

Setting a reference index
for cullet cost price
in Europe (France excluded)
- years 2008 and 2009 -

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Warnings

The present report was prepared per request of Eco-Emballages and Adelphe in the framework of the convention signed on March 26th, 2010.

Eco-Emballages and Adelphe informed us of their intention to publicize it to a large audience. We will take no responsibility for any use other than that defined in the convention, the goals of which are stated in page 4 of the present report, or towards any third party, the use of the report being their sole responsibility.

The present study aims at providing factual data based on a homogeneous methodology. On the contrary, this study does not aim at making recommendations, or at comparing and ranking the published data.

The cost prices used in the setting of the annual price indexes were determined based on the data made available to us. These data are the responsibility of the companies involved in the study. Our work included spot checks to ensure consistency with elements such as data management system extractions and supplier invoices; nevertheless, the works performed do not constitute an audit in the sense of generally admitted auditing standards.

The results of the study should be considered in regard to the methodological principles and limitations.

Besides, our responsibilities do not include the updating of the study based on any event posterior to our study.

Goals and context of the study

In the framework of the revision of the take-back price of glass paid to municipalities, Eco-Emballages (the French Green Dot Organisation) and Adelphe have commissioned PricewaterhouseCoopers (PwC) to conduct a study regarding the cost price of container cullet in Europe.

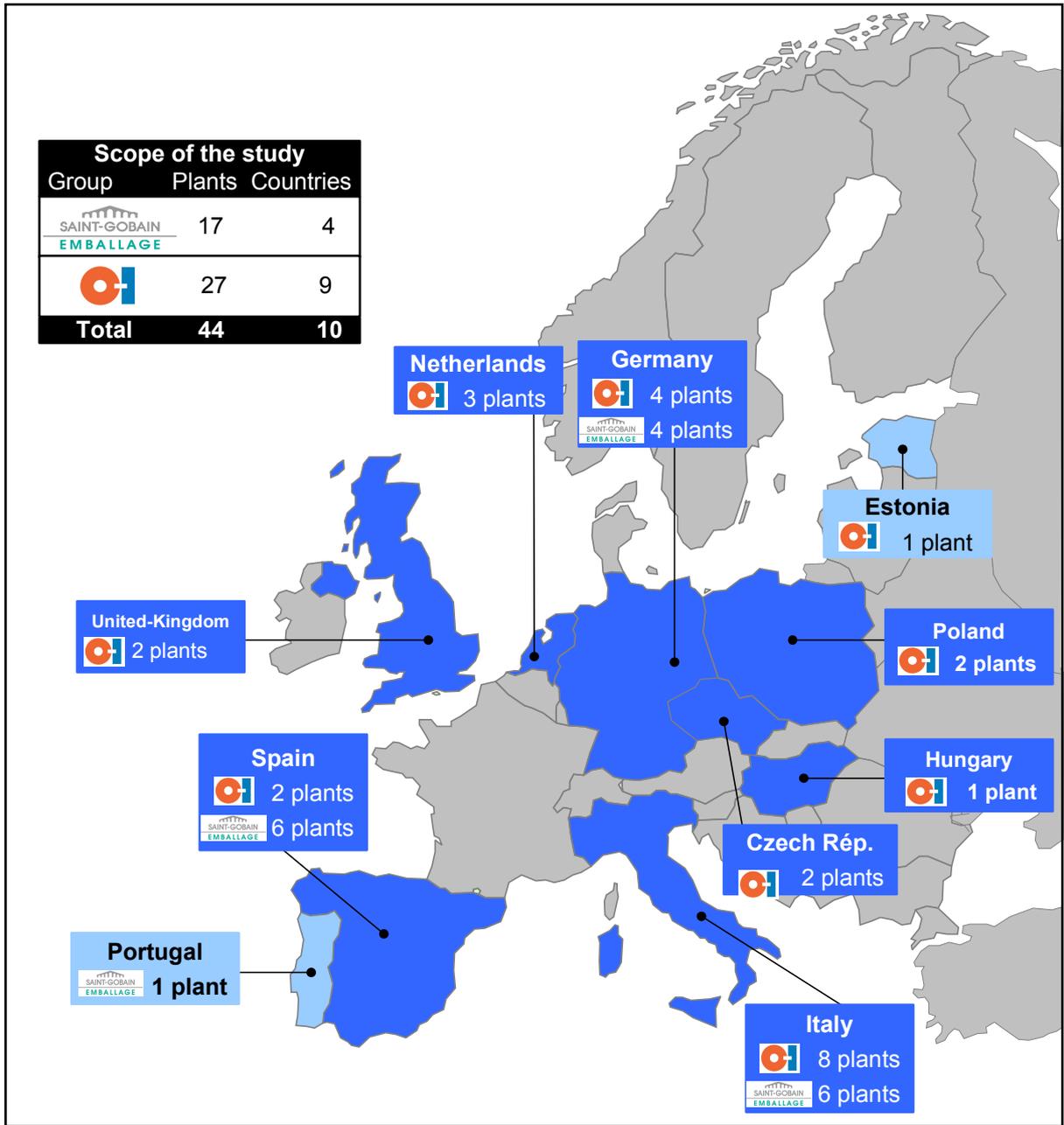
Indeed, the stakeholders involved in the cullet recycling process (municipalities, Eco-Emballages/Adelphe and the Glass Industry Union) decided that the take-back price would be adjusted annually depending on the variation of the European cost price of coloured cullet (mixed-colour, brown and green). The panel of plants considered is composed of the plants from the groups Saint-Gobain Emballage and O-I that are using container cullet and implemented in the European Union (France being excluded).

