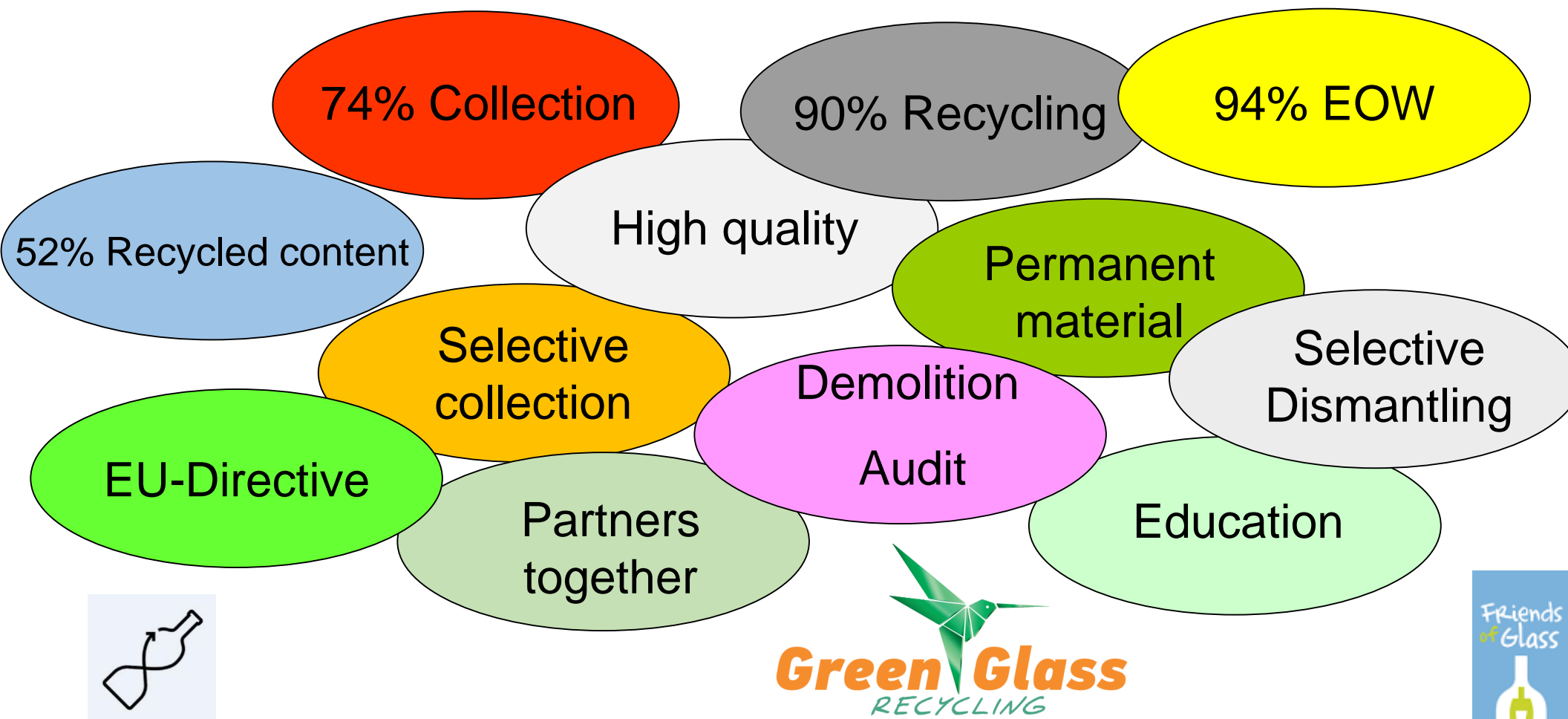


Glass, the End of Waste success story in Europe





Glass, the End of Waste success story in Europe

Glass, the End of Waste success story in Europe

- **Introduction** – B. Ska 4.00 – 4.05 pm
- **Glass packaging recycling in Europe:** *Results of coordinated efforts and remaining challenges* - U. Ix: 4.05 – 4.30 pm
- **Glass recycling in an emerging country** – C. Damov 4.30 – 4.50 pm
- **Going round the circle:** *why is cullet crucial for the glass industry?* A. Farrelly 4.50 – 5.10 pm
- **Panel discussion:** *from packaging glass to flat glass: how to ensure the same success?*
 - with U. Ix, C. Damov, A. Farrelly and B. Cazes, *Secr. General of Glass for Europe* 5.10 – 5.30 pm



Glass, the End of Waste success story in Europe

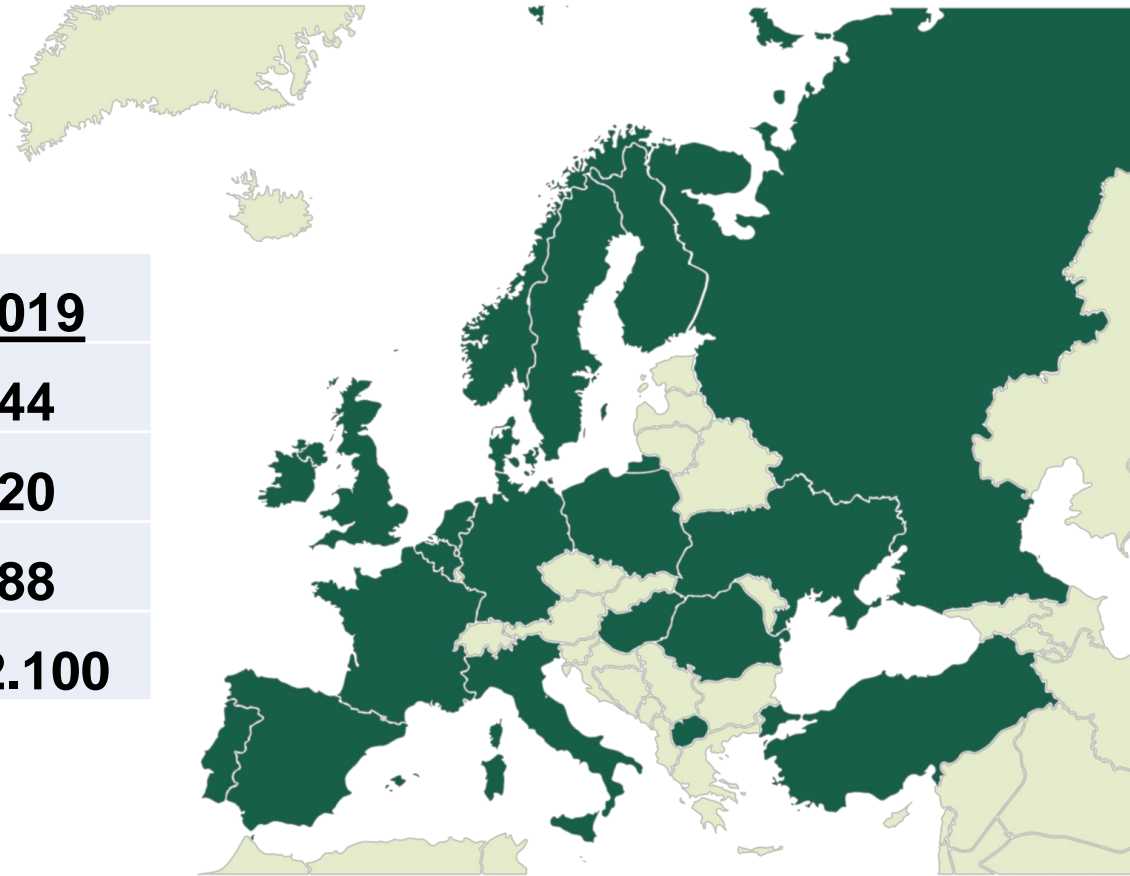
***Ulrich Ix**, President of FERVER*



founded in 2004
based in Brussels

Fédération Européenne des Recycleurs de Verre

| | <u>2019</u> |
|--------------------------|--------------------|
| Members | 44 |
| Countries | 20 |
| Glass rec. plants | 88 |
| Employees | > 2.100 |



Glass, the End of Waste (EOW) success story in Europe

Why End of Waste for cullet?

