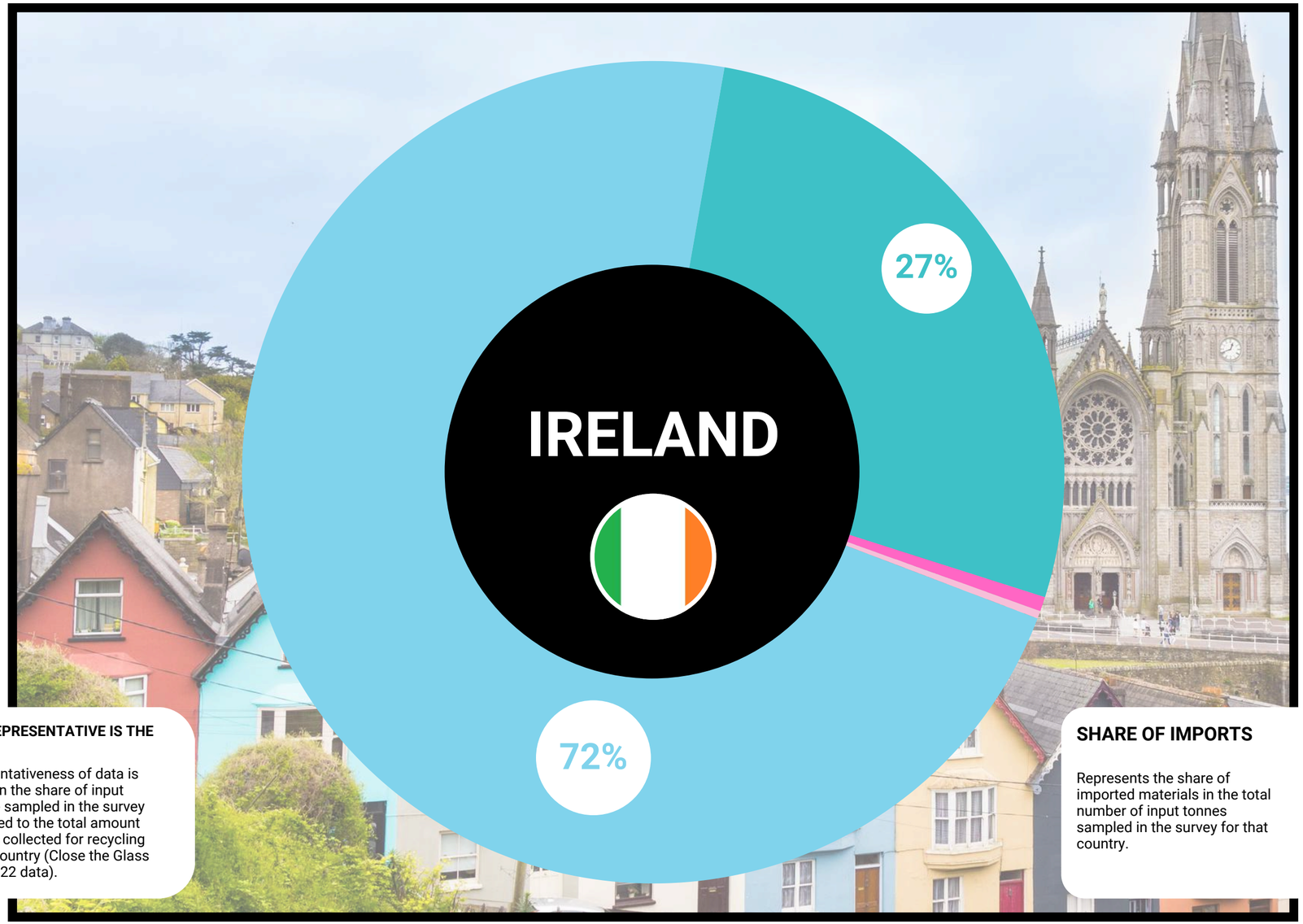
Input material categories:

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)

Ireland - a recycling system where municipal waste collection is complemented by direct acquisition from HORECA.



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HOW REPRESENTATIVE IS THE DATA?

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SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

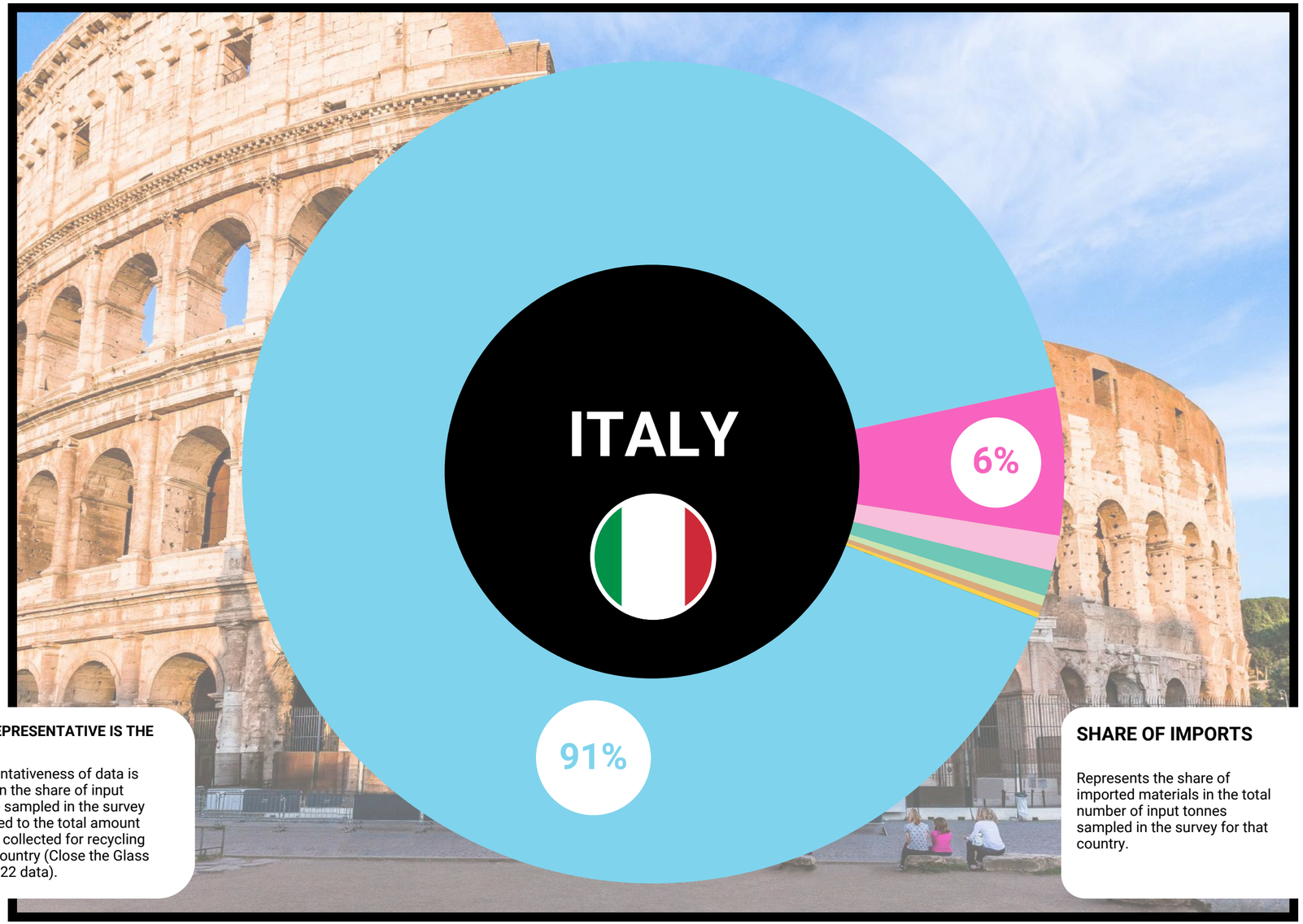
1%

- Municipal waste collectors
- Direct acquisition from HORECA (Hotels, restaurants, cafés)
- <1% Glass recovered from Material Recovery Facilities
- <1% Direct acquisition from bottlers

Input material categories:

- **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)**

Italy – a recycling system operating almost exclusively with municipal waste collectors, complemented for a small fraction by Material Recovery Facilities.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

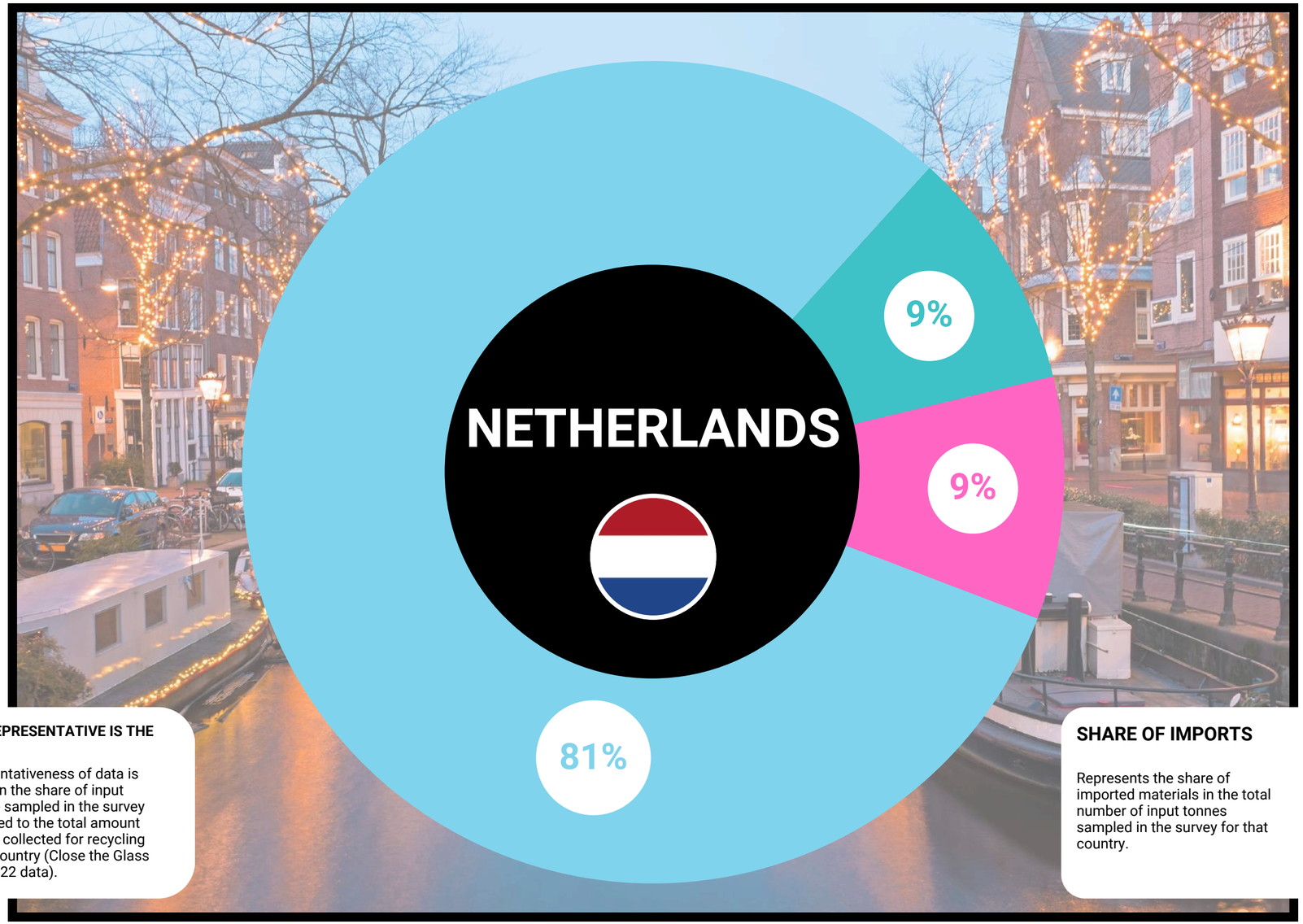
9%

- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- 1% Direct acquisition from bottlers
- 1% End of life refillable glass
- <1% Direct acquisition from the glass container industry
- <1% Glass recovered from mixed waste or residual waste
- <1% Direct acquisition from the glass industry other than container glass
- <1% Direct acquisition from HORECA (Hotels, restaurants, cafés)