The scope and the methodology have been defined by Eco-Emballages and Adelphe and accepted by the CEOs of Saint-Gobain Emballage and O-I groups, and the French Glass Industry Union.

The study deals with years 2008 and 2009, 2008 being the reference year (index base 100). Similar studies were performed by PricewaterhouseCoopers in 2006, 2007, 2008 and 2009 in order to calculate the 2005, 2006, 2007 and 2008 cost prices.

Scope of the study

44 plants, located in 10 countries of the European Union (France excluded) were chosen for this study (see on the graphics below). This list was established by Eco-Emballages, Adelphé, and the partner glass manufacturers (Saint-Gobain Emballage and O-I groups). The plants in each country are listed in Appendix I. One plant was closed in 2009 (Finland); thus it is not in the scope of this study anymore.



Results presentation

Scope of the study for years 2008 and 2009

No plants were excluded from the scope of the study for years 2008 and 2009 as a result, 35 plants are considered within the scope for 2008 and 2009, identical as last year study. The plant closed in 2009 did not use coloured cullet in 2008 and was then already out of scope in last year study.

European reference indexes for years 2008 and 2009

The variation of the European cost price of coloured cullet (mixed and green) between 2008 and 2009 is -1 %. Therefore the indexes are:

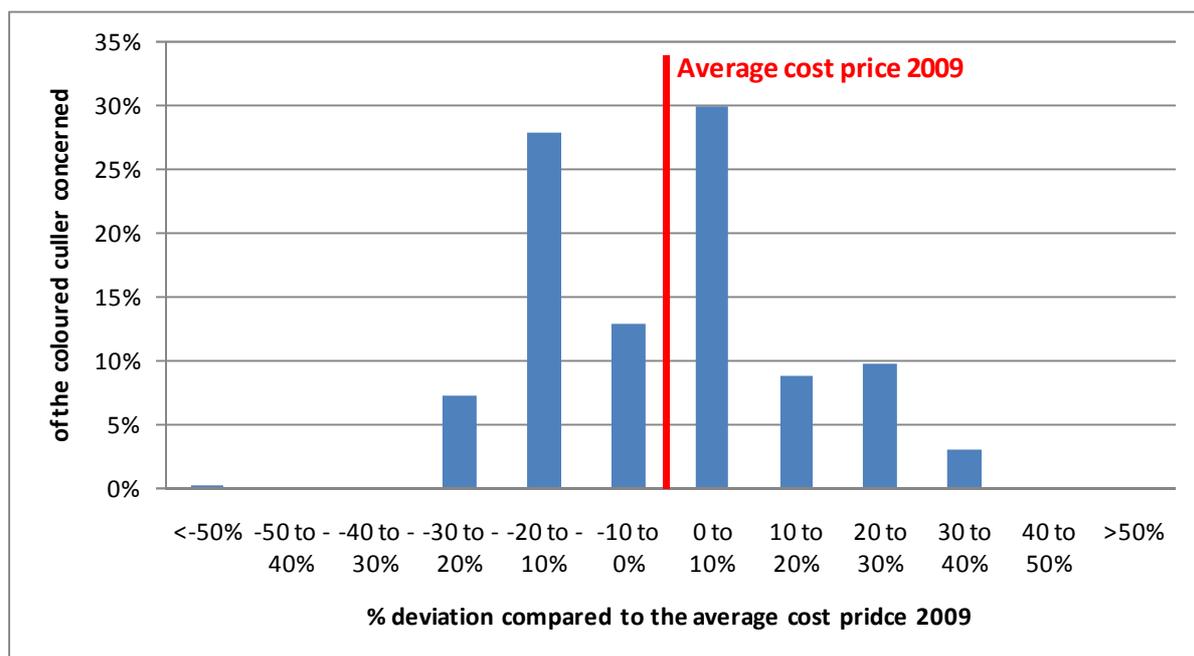
- 2008 index (reference year): 100 ;
- 2009 index: 99.