- Facilitation of trade and logistics (international transportation)
- Lower costs in storing
- Homogeneous criteria throughout Europe = comparability

and very important

- Product means equivalence with primary raw material!
Severe acceptance due to rules on food contact

Glass, the End of Waste (EOW) success story in Europe

FERVER and **FEVE** played an active role in the study performed by the **Joint Research Center JRC** (Seville) as basis for the **EOW Regulation** on glass with the title

„COMMISSION REGULATION (EU) No 1179/2012 of 10 December 2012 establishing criteria determining when glass cullet ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council“

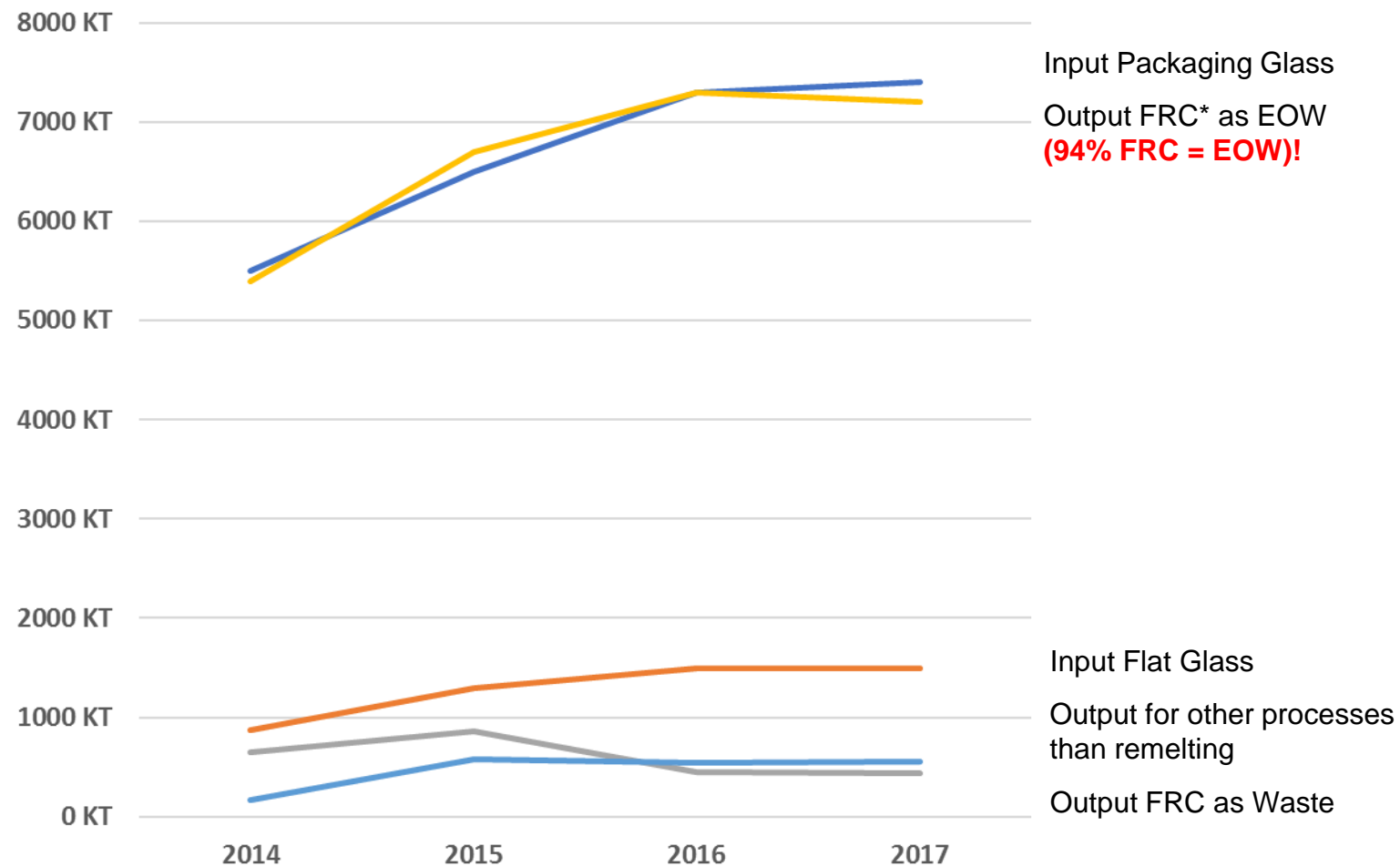
Glass, the End of Waste (EOW) success story in Europe

Dates of EOW Regulation on glass

COMMISSION REGULATION (EU) No 1179/2012 of 10 December 2012

| | |
|---------------------------------|---|
| 2008 | Start with publication of new waste framework directive 2008/98 |
| Dec 11th 2012 | Publication in The Official Journal |
| Dec 12th 2012 | Entry into force at European level |
| Jun 11th 2013 | Entry into force for the EU Member States |

Development of Cullet → EOW (FERVER members only)



* FRC : **F**urnace **R**eady **C**ullet

Collection

kerbside



bin



plastic bag



bottle bank



plastic basket



Collection

MRF (Materials Recovery Facilities)



SUSTAINABILITY
=
RECYCLABILITY

Sustainability - a matter of quality

One important target of the sustainability process is to enable consistent recycling with respect to the environment including all participants involved.

Recyclability has to be guaranteed!

Quality Specifications

1 ton of cullet
may contain max.

| | Input | Product |
|---|-------------|---------|
| CSP (Ceramics, Stones, Porcelain)  | 2 – 4 kg/t! | 25 gr |
| Non ferro  | | 3 gr |
| Ferro  | | 2 gr |

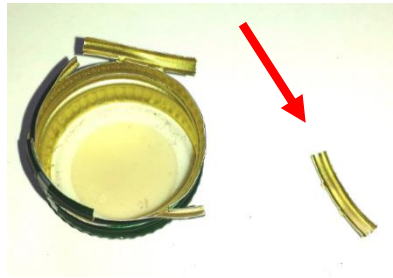
Looking for a needle in a haystack!