Input material categories:

- **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)**

Netherlands - a recycling system where municipal waste collection is complemented by two significant other sources including HORECA and Material Recovery Facilities.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

17%

Municipal waste collectors

Direct acquisition from HORECA (Hotels, restaurants, cafés)

Glass recovered from Material Recovery Facilities

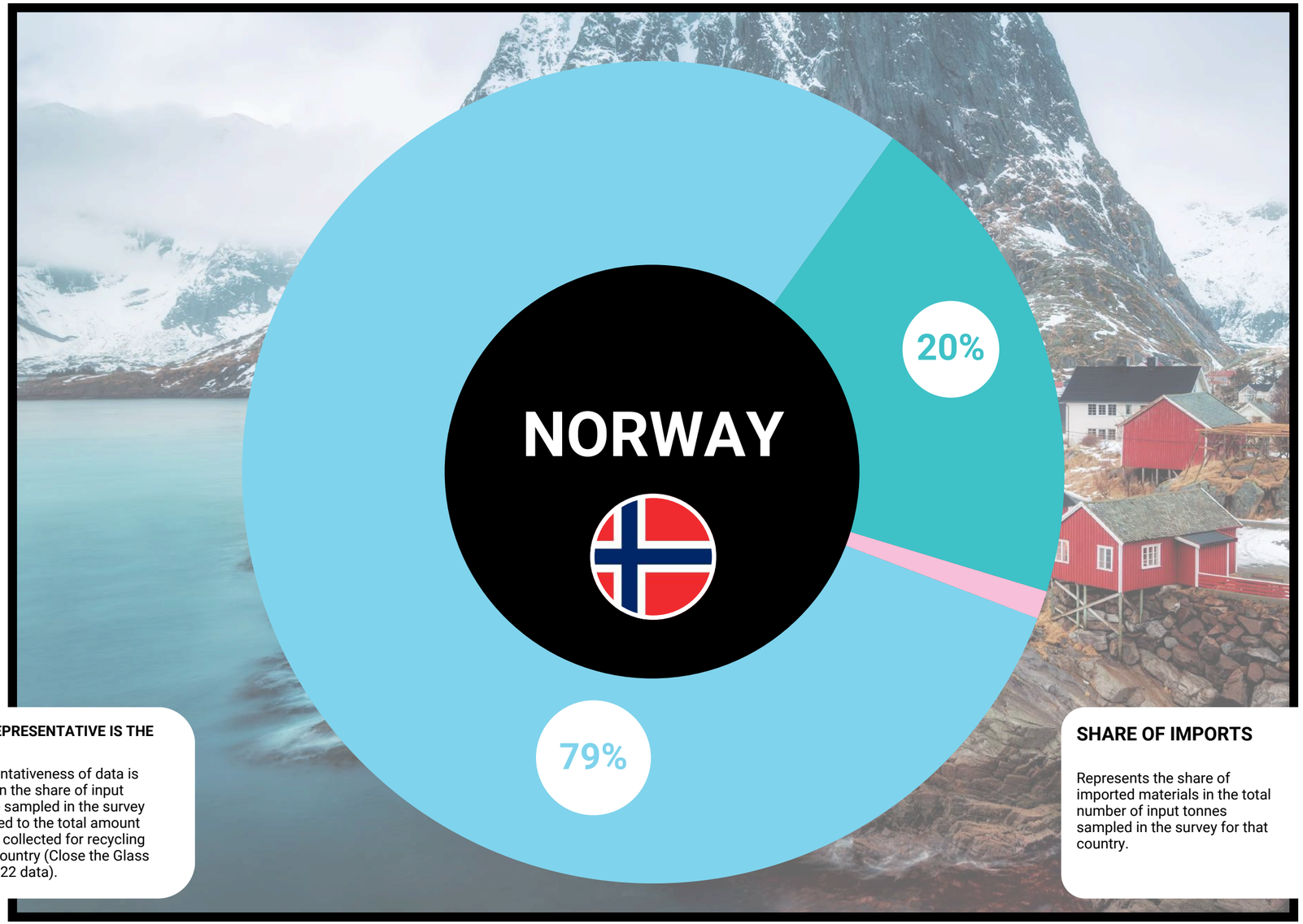
Input material categories:

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)

Norway - a recycling system based on municipal waste collection and glass acquired directly from HORECA.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

Municipal waste collectors

Direct acquisition from HORECA (Hotels, restaurants, cafés)

Direct acquisition from bottlers

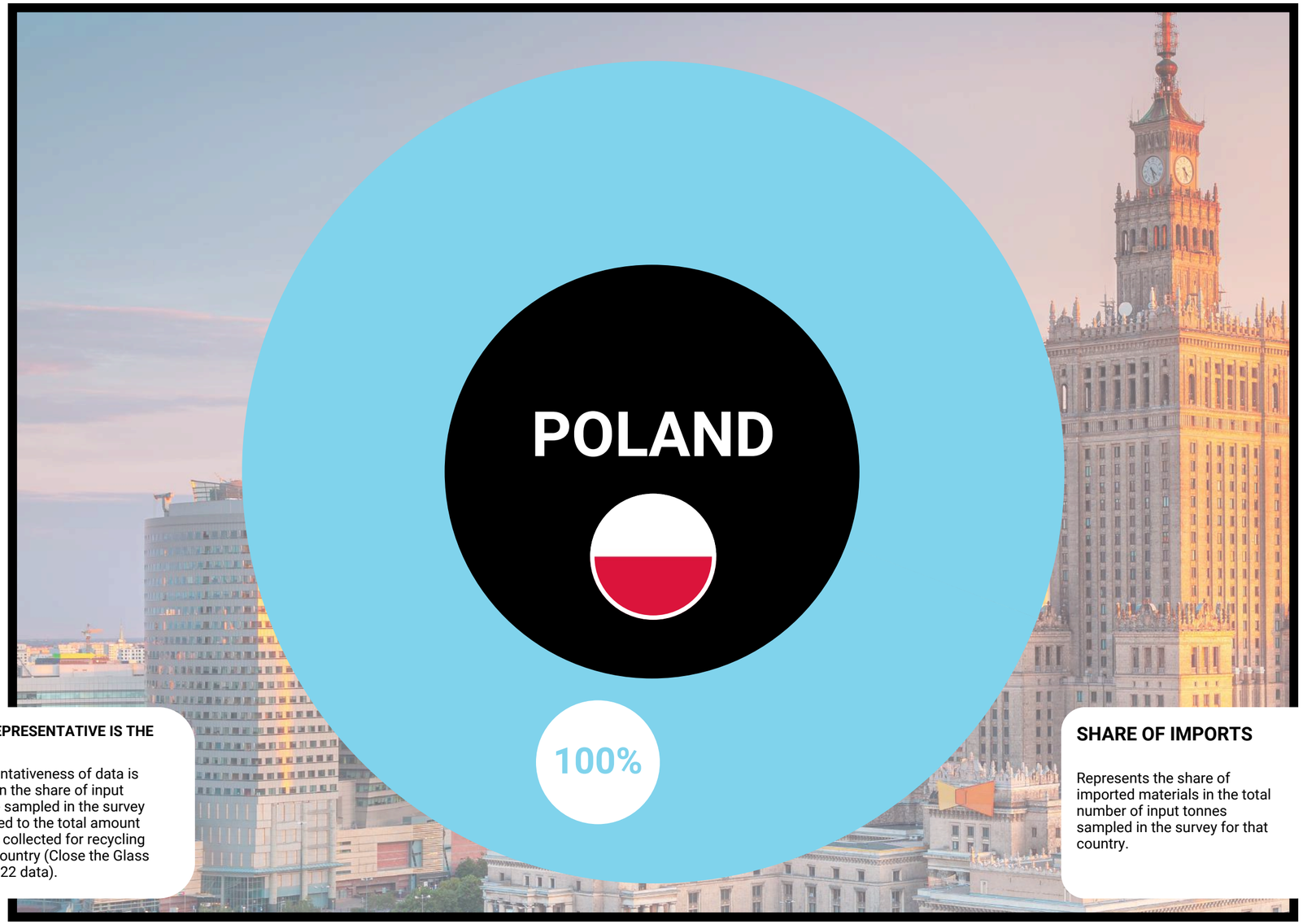
Input material categories:

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)

Poland – a recycling system operating exclusively with municipal waste collectors.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

Municipal waste collectors

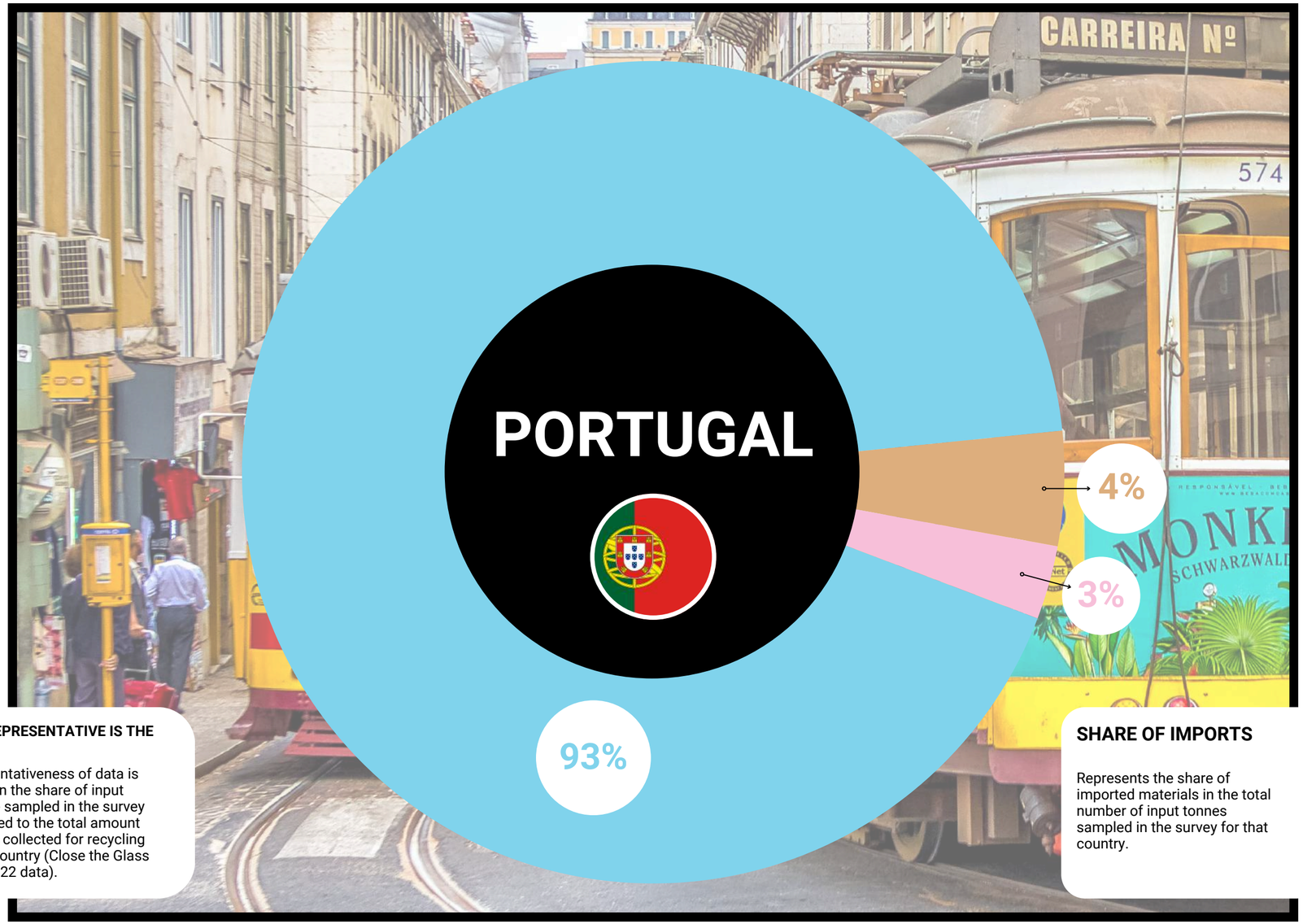
Input material categories:

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)

Portugal - a recycling system predominantly based on municipal waste collectors and relying very strongly on imports.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