Reminder: the indexes calculated during the previous study (concerning years 2007 and 2008) were:

- 2007 index (reference year): 100 ;
- 2008 index: 112.6.

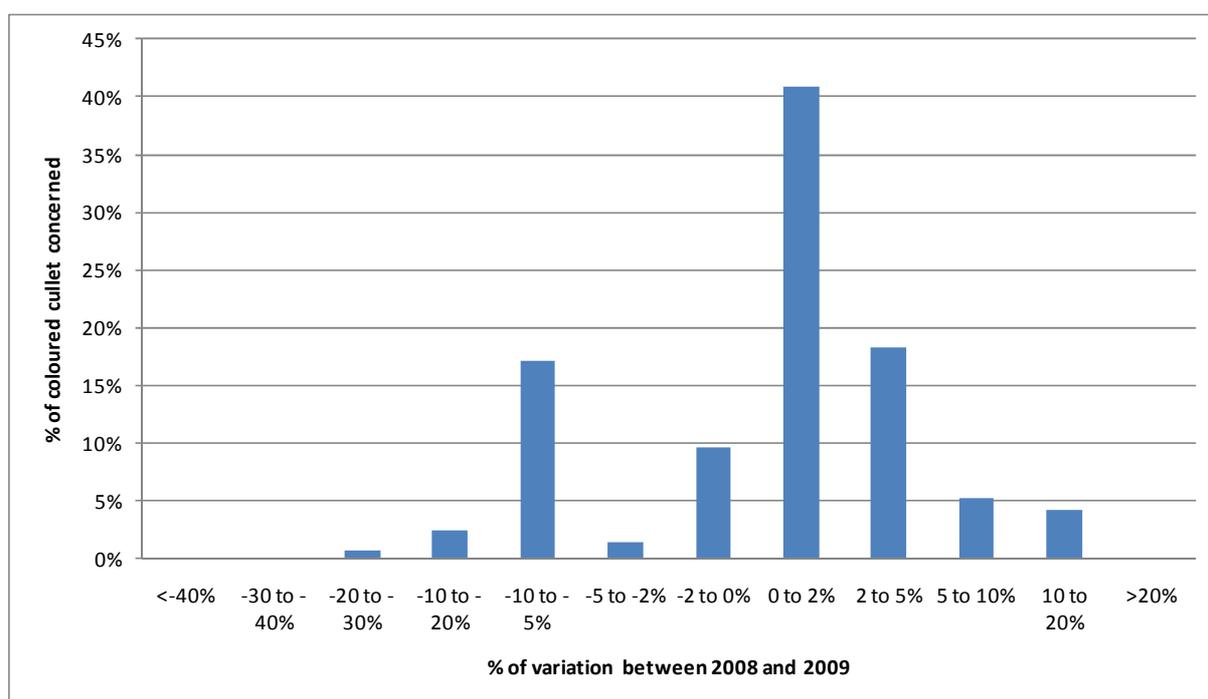
Dispersion of the cost price compared to average cost price for coloured cullet

The figure below presents the dispersion of the cullet cost price calculated on the scope of 35 plants considered. The prices are much dispersed compared to the average price. A majority of the cost prices are higher than the average cost price value (52 %). On the contrary, more than 35 % of the tonnages have a cost price inferior to the weighted average by at least 10 %.



Cost price evolution between 2008 and 2009

The chart below shows the dispersion of the 2008/2009 evolution of cost price per plant over the 35 plants included in the scope of the index of coloured cullet (mixed and green). A small dispersion can thus be observed, indeed, most of the coloured cullet tonnages (90%) show a variation of their cost between -10% and +10%. Besides, more than 50% of the tonnages show a variation between -2% and +2%. If almost 18% of the tonnages present an increase between 2% and 5%, 17% of the tonnages present a decrease between -10% and -15% which explains partly the global decrease of -1%.



Significant increases for the coloured cullet (mixed and green) have been established for 4 plants (covering 9 % of the coloured cullet consumption). In accordance with the specifications of the methodology, all these variations were justified by the plants. They are mostly due to:

- negotiations led to reduce the cost which significantly increased in 2008;
- the increase of the price of the treated cullet purchased through wholesalers and intermediaries.