SUSTAINABILITY = RECYCLABILITY

Closures : Optimization of sealing systems

aluminium ring

segments can cause silicium
inclusions in a new bottle

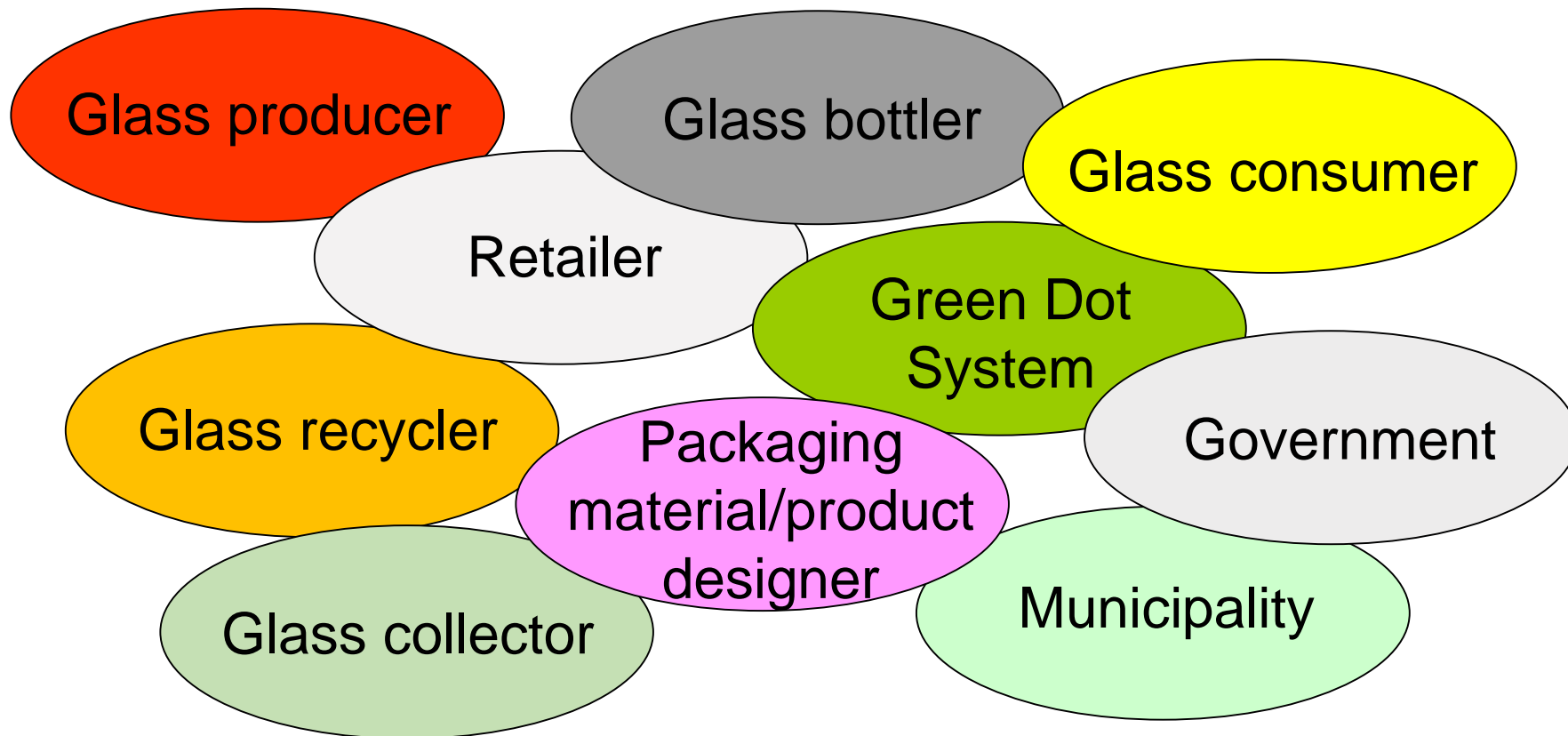


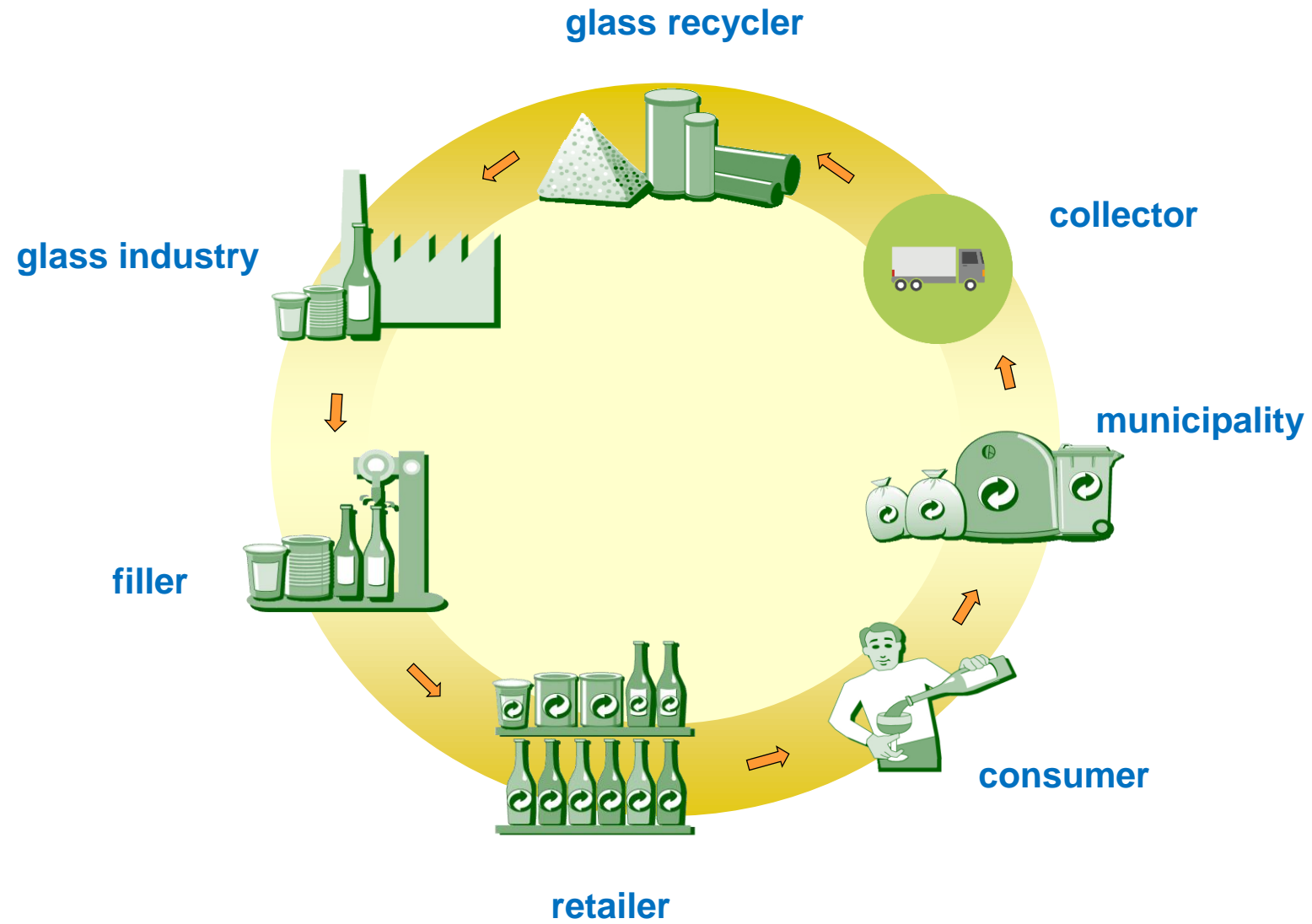
with paper sealing

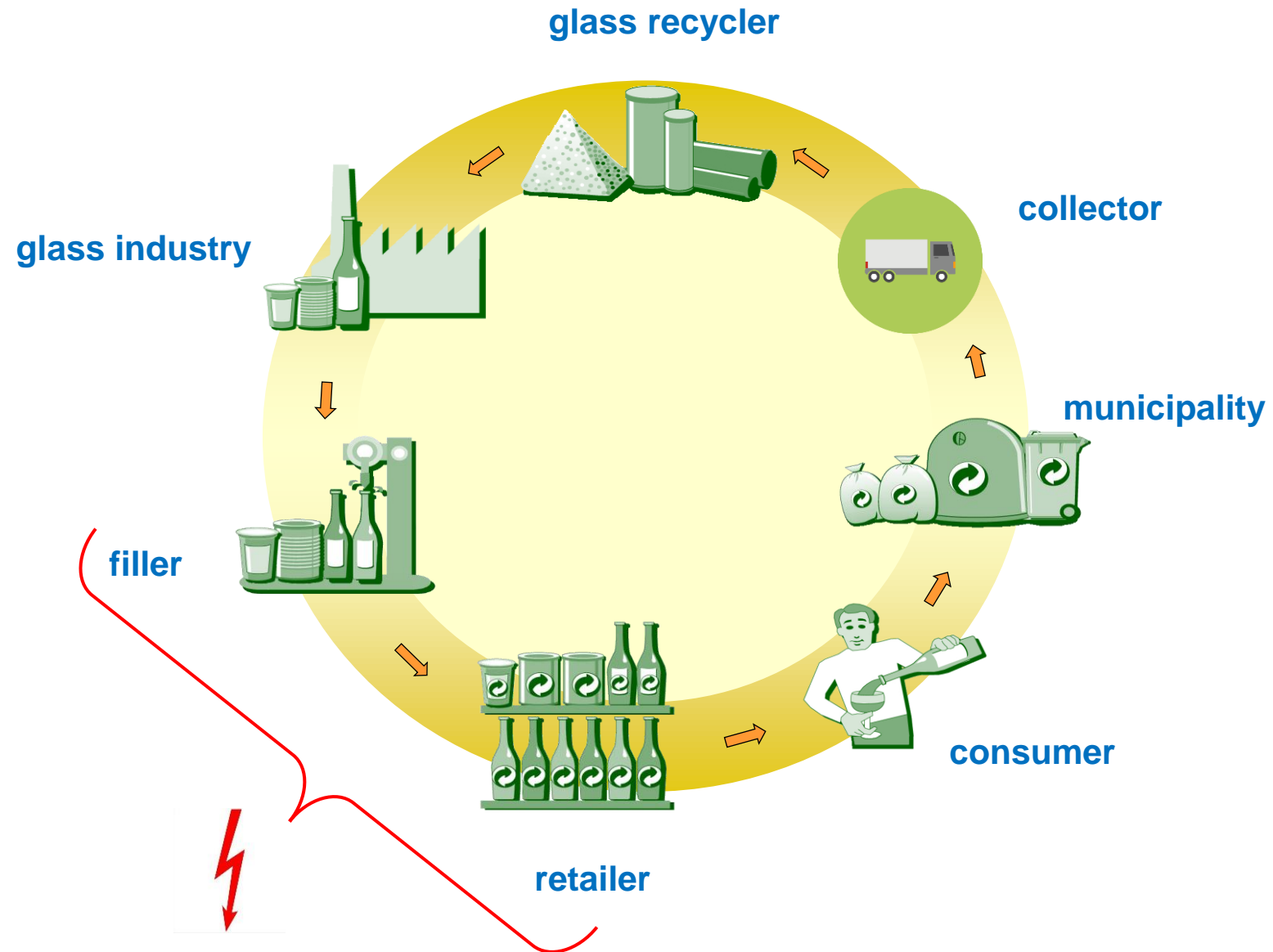
perfectly recyclable

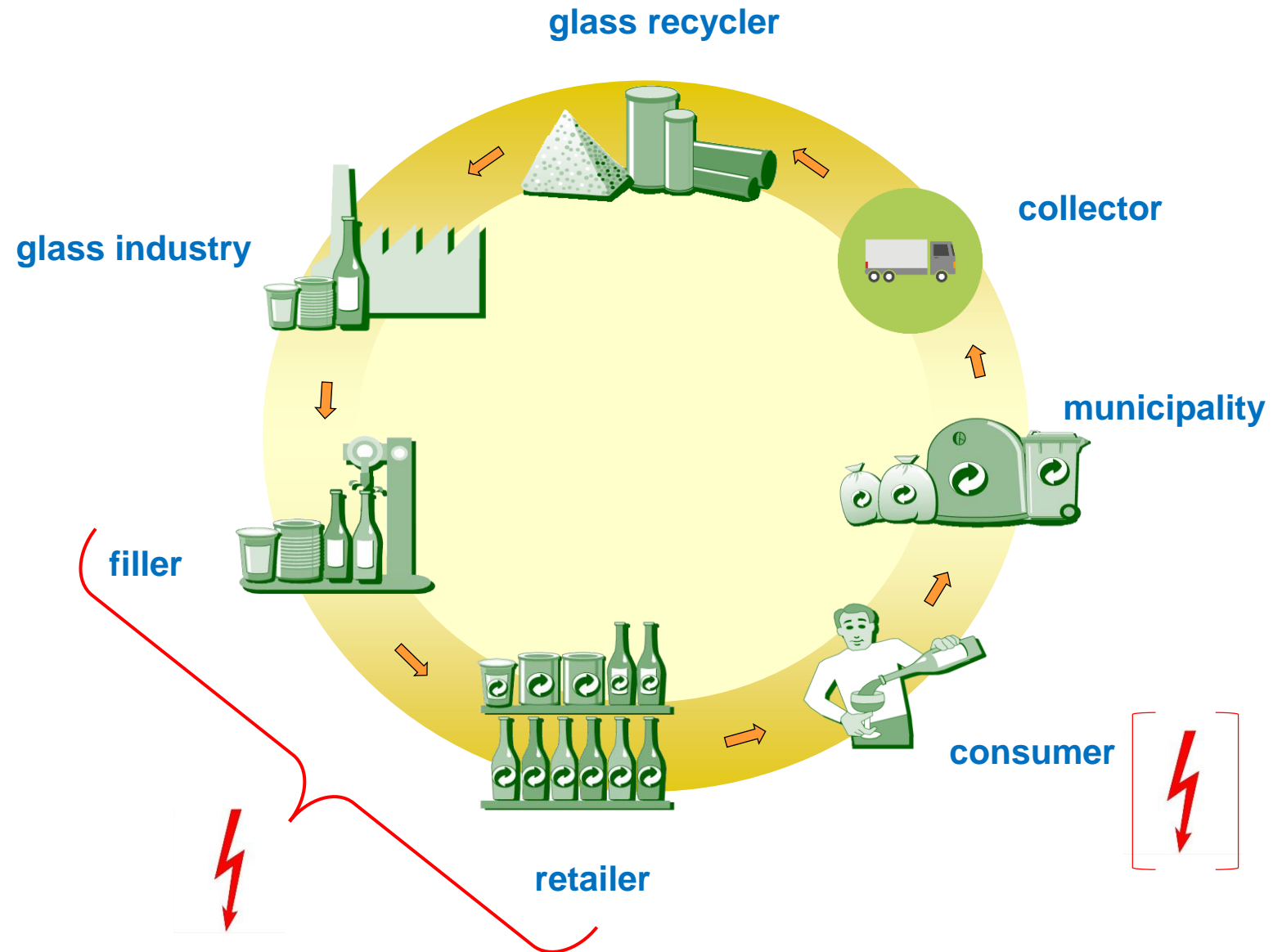


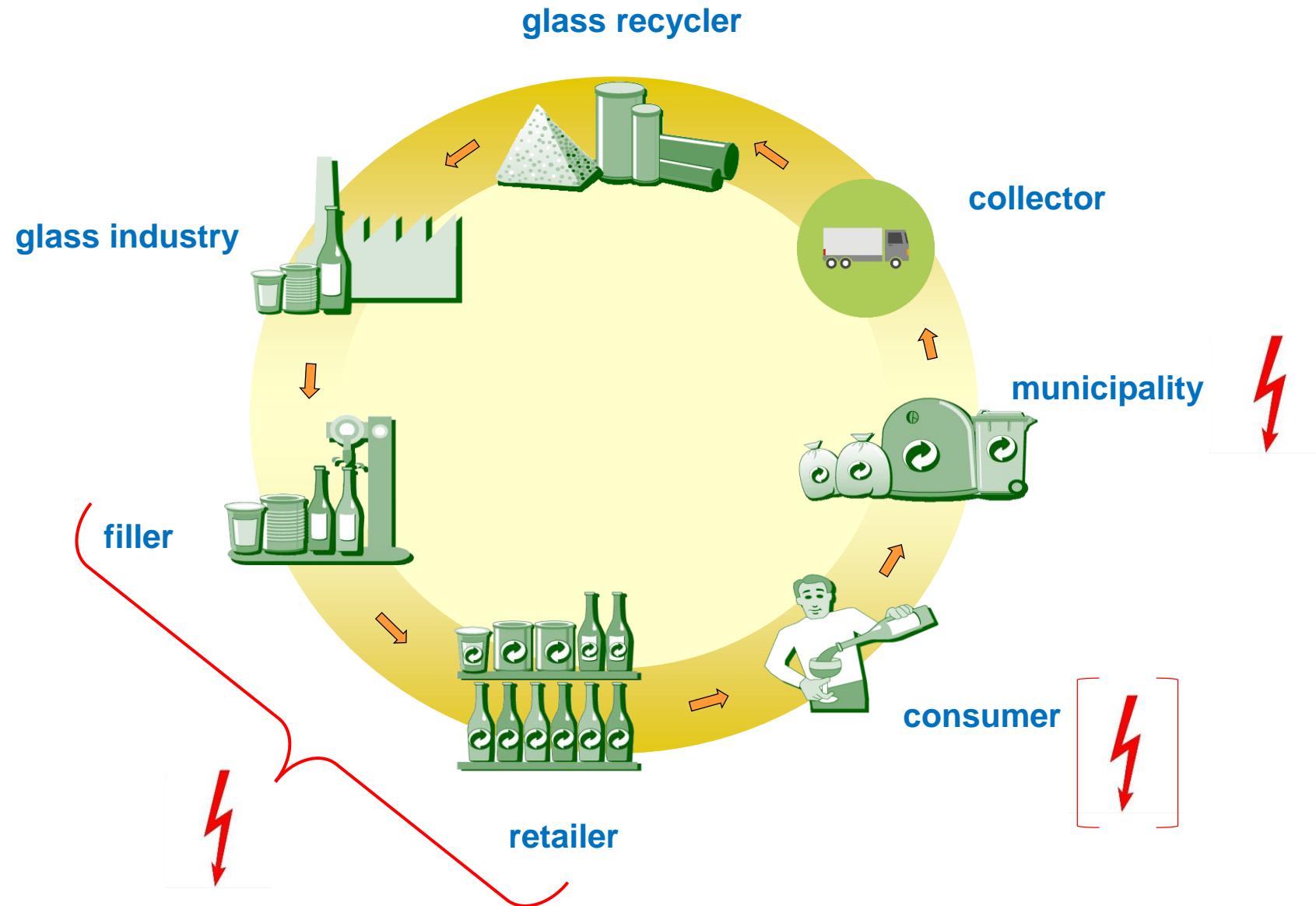
Responsibility by all of us

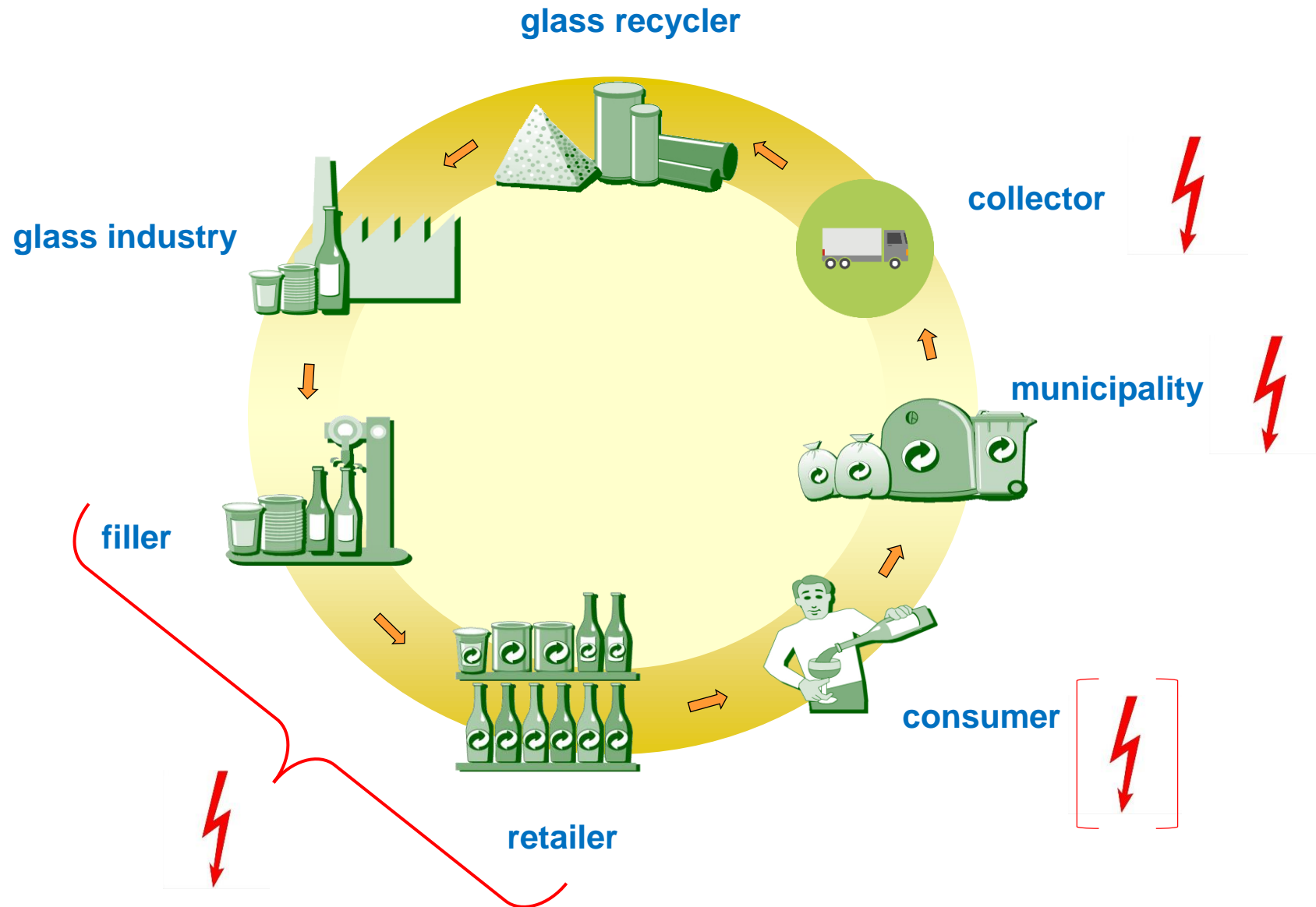


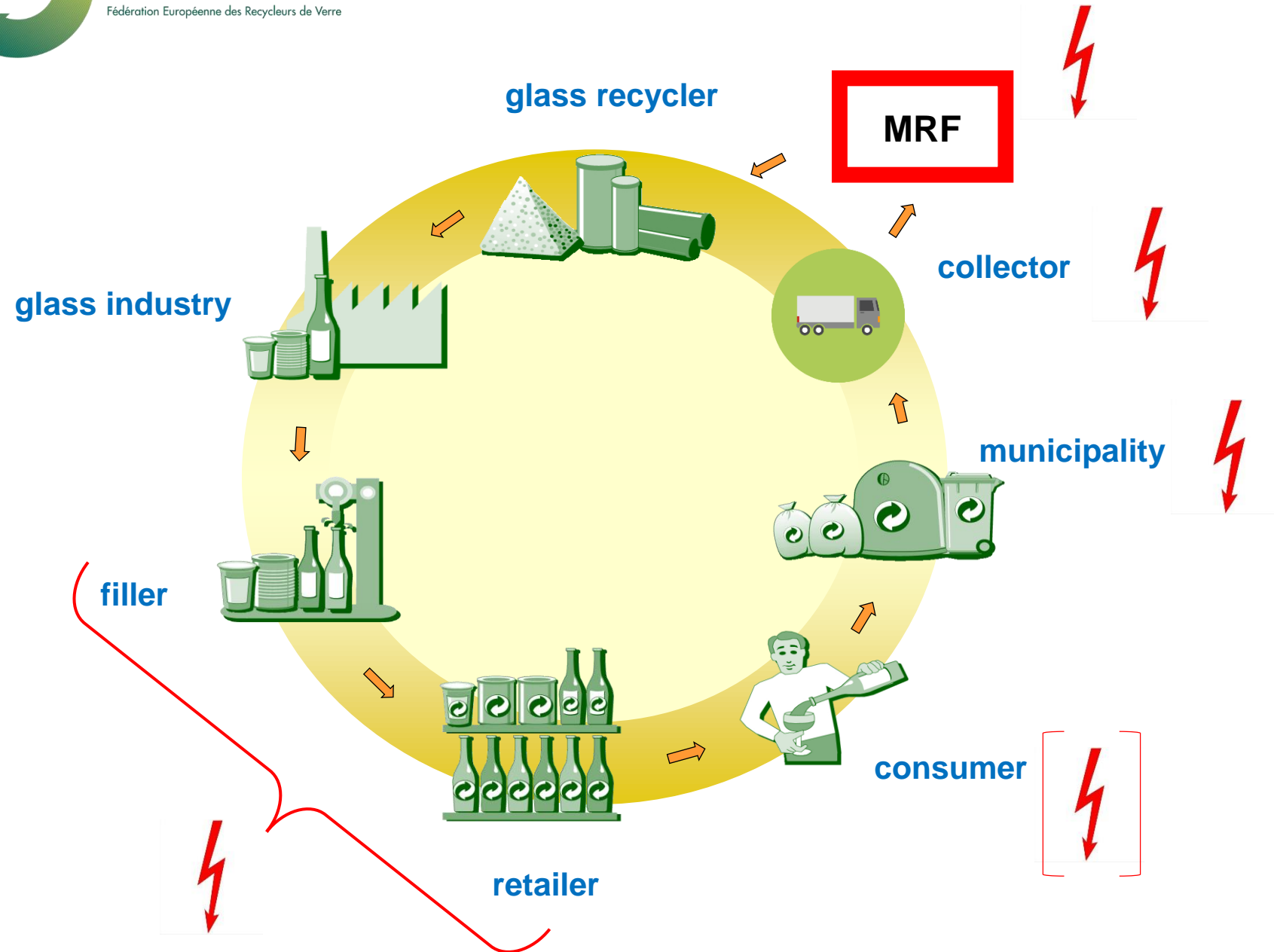












Glass Recycling in the U.S.

Collection 3.3 Mill. tons/yr.
U.S. 10 kg/cap/year
EU 21 kg
(50% comes from 10 states)

Glass recycling plants 65

- U.S. much larger than Central Europe
- Glass plants not close to population



Glass Recycling in the U.S.

- **Collection**

West coast (California, Oregon ...) better than East coast

- **Container glass industry** is typically the main user of cullet
- **Fiber glass industry** is a close second

The gap closed due to

- growth in construction
- many furnace closures in the last years

- **Lack of information**

„When it comes to a typical community's glass recycling program

nobody can tell you exactly what's happening after collection“

Glass Recycling in the U.S.

Input quality

- more contamination in input stream
- many underinvested plants to cope with contamination levels
- high level of fines due to impact crushers in collection



Output cullet quality

- poorer than European cullet
 - very competitive batch costs => lower cullet rates
- (Low primary raw material costs resp. high collection and treatment costs)

We see the same in
the UK!

Glass Recycling in the U.S.

MRF (Materials Recovery Facility)

Commingled collection: Mixture of **paper**, **plastics**, **metals**, **glass**



Glass from a redemption center



„Glass“ from a single-stream MRF

Source: Resource Recycling Feb. 2017

**Nevertheless: A well defined and controlled commingled collection of
i.e. glass+cans (Norway) can be efficient**

Glass Recycling in the U.S.