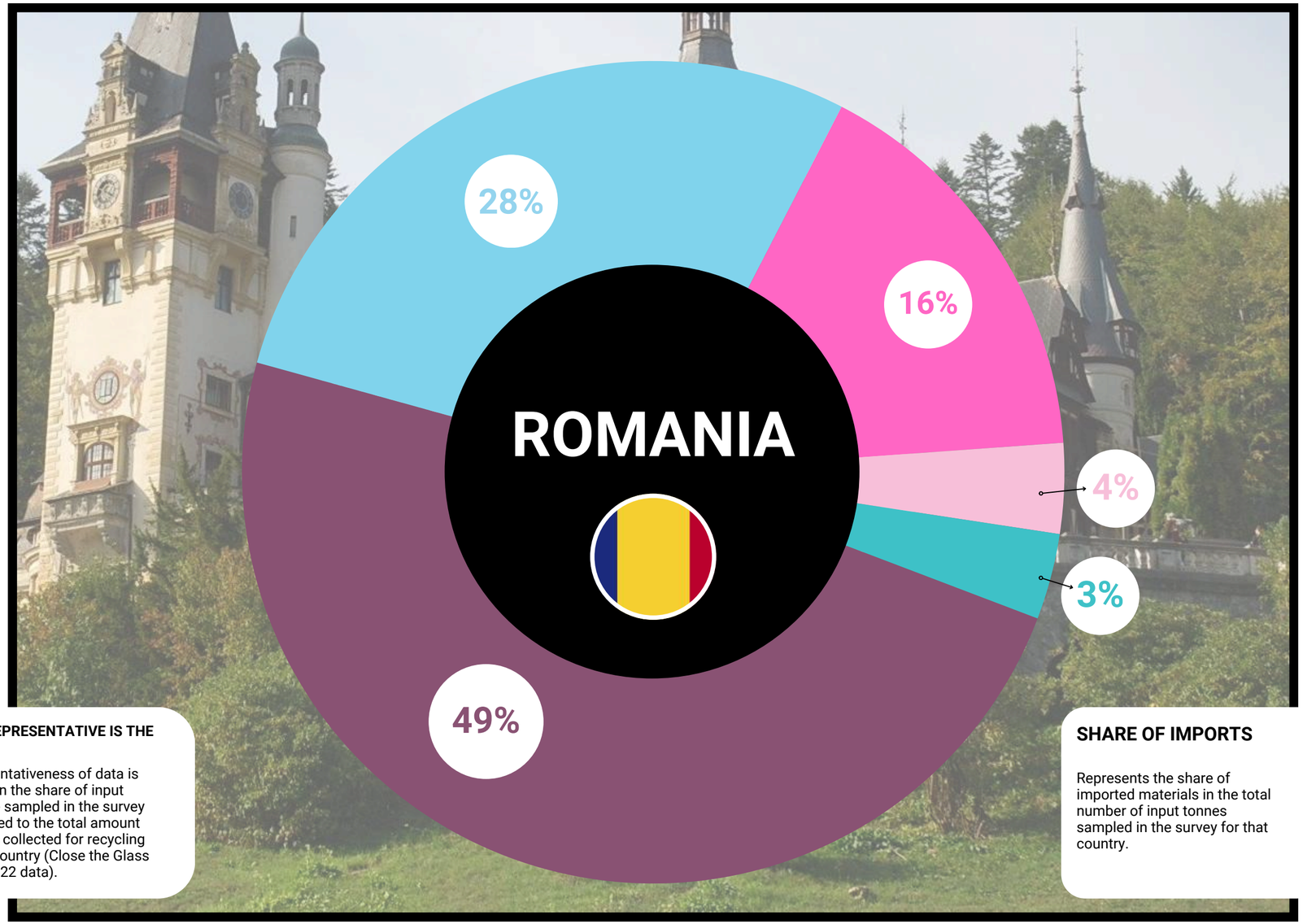
43%

- Municipal waste collectors
- Glass recovered from mixed waste or residual waste
- Direct acquisition from bottlers

Input material categories:

- **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)**

Romania – a recycling system relying predominantly on direct acquisition from consumers.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

- Direct acquisition from consumers
- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- Direct acquisition from bottlers
- Direct acquisition from HORECA (Hotels, restaurants, cafés)

Input material categories:

- **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)**

Slovakia – a recycling system with a large share of imports, operating almost exclusively with municipal waste collectors.

100%
80%
60%
40%
20%
0%

HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

28%

Municipal waste collectors

<1% Direct acquisition from the glass industry other than container glass

<1% Glass recovered from incineration plants (after incineration)

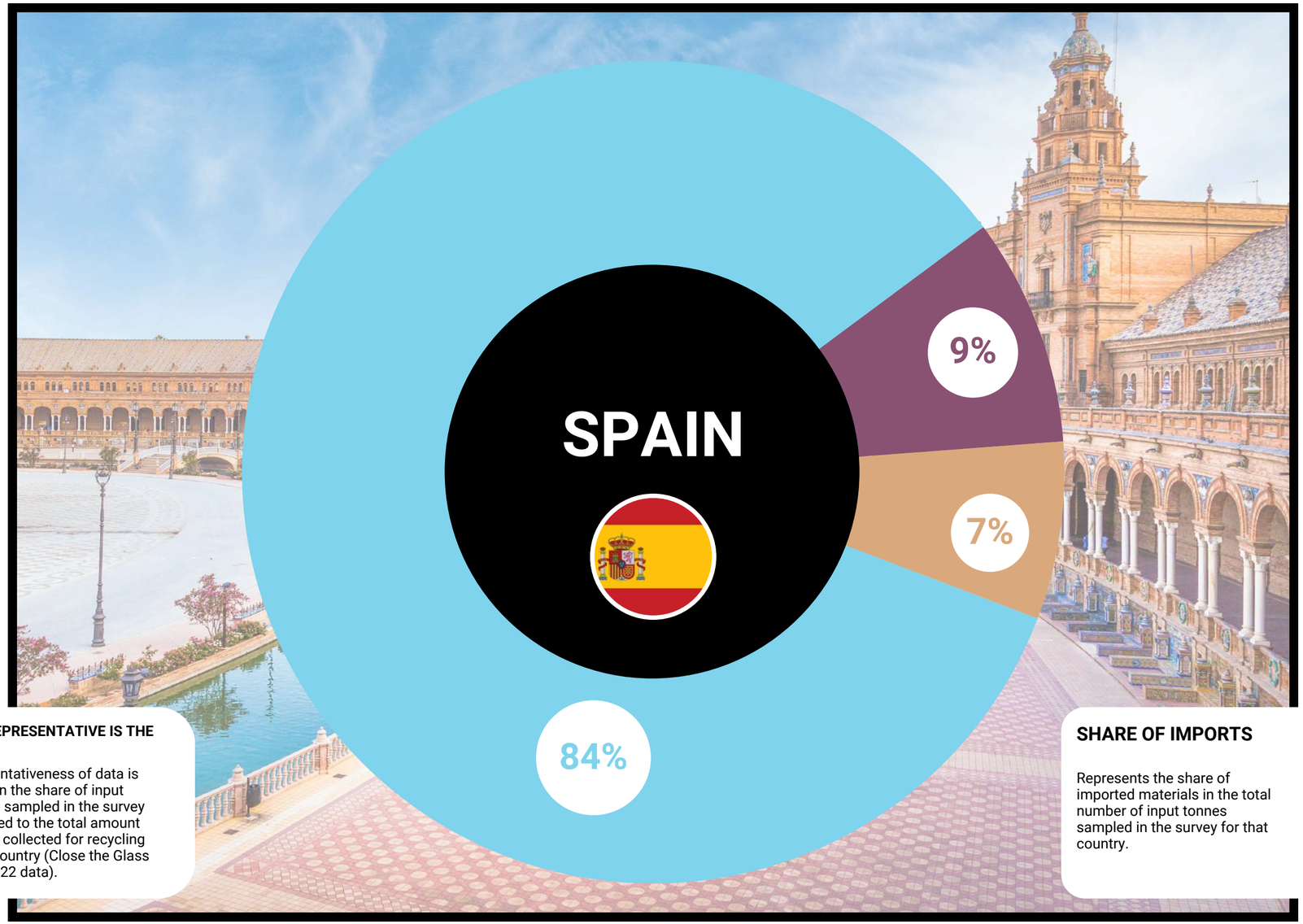
Input material categories:

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)

Spain - a recycling system based on municipal waste collection with two significant other sources including direct acquisition from consumers and recovering glass from mixed or residual waste.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

Municipal waste collectors

Direct acquisition from consumers

Glass recovered from mixed waste or residual waste

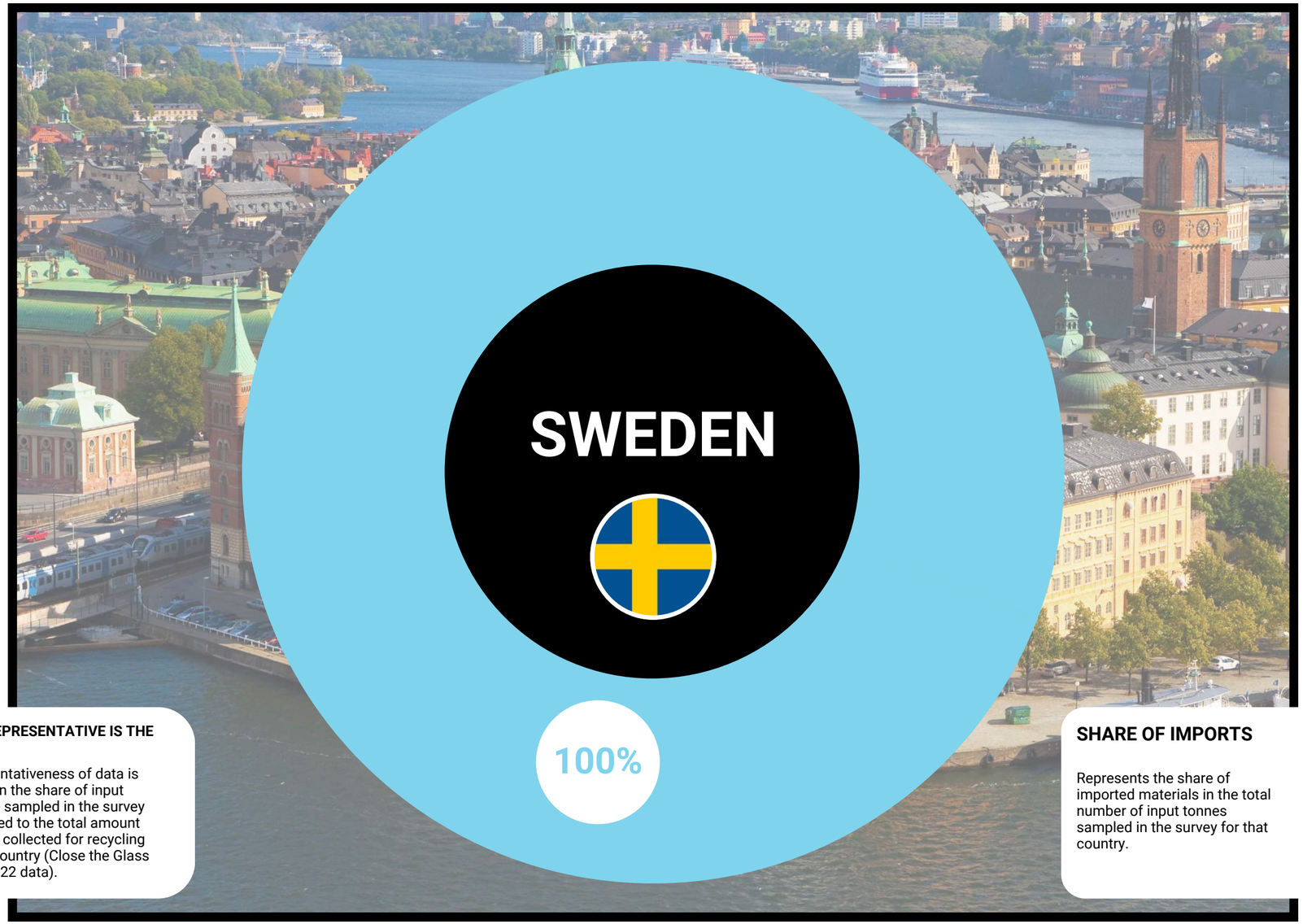
Input material categories:

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)

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



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20%
0%

HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

Municipal waste collectors

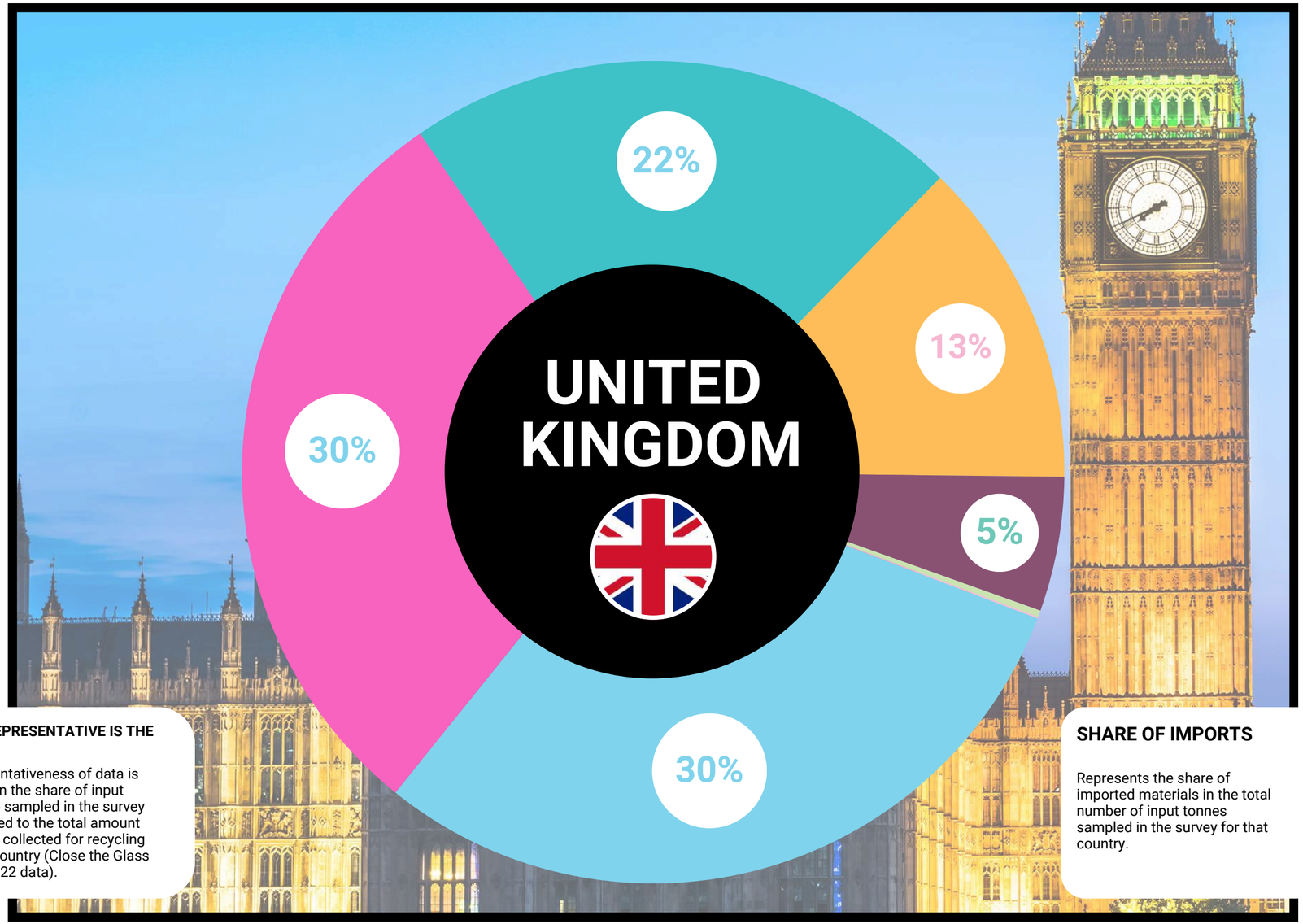
Input material categories:

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)

United Kingdom – a recycling system relying on diverse sources including national municipal waste collection, glass recovered from Material Recovery Facilities and direct acquisition from HORECA.



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HOW REPRESENTATIVE IS THE DATA?

Representativeness of 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 2022 data).

SHARE OF IMPORTS

Represents the share of imported materials in the total number of input tonnes sampled in the survey for that country.

0%

- Municipal waste collectors
- Glass recovered from Material Recovery Facilities
- Direct acquisition from HORECA (Hotels, restaurants, cafés)
- Direct acquisition from the glass industry other than container glass
- Direct acquisition from consumers
- <1% Direct acquisition from glass container industry
- <1% Direct acquisition from bottlers

Input material categories:

- **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)**

CHAPTER

5

ANALYSIS OF OUTPUT MATERIALS FROM GLASS CULLET RECYCLING FACILITIES

close the glass loop

Guidance on output material categories and how to interpret the rates in this report.

There are 3 categories for glass recycling:

closed loop recycling: where the secondary raw materials are sent for re-melt in glass packaging manufacturing for the production of new bottles, jars etc...

open loop glass recycling: where the secondary raw materials are sent for re-melt in glass manufacturing but not for packaging, e.g. glass wool, glass foam etc...

open loop recycling: where the secondary raw materials are sent to applications outside of the glass industry, e.g. construction, bricks, abrasive materials etc...

We have used 5 further categories to describe output materials:

Materials sent for recycling in another material stream (e.g. metals, paper, PET...): these are materials that are typically found in glass collection due to the presence of labels, caps, lids etc... they represent a loss for glass recycling, but may still be recycled in another material stream.

Materials sent to landfill cover: as an inert material, glass can be used as a protective layer on top of landfills.

Materials sent to landfill (excluding landfill cover), **waste to energy or incineration**.

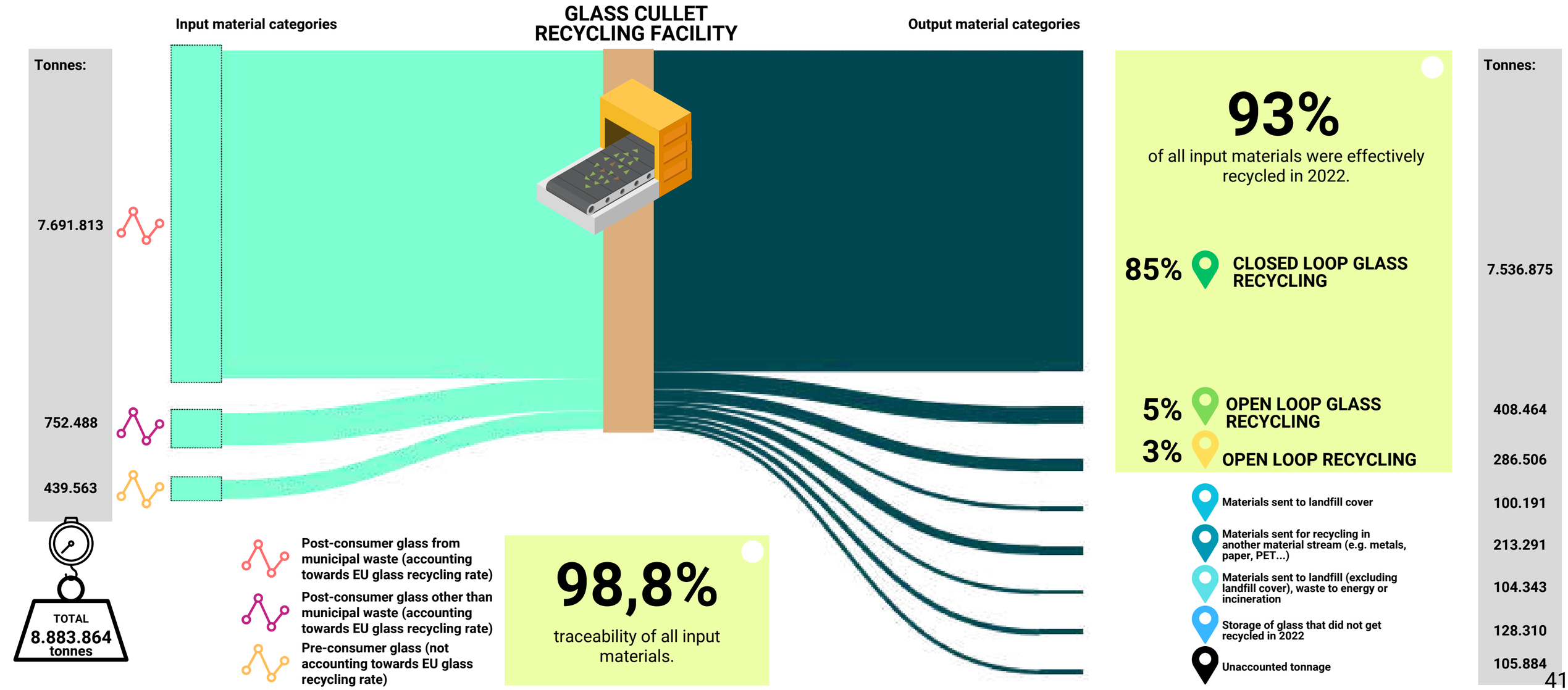
Storage of glass that did not get recycled in 2022

Unaccounted tonnage: represents the missing tonnage between the total input materials and the total reported output materials.

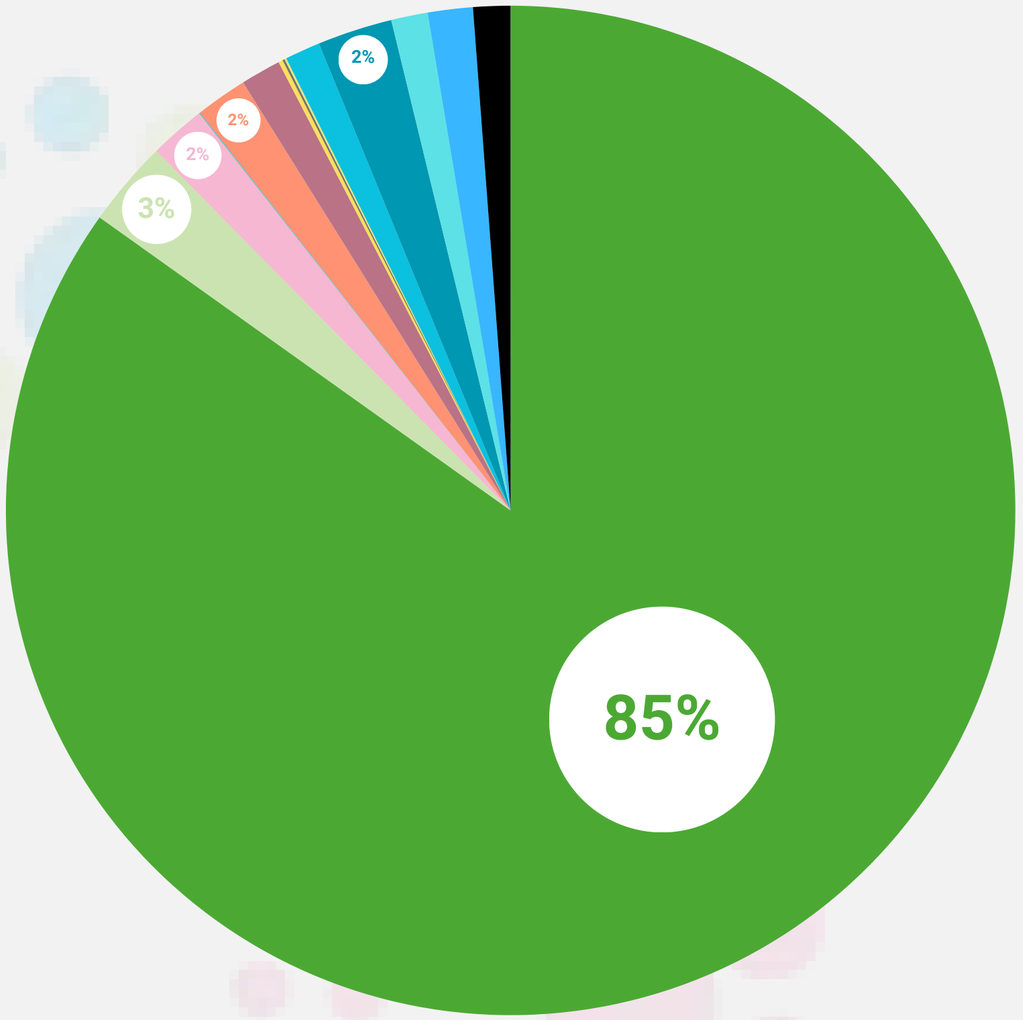
Guidance on how to interpret rates in this report:

The glass recycling rate is the ratio of glass effectively recycled compared to the total amount of glass packaging placed on the market in a given year. The starting point for this report is not the glass packaging placed on the market, but the **total amount of glass packaging collected for recycling and entering Glass Cullet Recycling Facilities**. The rates in this report are therefore indicative of the efficiency of the glass recycling process, but cannot be used to infer a glass recycling rate.