Methodology

Tonnages and colours considered

In the glass plants selected, only cullet from container glass is considered, whether of domestic origin (regulated or free market system) or imported. This can include either household glass (local communities), or industrial glass (bottle plants), or glass of other origins (e.g. restaurants and commercial catering, sports clubs, etc.).

In order to facilitate the analysis and the critical review of the data, the cost prices are established by colour (mixed / green / brown / white / half white). However, available colours vary from one country to another depending on the raw glass sorting system in place.

The French industry of packaging glass uses mixed cullet coming from the selective collection of unsorted raw glass. However, some other European countries have different collection pathways in place: in the countries where raw cullet is collected separately based on its colour (most often green, brown and white colour) green cullet is the closest to mixed quality. Indeed, some studies led since 2004 have shown that green and mixed cullets share the same price range and variations. It is thus justified to include green cullet in the calculation of the coloured cullet cost price index. This enables to enlarge the scope and to include countries which developed a separate collection of cullet and which contribute significantly to the tonnages of cullet produced and put into furnace across Europe.

On the contrary, in the countries where they are collected, white and brown cullet show price ranges and evolutions different from green and mixed cullet. Also, the French glass industry doesn't use any brown cullet for its production. Those two colours of cullet are excluded from the index scope; since the origin of the study concerning the white cullet, since last year concerning the brown cullet.

The tonnages taken into account for the coloured cullet cost prices (bases of this study index) therefore concern only mixed and green cullet.

Costs and subsidies considered

Cost prices apply to ready-to-use cullet delivered to the plant. They take into account the following costs and subsidies:

- Purchase of raw glass;
- Transportation of the raw cullet from the collection point to the treatment centre;
- Treatment of the glass;
- Transportation of the processed cullet from the treatment centre to the plant;
- Any supplier discounts or grants awarded to the glass manufacturers through any domestic system in place (this can include transport grants, for instance, such as in Portugal and Italy, year-end discounts, subsidies for target overshoots -Italy- or raw glass purchase grants - Italy);
- Where applicable, amounts paid by glass industrials to finance the administrative expenses of the organization of the recycling of household glass from local communities.

All additional treatment processes, internal or external (for example cullet crushing for production of powder) are not taken into account.

Besides, in free market systems (non administered), glass industrials often buy already processed, ready-to-use cullet delivered to the plant, directly from treatment companies. In that case, only one cost is taken into consideration.

Gains from energy savings related to fusion, and costs related to non-quality are not included.

Exchange rate chosen for countries outside the Euro area

For countries outside of the Euro area (United Kingdom, Czech Republic, Poland and Hungary), an average exchange rate over the 2008-2009 period has been chosen for the conversion in Euros in order to avoid interferences from the important fluctuations in the exchange rates. Therefore, the exchange rate adopted for these countries is different from the one adopted last year based on the 2007-2008 period. For Estonia, the Crown/Euro exchange rate is fixed over the two years.

Calculation of the 2008 index

The average cost price for 2008 is chosen as the reference (100 base). The price index for 2009 can be calculated as follows, once the average cost price for 2009 has been determined:

2009 Index = 100 + % evolution of the average 2009 cost price relative to the average 2008 cost price.

Work performed

Data collection and analysis

For each country, the collection of data took place at the glass manufacturer's headquarters or at the plant centralising the various elements required for our interventions. These elements were the following:

- Tonnages of coloured cullet purchased for the considered year (based on invoices, and data management system extractions);
- Costs (for instance, purchase of ready-to-use cullet delivered to the plant, purchase of raw glass, transportation costs etc.) as well as any supplier discount or grant (transport grants, year-end discounts, raw glass purchase grants, etc.) included in the calculations of the cost price for the considered year.

Besides, spot checks have been conducted to ensure consistency between the statements prepared by the glass manufacturers and the justifying documents (supplier invoices, data management system extractions, procedures for calculating subsidies, justifying elements for supplier discounts, etc.).

Finally, we have requested that the glass manufacturers consulted provide a representation letter in which they state the completeness of the data provided concerning tonnages and costs.

Particular case: remote data collection

For some glass manufacturing plants, remote data collection was made without questioning data reliability. Glass manufacturers that are concerned appear in light blue on the graphics in page 5 and Appendix I. These manufacturers have shown:

- unchanged organisation and contacts compared to previous years studies,
- no problem encountered during visits that took place in 2006, 2007, 2008 et 2009
- non significant tonnages of cullet consumed (< 100 000 tons for coloured cullet i.e. less than 5% of the tonnages).

Note that remote data collection cannot happen more than once every two years.

Comments on the implementation of the methodology

When possible, cost prices are calculated based on quantities of cullet filled in the year. However, in some cases, the absence of reliable data on the filled quantities led us to consider purchased quantities. We then checked with the glass manufacturers that stock variations were not likely to impact cost prices significantly.