MRF (Materials Recovery Facility)

Commingled collection: Mixture of paper, plastics, metals, glass

2014: MRF production 6 kg/capita/year

MRF input 20 – 25% glass by weight

Single-stream processing facilities generate about 65 % usable cullet
=> 35% not available for the glass market!

Glass = lowest value of all materials of commingled collection

Glass contains all small contaminations (residues) after MRF process

Paper and plastic industry are claiming glass pieces in their MRF input streams!

Glass is damaging the MRF equipment => some cities removed glass
=> now going to landfill!!!

Conclusion

- No new packaging product w/o taking a survey on recyclability and with respect to the environment
- All participants in the closed loop have responsibility
- Selective collection is crucial (lowest residuals)
- Recycling is not only the volume of collection. It is the volume of material that finally goes back into the loop.

**Please help to make glass
a success story worldwide!**



Thank you!



GLASS RECYCLING IN ROMANIA

A SUCCESS STORY



HOW IT ALL STARTED



Landfill



Packaging glass waste 90% landfill

Greenglass Recycling S.A. (2013)



10% for recycling

GREENGLASS RECYCLING

FACTS & FIGURES



Greenglass Recycling is
**THE ONLY EoW
CERTIFIED**
glass recycler in Romania



Glass cullet with a purity
of at least **98%**

Processing capacity:
110,000 tons/ year
Investments: 6.5 mil. EUR
Employees: 45



7 days for Green Glass to
recycle all glass put on
the market in Bucharest
in 30 days



ROMANIA

GLASS RECYCLING RATE EVOLUTION



Greenglass opening

EoW
Criteria

False
reporting !!!

EPR Schemes
revival

Recycling rate
increases

Recycling rate
consolidates

2013

3%

2014

20%

2015

40%

2016

50%

2017

60%

2018

60%



New legislation
induces unnecessary
collection crisis

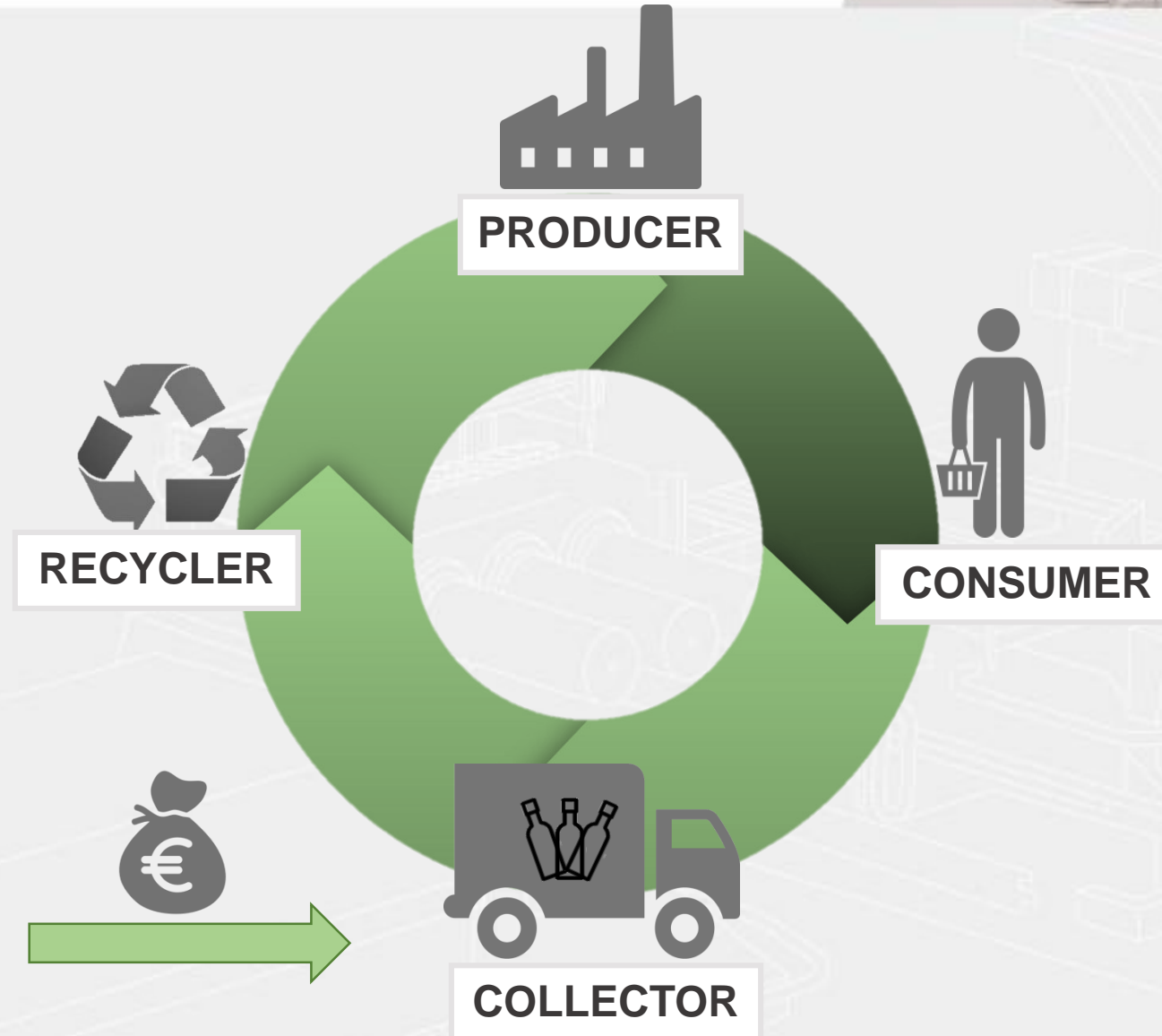
2019



GLASS RECYCLING IN ROMANIA

CIRCULAR MODEL

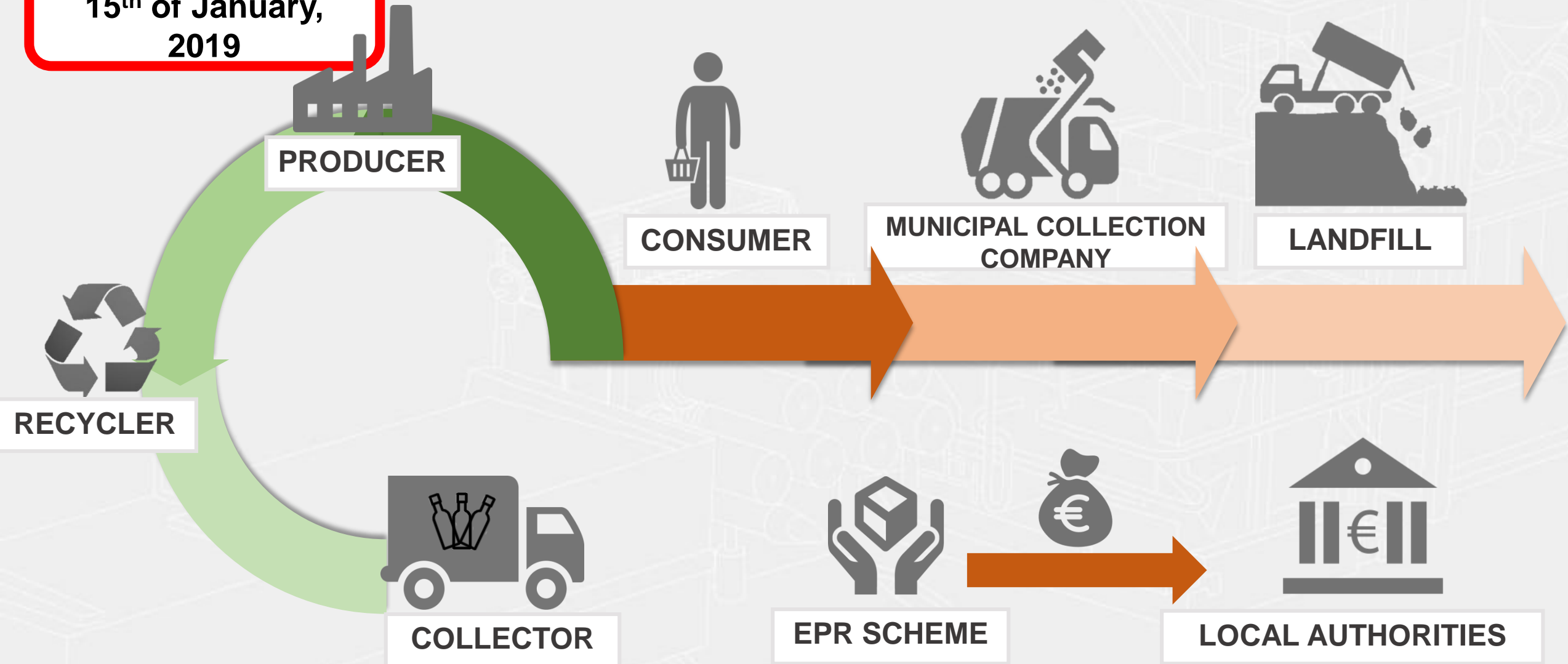
BEFORE
15th of January,
2019



CURRENT CONTEXT

LINEAR ECONOMY REINFORCEMENT

AFTER
15th of January,
2019



S.O.S. MESSAGE IN A BOTTLE



Circular economy is about innovation, and as an inventive Eastern European nation, we'll find a way out!