Overview of the performance of packaging glass recycling: **a traceable value chain delivering major results for the circular economy.**



Detailed distribution of output tonnage by type: **a huge pull for closed loop recycling.**



85%

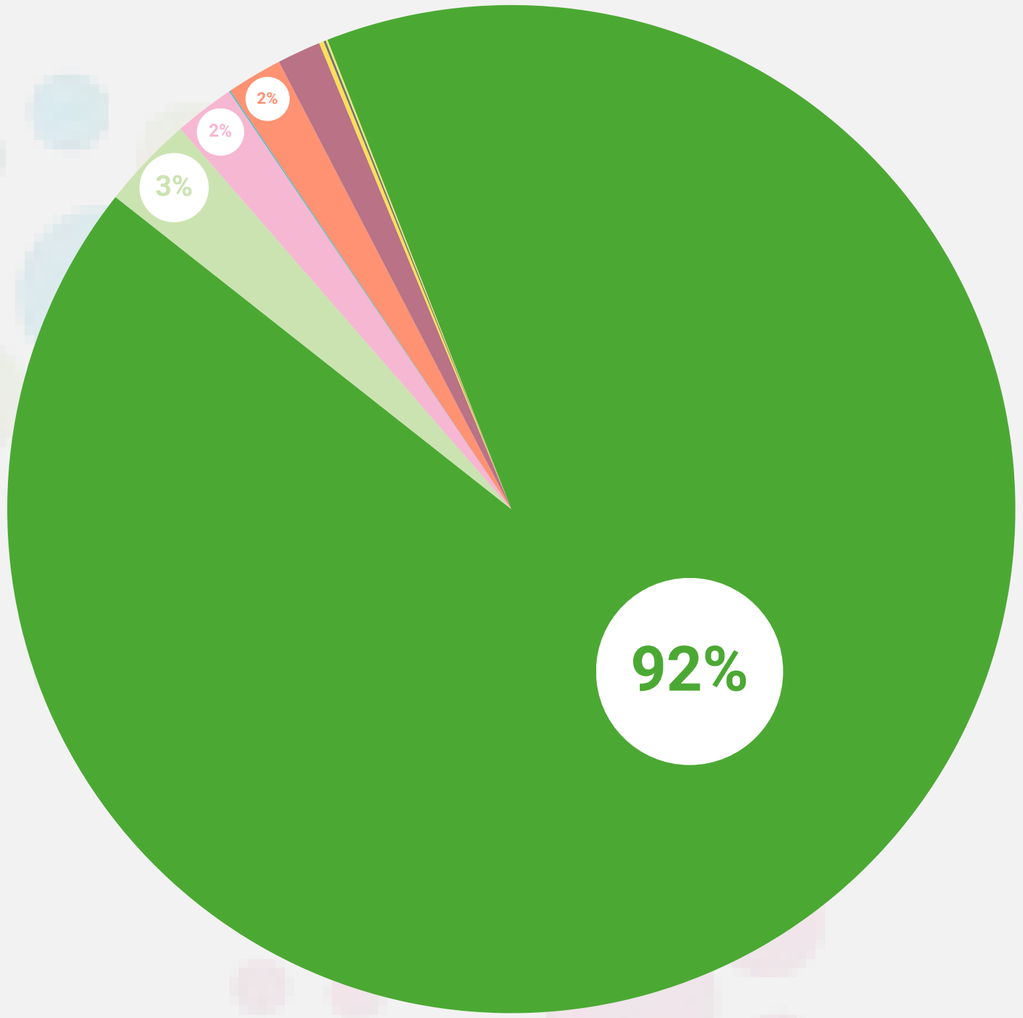
of all input materials were effectively recycled in closed loop glass packaging manufacturing.

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

- Glass packaging manufacturing
- Glass wool manufacturing
- Glass foam manufacturing
- <1% Special glass manufacturing
- <1% Tableware glass manufacturing
- Construction materials
- 1% Brick-making
- <1% Filtration media
- <1% Abrasive materials
- <1% Glass sand substitute

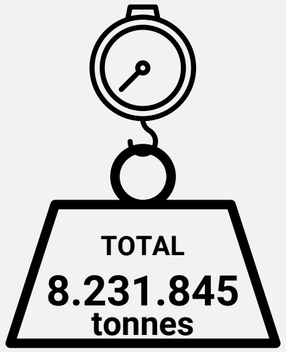
- 1% Materials sent to landfill cover
- Materials sent for recycling in another material stream
- 1% Materials sent to landfill
- 1% Storage of glass that did not get recycled in 2022
- 1% Unaccounted tonnage

Share of the different recycling destinations for glass packaging within the total amount of materials effectively recycled



92%

of all the output materials effectively recycled were recycled in closed loop glass packaging manufacturing.



- Glass packaging manufacturing
- Glass wool manufacturing
- Glass foam manufacturing
- <1% Special glass manufacturing
- <1% Tableware glass manufacturing
- Construction materials
- 1% Brick-making
- <1% Filtration media
- <1% Abrasive materials
- <1% Glass sand substitute

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

CHAPTER

6

ANALYSIS OF OUTPUT MATERIALS FROM GLASS CULLET RECYCLING FACILITIES BY REGION

close the glass loop

Overview of the performance of packaging glass recycling in the North region

Tonnes:

Input material categories

GLASS CULLET RECYCLING FACILITY

Output material categories

Tonnes:

2.035.147

405.024

269.795

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)

TOTAL 2.709.966 tonnes

99,3%

traceability of all input materials.

92%

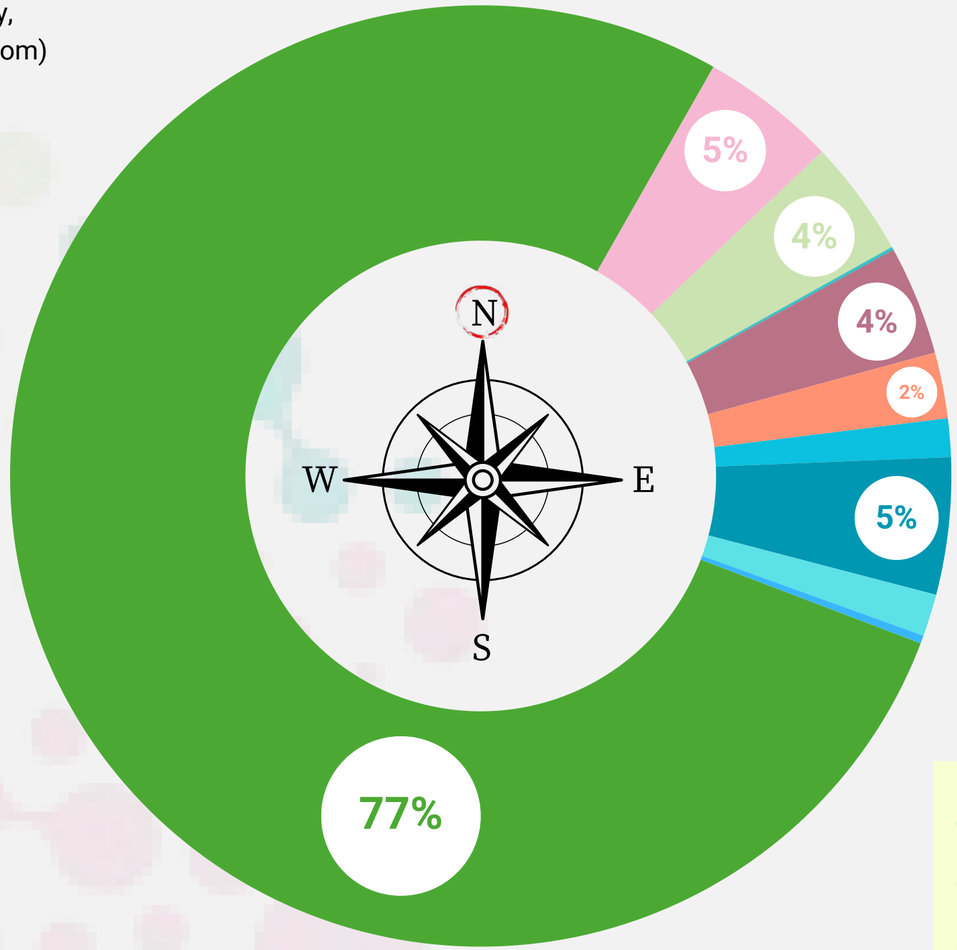
of all input materials were effectively recycled in 2022.

77%	CLOSED LOOP GLASS RECYCLING	2.084.441
9%	OPEN LOOP GLASS RECYCLING	236.713
6%	OPEN LOOP RECYCLING	161.918
	Materials sent to landfill cover	35.507
	Materials sent for recycling in another material stream (e.g. metals, paper, PET...)	126.663
	Materials sent to landfill (excluding landfill cover), waste to energy or incineration	38.997
	Storage of glass that did not get recycled in 2022	7.286

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

NORTH

(Denmark, Finland, Germany, Norway, Sweden, United Kingdom)



0,7%
unaccounted tonnage

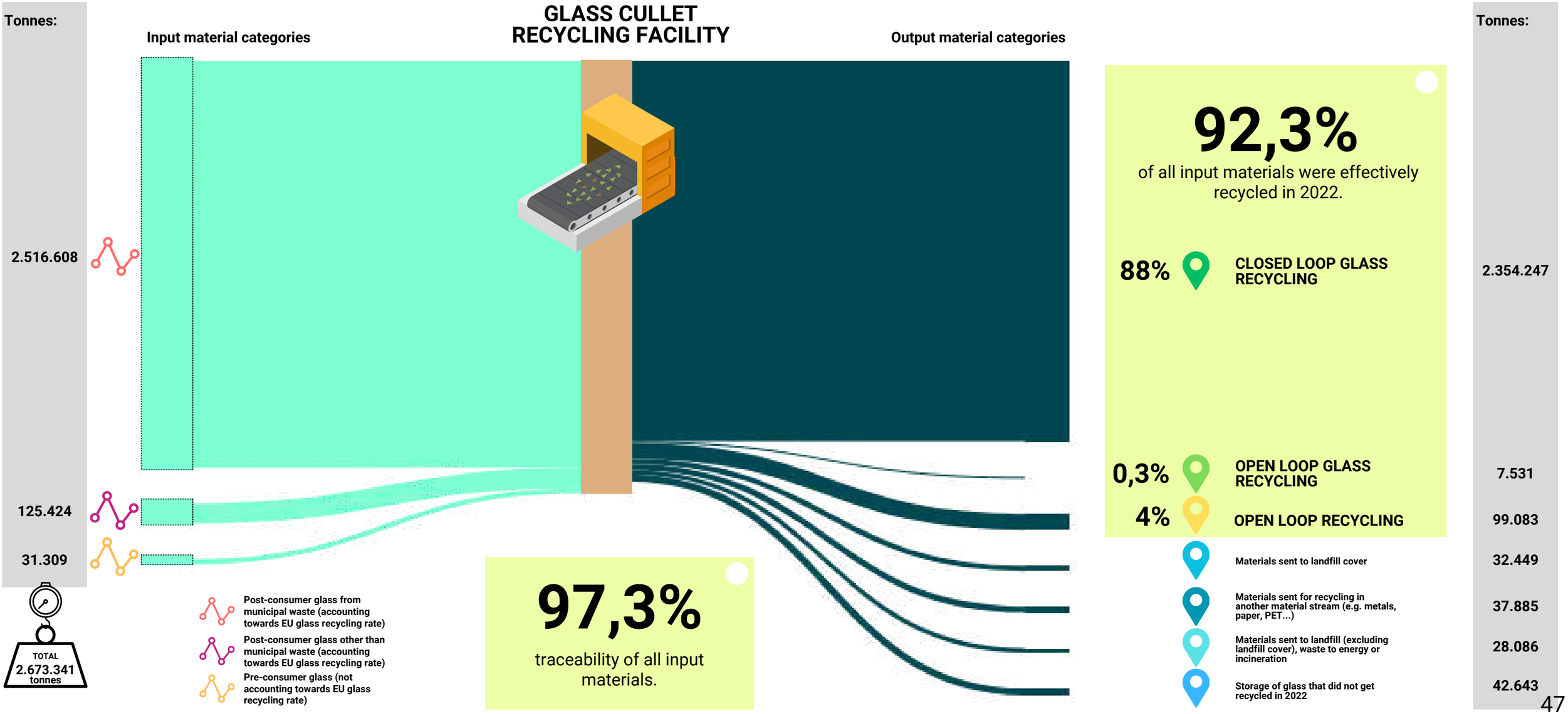
- Glass packaging manufacturing
- Glass foam manufacturing
- Glass wool manufacturing
- <1% Special glass manufacturing
- <1% Abrasive materials
- Brick-making
- Construction materials