For one glass manufacturer, in one country, we were only able to obtain the cost price of coloured cullet at the scale of the company, and not for each plant. The same price was therefore used for all of this manufacturer's plants in the country. This does not impact the average cost price but it affects the analysis of the cost price dispersion.

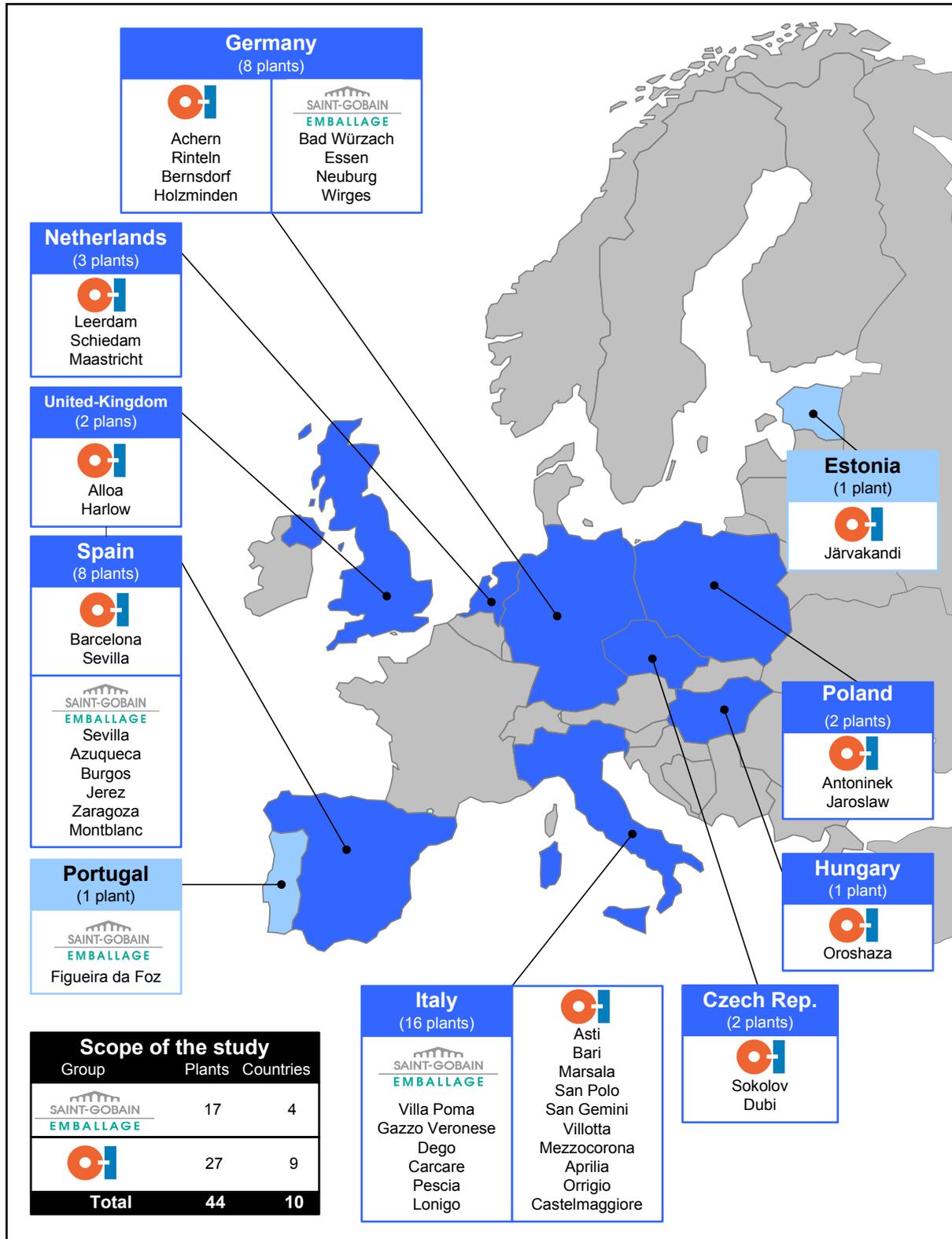
For two glass manufacturers, it was not possible to separate container cullet flows from flat cullet. A ratio provided by the manufacturers on the basis of national statistics allowed the calculation of the tonnages that had to be excluded from the scope (flat cullet).

Critical review of the data

The collection and the critical review of the data were satisfactory in most cases.

Appendix I: List of plants within the scope

Countries appearing in light blue are those for which data collection was operated remotely.



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