Thank you!

Constantin Damov, Green Group President

Constantin.damov@green-group.ro

Mobile: +40.743.100.026

Website: www.green-group.ro

Going round in circles:

Why cullet is crucial for the glass industry?

Adeline Farrelly, Secretary General FEVE

World Resources Forum, Antwerp, 25 February 2019

OVERVIEW

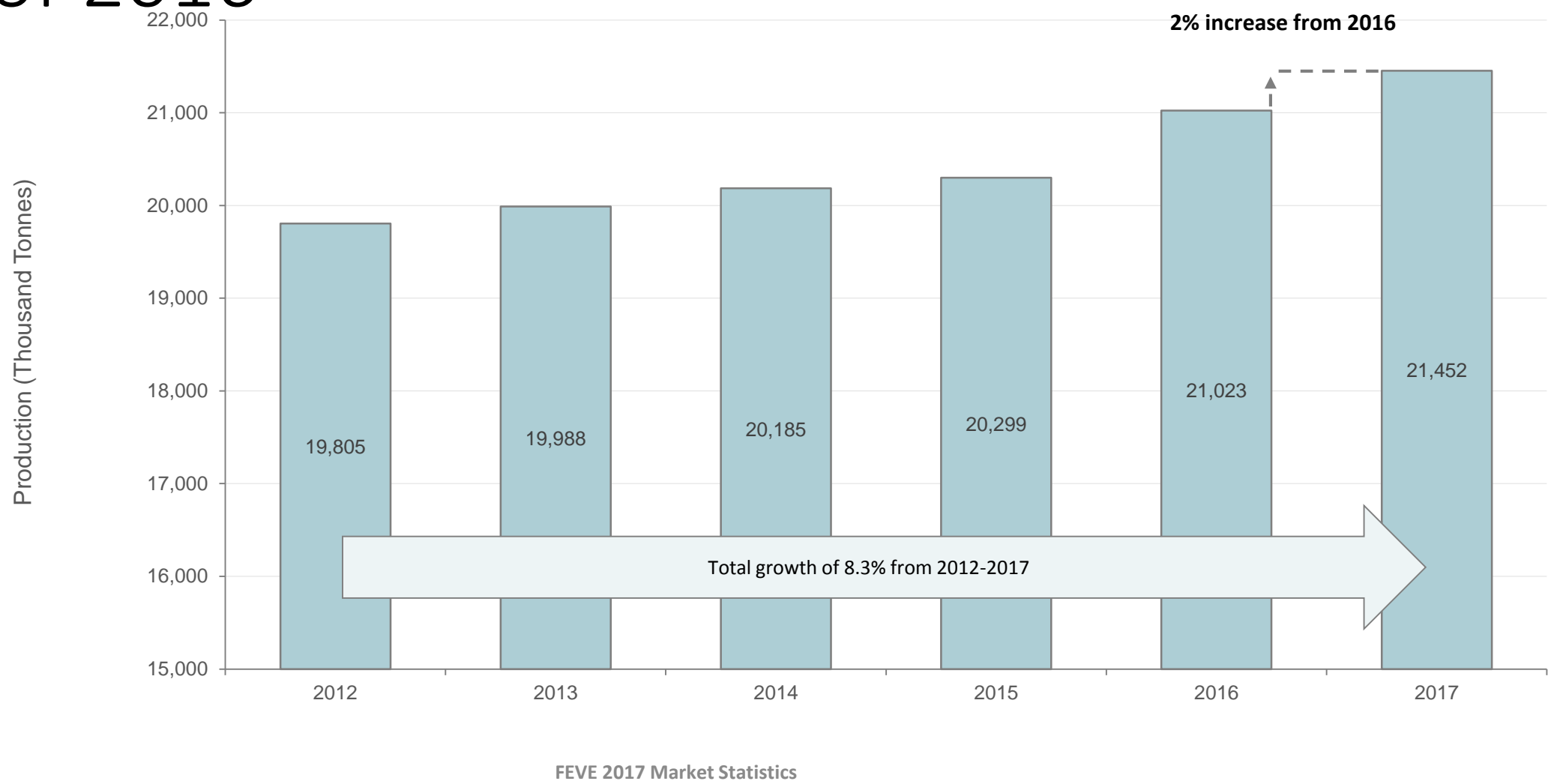
- About FEVE and the Industry
- Glass as a Permanent Material and its benefits
- Our new operating context
- Call for action

FEVE ASSOCIATION MEMBERS



- Represents 90% of EU production
- 40,000 direct jobs (125.000 indirect)
- 160 plants in 20 countries
- ~21 million tonnes glass per year
- 74% collected for recycling
- > €600 million investment in the EU every year

Production increased by 2% in weight terms in 2017, continuing the strong performance of 2016



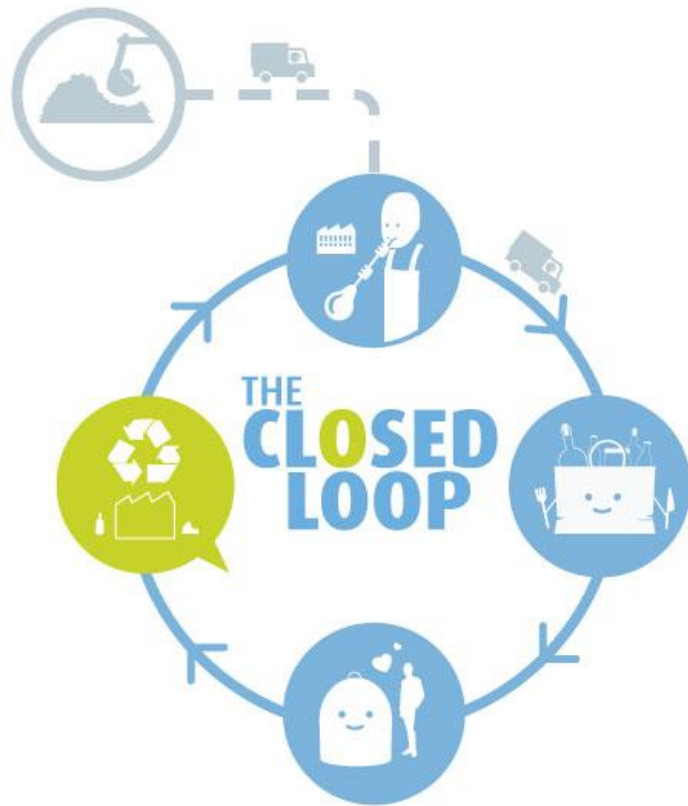
| Key Points |
|---------------------------|
| Introduction |
| Macroeconomic Context |
| Headline Industry Results |
| Benchmarking Results |
| 42 HY Results Audit |



We are part of the Fast-Moving Consumer Goods (FMCG) market. Packed foods, beverages, toiletries, over-the-counter drugs, and other consumables - sold quickly and at a relatively low cost. Recycling or reusing FMCG packaging is important.

How does glass
stack up ?