- 1% Materials sent to landfill cover
- Materials sent for recycling in another material stream
- 1% Materials sent to landfill
- <1% Storage of glass that did not get recycled in 2022

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

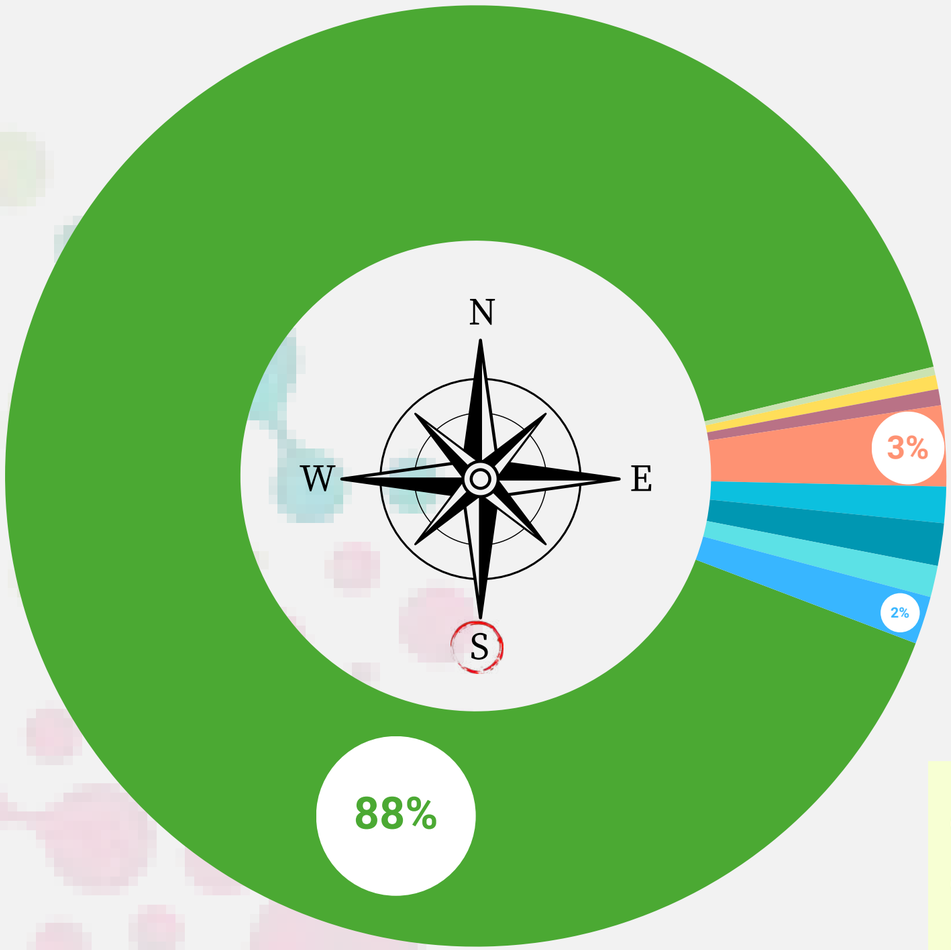
- Materials sent for recycling in another material stream (e.g. metals, paper, PET...)
- Materials sent to landfill cover
- Materials sent to landfill (excluding landfill cover), waste to energy or incineration
- Storage of glass that did not get recycled in 2022

Overview of the performance of packaging glass recycling in the South region



Recycling performance of Europe's South Region: **a strong closed loop complemented by several other recycling applications.**

SOUTH
(Italy, Portugal, Spain)



2,7%
unaccounted tonnage

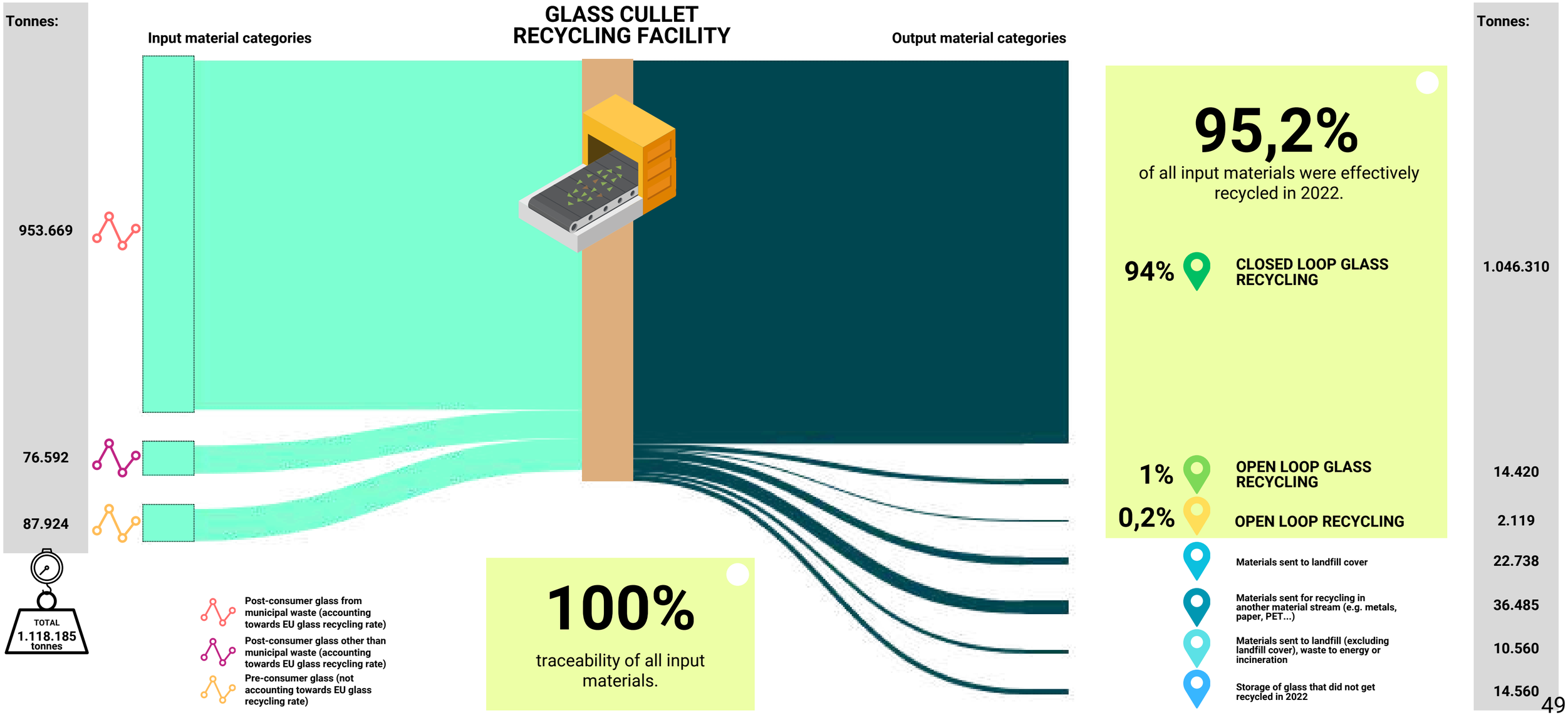
- Glass packaging manufacturing
- <1% Glass wool manufacturing
- <1% Filtration media
- <1% Brick-making
- Construction materials
- <1% Tableware glass

- 1% Materials sent to landfill cover
- 1% Materials sent for recycling in another material stream
- 1% Materials sent to landfill
- Storage of glass that did not get recycled in 2022

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

- **Materials sent for recycling in another material stream (e.g. metals, paper, PET...)**
- **Materials sent to landfill cover**
- **Materials sent to landfill (excluding landfill cover), waste to energy or incineration**
- **Storage of glass that did not get recycled in 2022**

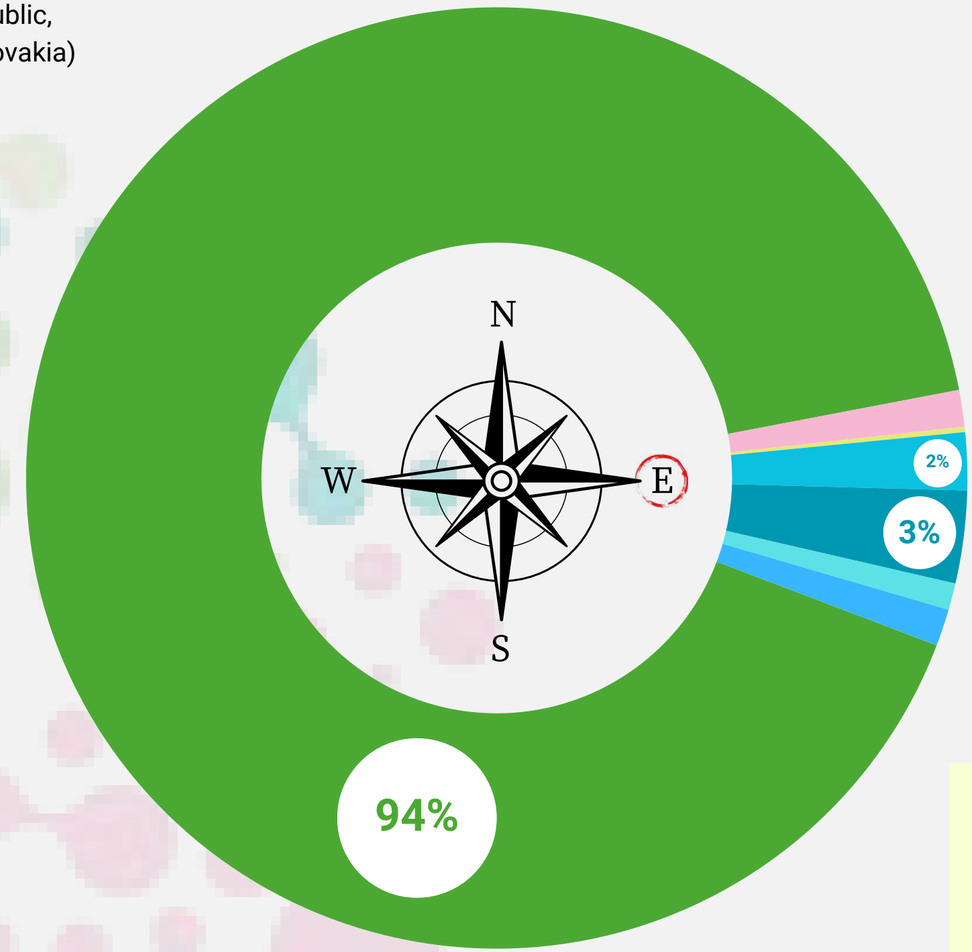
Overview of the performance of packaging glass recycling in the East region



Recycling performance of Europe's East Region:
a very strong closed loop and few other recycling applications.

