

## Construction & Demolition Waste Glass

### *Explanation and input to public consultations*

**Flat glass products are essential for construction and renovation.** They provide net carbon-avoidance benefits and thus participate to the decarbonisation objective of the EU. However, glazing products' recycling potential is currently under-exploited and deserves to be scaled-up.

This paper aims to bring information and explanation on the state-of-play of building glass recycling and related challenges, as contributions to two consultations:

- JRC Construction & Demolition Waste – Workshop Survey
- European Commission Construction & Demolition Waste – end-of-waste Survey

While flat glass manufacturers are keen to develop **a closed loop recycling model for building glass, i.e. flat glass to flat glass**, Glass for Europe wishes to emphasize that this industry effort could be greatly helped by way of **specific EU policy interventions**:

1. **An EU-wide recognition of the status of 'by-product' for pre-consumer cullet**
2. **A framework to incentivize the adequate sorting of construction and demolition waste that ensures the recovery and recyclability of waste glass.**

### The benefits of flat glass cullet recycling

The recycling of flat glass cullet (recycled broken or waste glass) is a way to valorize waste and increase circularity but also offers other environmental benefits. For instance, the **recycling of flat glass into flat glass furnaces** is one of the most prominent avenues to reduce energy consumption and CO<sub>2</sub> emissions from glass manufacturing.

**It is therefore imperative for EU legislation to facilitate and incentivise the closed loop of flat glass recycling to reduce CO<sub>2</sub> emissions and help the industry maximise its contributions to the EU climate neutrality objective.**

The use of cullet as raw material is critical for the flat glass industry. Because it requires less energy to melt, it contributes to reducing energy consumption and heat-related CO<sub>2</sub> emissions, i.e. 2 to 3% reduction of energy consumption per 10% cullet in the batch (European Commission, 2012, Glass BREF). It also helps reduce process emissions, which cannot be decreased by an energy switch to carbon neutral energy, as cullet saves 1.2 times the same amount of raw materials (*ibid.*). In 2019, 26% of the raw materials' input going into European flat glass furnaces was cullet; the current figure is estimated to be higher.



High quality / purity cullet is required to ensure the quality of newly produced flat glass and to avoid serious and costly damages to manufacturing installations. For this reason, flat glass producers have been performing successful tests in the last years to ensure the technical feasibility of more cullet integration in the production processes. **Cullet is now increasingly used as a raw material in flat glass plants and demand for more flat glass exists in the EU.**

## Flat glass cullet recycling today

The share of recycled glass used as raw material has increased over the last decade thanks to collection schemes put in place by the industry with transformers and recyclers (Glass for Europe, 2019, 2050 | Flat glass in a climate-neutral EU). There are however different sources of cullet with potential to be tapped in if a more conducive framework allows it.

There are essentially **three sources of flat glass cullet**, each coming with their own specificities.

1. **Internal cullet generated on production site:** fully recovered and remelted on-site.
2. **Pre-consumer cullet:** off-cuts generated on glass processors' transformation sites; they are largely recovered and recycled thanks to take-back systems organised between processors and flat glass manufacturers themselves and / or collection by glass recycling firms.

The use of pre-consumer cullet could be facilitated by an EU-wide recognition of flat glass cullet as by-product, eventually linked to specific harmonised technical criteria.

3. **Post-consumer construction and demolition waste:** glass from old windows, facades, internal partitions, etc. From past studies, it is estimated that 1.5 million tonnes of such waste is generated annually in the EU and that less than 5% of it is recycled into new glass. Most of this waste is not valorised and therefore lost when used either as aggregate or sent to landfilling (Deloitte, 2016, Economic study on recycling of building glass in Europe).

C&D waste glass is the biggest untapped source of cullet nowadays. Policy interventions to incentivise the recovery of this waste at time of window replacement or building renovation and demolition are necessary to address this waste stream.

**Nowadays, flat glass recycling is mostly hampered by the difficulty to access enough waste glass of a quality suitable for remelting.**

## EU policy interventions to maximise flat glass cullet recycling

To scale up flat glass recycling, policy interventions are needed on two items:

1. An EU-wide recognition of the status of 'by-product' for pre-consumer cullet
2. A framework to incentivise the adequate sorting of construction and demolition waste that ensures the recovery and recyclability of waste glass.



## 1. An EU-wide recognition of the status of ‘by-product’ for pre-consumer cullet

While most pre-consumer flat glass cullet meets the conditions to be considered as a ‘by-product’, many Member States do not recognise the by-product status for pre-consumer cullet. This means in practice that trucks of flat glass pre-consumer cullet get controlled, questioned, and stopped, sometimes within a Member State itself or at borders inside the EU. This lack of harmonised approach in EU Member States represents a major barrier which could be solved by an EU-wide recognition of the ‘by-product’ status, eventually linked to specific harmonised technical specifications.

It must be noted that such EU-wide by-product status and technical specifications could build upon existing guidelines of some Member States and the technical specifications already in place for end-of-waste criteria for glass. A steer from the European Commission to launch such a work with Member States is what is essentially needed to facilitate the recycling of this resource.

## 2. A framework to incentivise the adequate sorting of construction and demolition waste that ensures the recovery and recyclability of waste glass

Flat glass cullet from construction and demolition waste has not been a priority for the EU legislator so far, as it represents a relatively low volume at the level of C&D waste. 1.5 million tonnes of waste glass would nevertheless be **a major resource for the flat glass sector** as it offers the potential to increase by 50% flat glass cullet availability.

**A focus on flat glass waste is required to support the EU’s own circularity and climate goals** and to lift current barriers to the selective deconstruction and recovery of materials in the building sector.

A more supportive EU regulatory environment should include:

- A generalisation of pre-demolition audits
- Incentives to the dismantling of CDW and deposit of waste glass at collection points
- A ban on the landfilling of waste building glass
- Together with the landfill ban, a recycling target for waste building glass
- Promotion of closed loop recycling, i.e. flat glass to flat glass, under the form of a sub-target under a generic recycling one.

The above policy options would greatly help to ensure that waste glass is adequately collected and sorted and thus to overcome the current situation where landfilling and use in aggregates remains the pre-dominant and cheapest avenue to dispose what could otherwise be a valuable resource.

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*Glass for Europe is the trade association for Europe’s flat glass sector. Flat glass is the material that goes into a variety of end products, primarily in windows and facades for buildings, windscreens and windows for automotive and transport as well as solar energy equipment, furniture and appliances. Glass for Europe brings together multinational firms and thousands of SMEs across Europe, to represent the entire building glass value-chain.*