Endlessly Recyclable – Glass packaging is a permanent material



- Inert packaging
- 100% infinitely recyclable food grade packaging
- Always safe for food and beverages even when recycled
- 90% recycled in closed glass Loop **TODAY**

Environmental benefits of recycling

Cullet

- **Saves energy**
- **Saves natural resources**
- **Cuts CO2 emissions**
- **Diverts waste from landfill**
- **Keeps glass productive in the Circular economy.**
- **Biggest part of our batch -**
On average 52% recycled content www.feve.org



“Recycled glass scores the highest quality with respect to other recycled packaging materials”



POLITECNICO
MILANO 1863

Permanent Materials

Maintain
inherent
properties
Equal to
virgin
raw
material

Producing
a new
packaging
made of
100%
recycled
material

** A methodology to assess the quality of recovered materials compared to virgin ones in Life Cycle Assessment studies. Final Report, May 2nd, 2017*



Container Glass Industry's CSR reports

Our
industry is
committed
to increase
recycling of
all
available
quality
cullet

BRANDS ALSO DRIVING THE MARKET



BY 2025
25% less CO2
100% returnable
packaging or
majority-recycled
content



BY 2020
Lower emissions

DROP THE C -
Packaging is
NEXT



By 2025
100% recyclable,
reusable or
compostable
packaging;
Support collection &
recycling initiatives in
its top 20 markets;



By 2020
Reduce
packaging weight by
15%
Increase recycled
content to 45%
Make 100% of our
packaging recyclable
or reusable



PEPSICO

By 2025,
aims to design 100% of
its packaging as
recyclable,
compostable or
biodegradable.

Coca-Cola

By 2025:
THIS IS FORWARD
Collect 100% packaging
50% recycled content of
PET bottles (21% in 2016)
100% packaging recyclable
or reuseable



evian.

BY 2025:
All bottles made from
100% recycled plastic
(currently 25%)
Partner « Loop industries »
create virgin quality PET
for food grade packaging

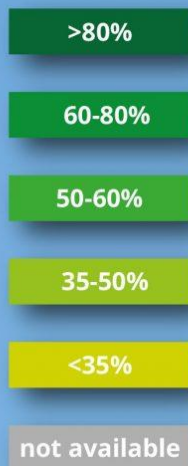


CONTAINER GLASS RECYCLING IN EUROPE



IN THE EU28, ON AVERAGE **74%** OF GLASS BOTTLES AND JARS ARE COLLECTED AND RECYCLED INTO **FOOD GRADE MATERIAL**

THE **90%** OF IT GOES BACK TO THE **BOTTLE-TO-BOTTLE PRODUCTION**



FEVE

The European Container Glass Federation

FEVE source – Year 2015 data
Industry estimates based on most recent data provided by national industry contact points or available on Eurostat.
See excel file on feve.org



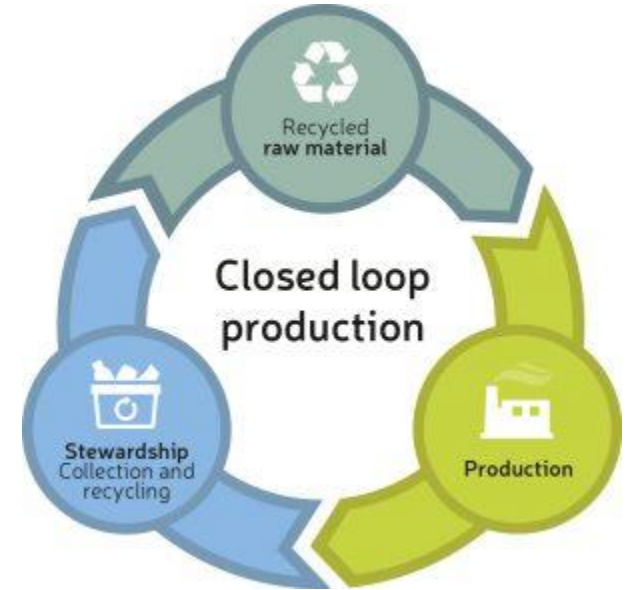
The new policy context

Circular economy package

- Targets for every Member State
- From “collection for recycling” to “real recycling”
- 65% by 2025, 70% by 2030 – all packaging
- Specific glass recycling targets:
 - 70% by 2025
 - 75% by 2030

Single use plastics directive

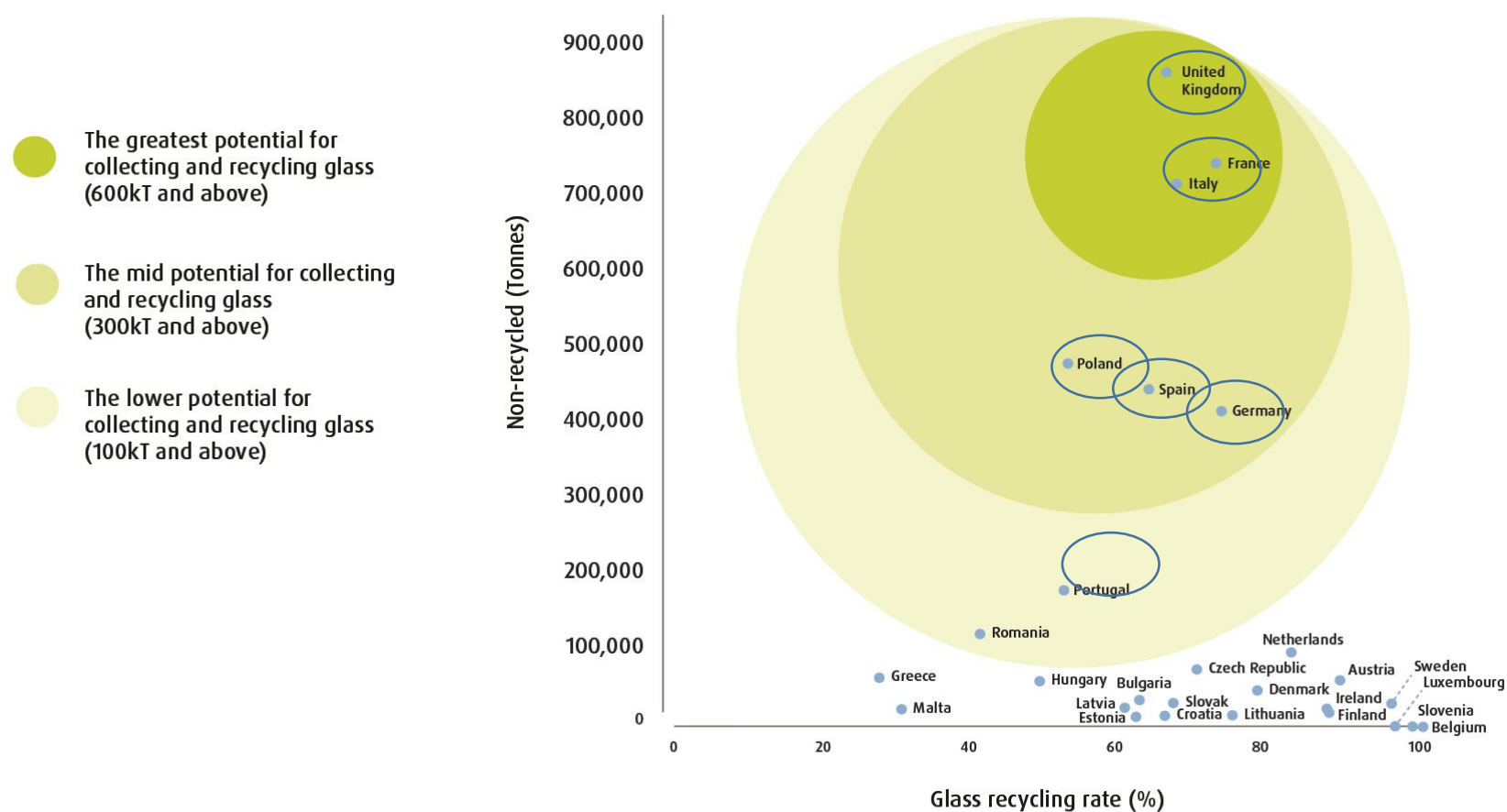
- 90% PET bottles collected by 2030 and
- 30% recycled content in every bottle



Stuck on 74%
collection for
recycling

Glass challenge

TARGETING POTENTIAL FOR COLLECTING AND RECYCLING MORE GLASS ACROSS THE EU



Source: Based on data from Eurostat

Working with partners

When you choose glass, always recycle,
never litter.



Endless lives of
Glass
communications

Today 7 in 10 glass bottles are recycled
in Europe with the help of the value
chain and consumers, we could make
that figure much higher.

**Will you work with us to guarantee
the circular economy of glass
packaging in the future?**



FEVE
The European Container
Glass Federation

THANK YOU

From Packaging glass to flat glass: how to ensure the same recycling success?

Adeline FARRELLY: Secretary General of FEVE

Bertrand CAZES: Secretary General of Glass for Europe

Constantin DAMOV: CEO of Green Glass Recycling

Ulli IX: President of FERVER

Moderator: Baudouin Ska, Secretary General of FERVER