EAST

(Austria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia)



0%
unaccounted tonnage

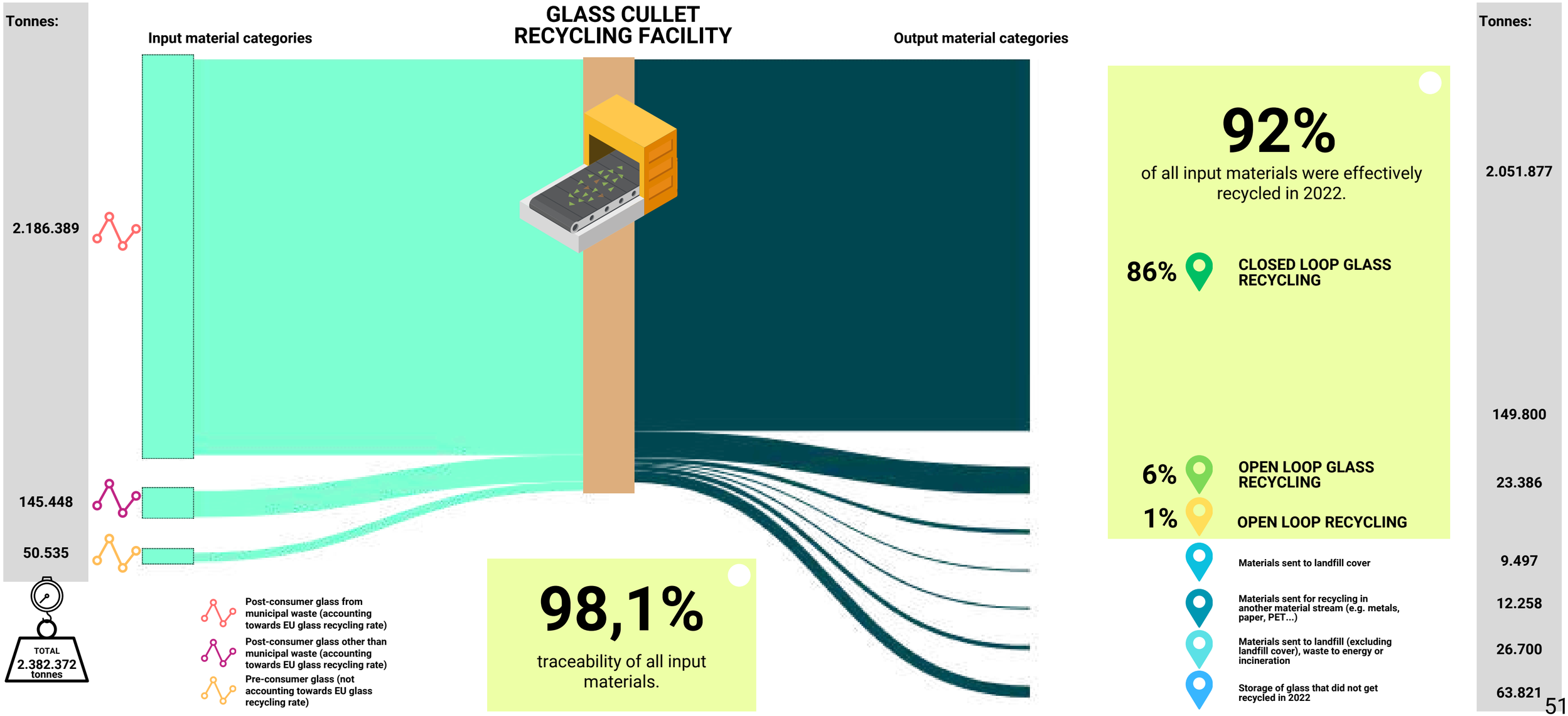
- Glass packaging manufacturing
- 1% Glass wool manufacturing
- <1% Construction materials

- Materials sent to landfill cover
- Materials sent for recycling in another material stream
- 1% Materials sent to landfill
- 1% Storage of glass that did not get recycled in 2022

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

- **Materials sent for recycling in another material stream (e.g. metals, paper, PET...)**
- **Materials sent to landfill cover**
- **Materials sent to landfill (excluding landfill cover), waste to energy or incineration**
- **Storage of glass that did not get recycled in 2022**

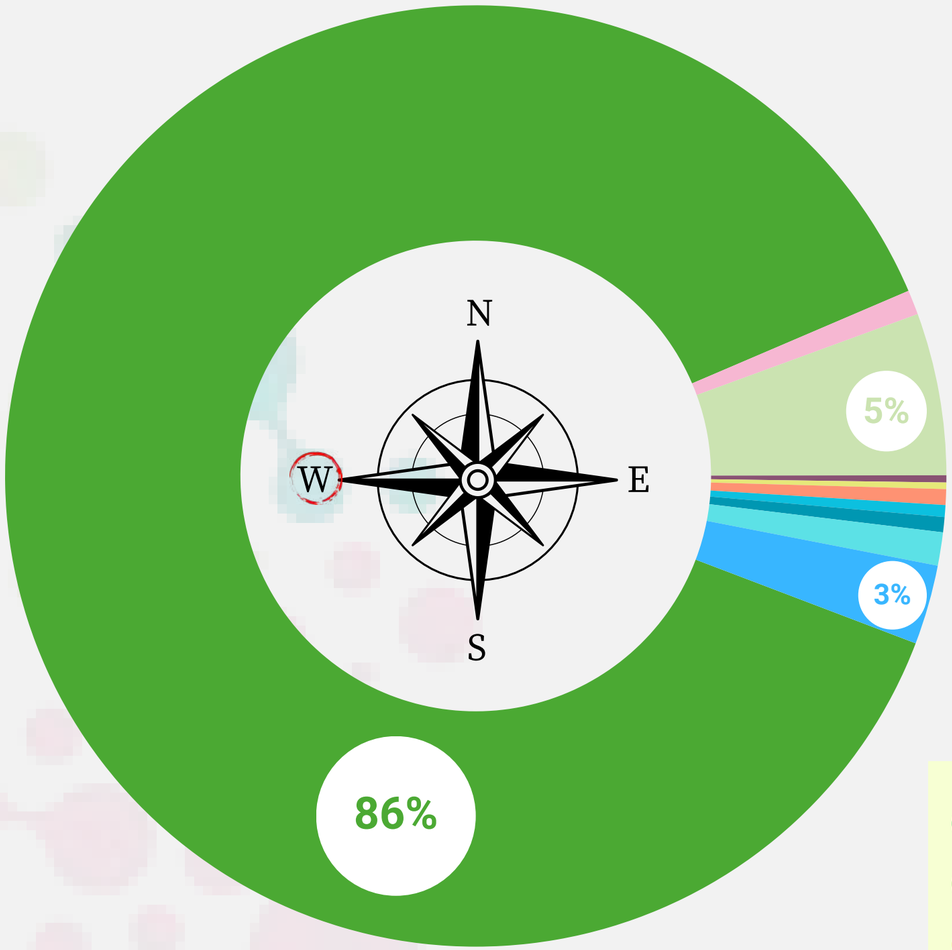
Overview of the performance of packaging glass recycling in the West region



Recycling performance of Europe's West Region: **a strong closed loop complemented by several other recycling applications.**

WEST

(Belgium, France, Ireland, Netherlands)



1,9%
unaccounted tonnage

- Glass packaging manufacturing
- <1% Glass foam manufacturing
- Glass wool manufacturing
- <1% Abrasive materials
- <1% Sand substitute
- <1% Construction materials

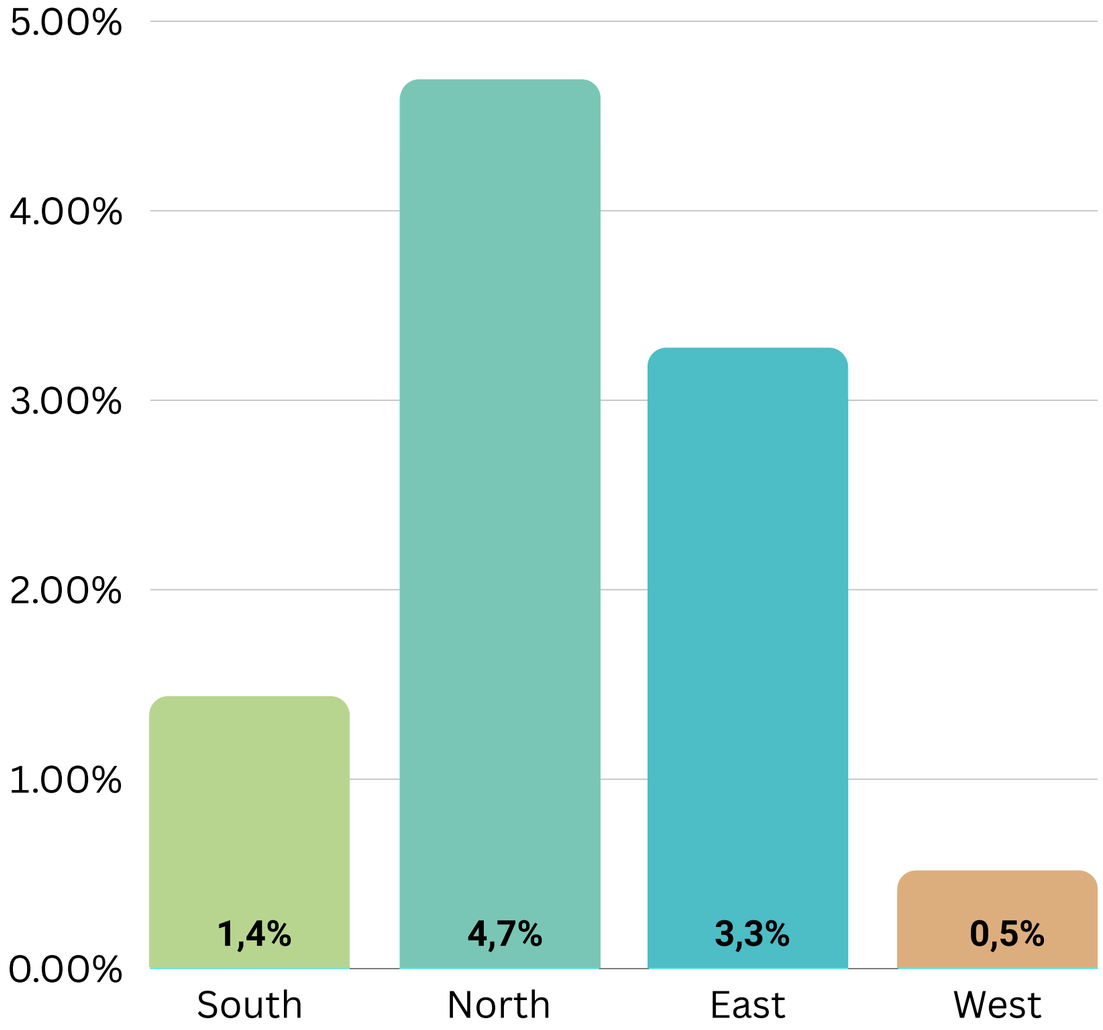
- <1% Materials sent to landfill cover
- <1% Materials sent for recycling in another material stream
- 1% Materials sent to landfill
- Storage of glass that did not get recycled in 2022

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

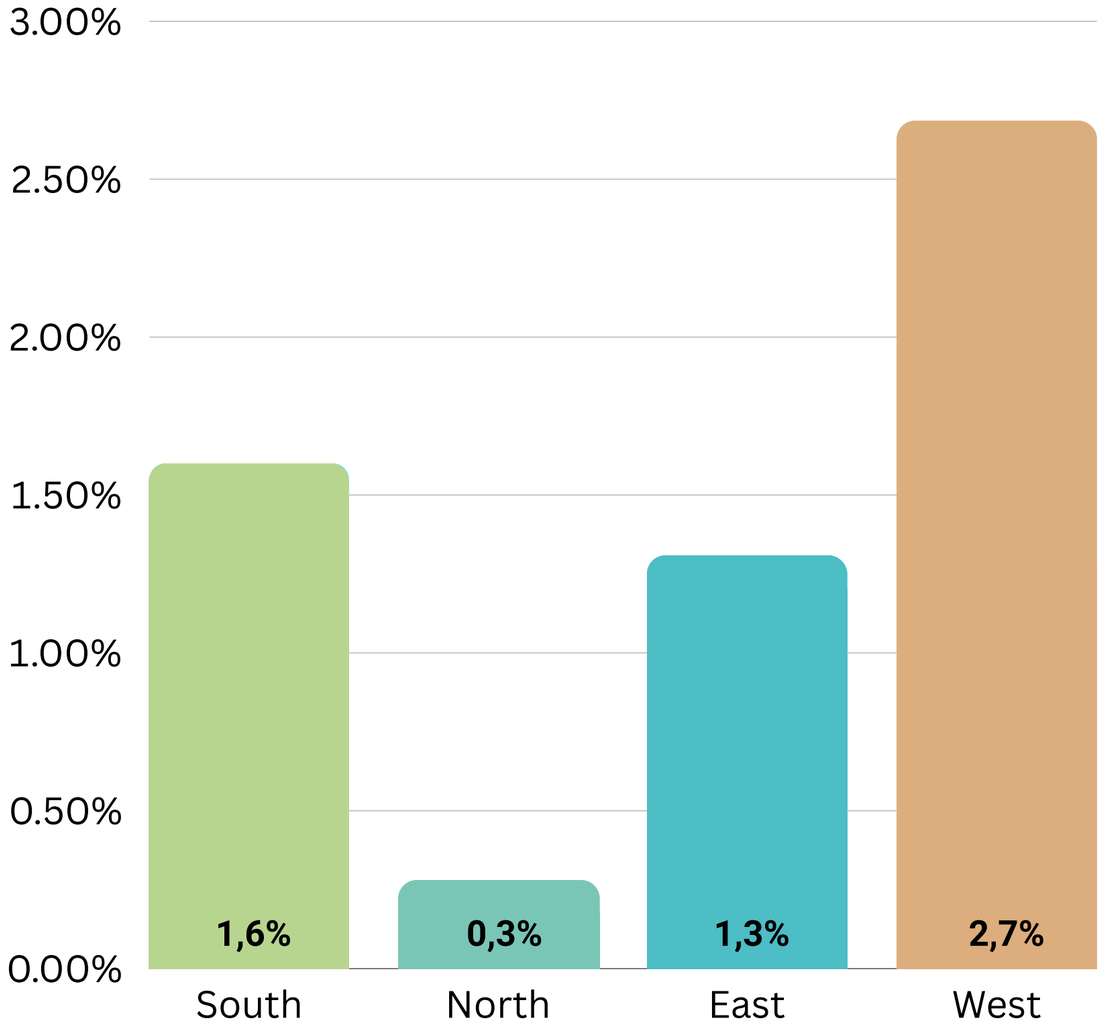
- **Materials sent for recycling in another material stream (e.g. metals, paper, PET...)**
- **Materials sent to landfill cover**
- **Materials sent to landfill (excluding landfill cover), waste to energy or incineration**
- **Storage of glass that did not get recycled in 2022**

Regional comparison of materials that are not sent for glass recycling

Share of materials sent for recycling in another material stream (e.g. metals, paper, PET...) - relative to total input materials

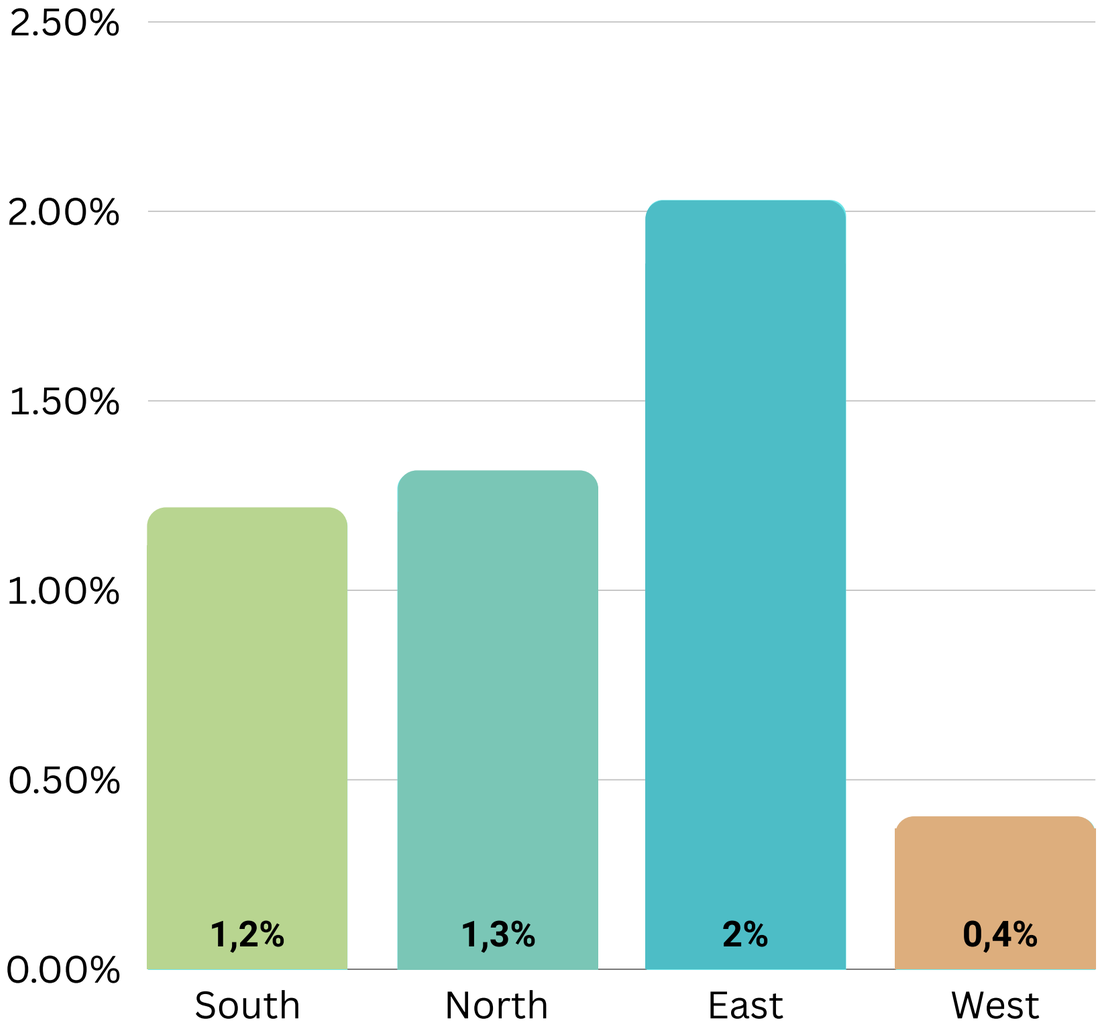


Share of storage of glass that did not get recycled in 2022 - relative to total input materials

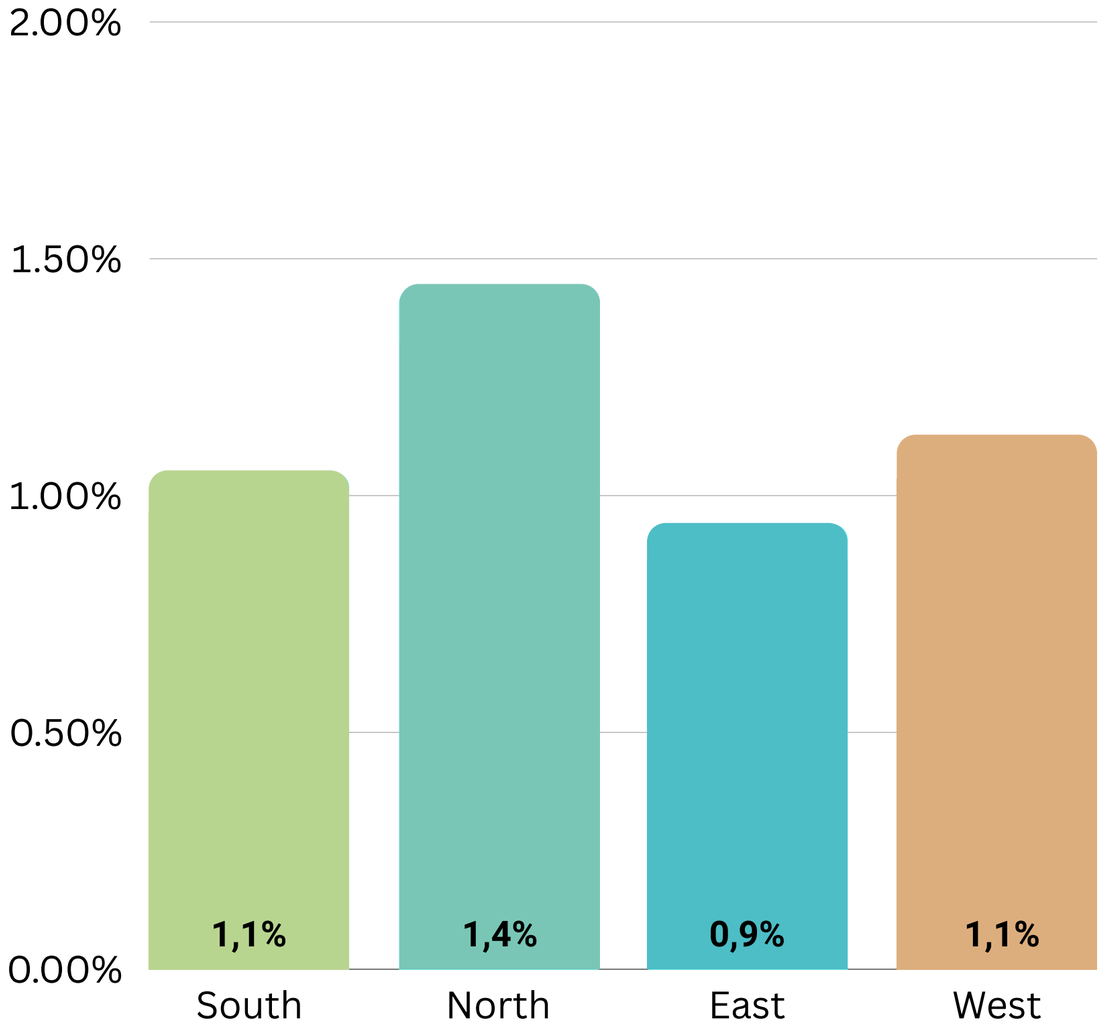


Regional comparison of materials that are not sent for glass recycling

Share of input materials sent to landfill cover - relative to total input materials



Share of input materials sent to landfill (excluding landfill cover), waste to energy or incineration - relative to total input materials



CHAPTER

7

SUMMARY

close the
glass loop

Glass recycling is a highly traceable value chain where post-consumer municipal waste becomes a high quality product for manufacturing new glass bottles & jars.

87%

of the total reported tonnage entering Glass Cullet Recycling Facilities **was sourced from municipal waste**

93%

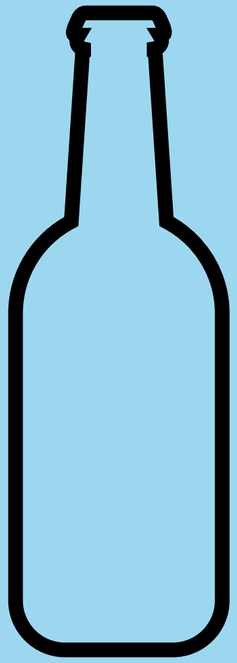
of the total reported tonnage entering Glass Cullet Recycling Facilities **was effectively recycled in 2022**

97%

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

92%

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



85%

Estimated performance of closed-loop recycling for collected glass packaging in 2022.

ACR+

AIJN EUROPEAN FRUIT JUICE ASSOCIATION

ceev Comité Européen des Entreprises Vins

EURO CITIES

Expra

FERVER

FEVE The European Container Glass Federation

Hotrec Hospitality Europe

mwe MUNICIPAL WASTE EUROPE

Natural Mineral Waters Europe

PROFEL

PROSPA CITEO

spirits EUROPE

Unesda Soft Drinks Europe

close the glass loop

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Close the Glass Loop is the European action platform for glass packaging collection & recycling. It brings together 14 European associations representing the whole value chain (product sectors, glass manufacturers, glass recyclers, extended producer responsibility organisations, municipalities and the hospitality sector), as well as 13 national platforms around the common goal of achieving 90% glass packaging collection for recycling by 2030 in the European Union.