



British Glass



Decarbonisation of single-use beverage packaging

Commentary on Eunomia/Zero Waste Europe report

July 2023

Dear Mr Simon,

British Glass and FEVE are both representing the container glass industry, respectively at UK and EU levels.

We have reviewed the Eunomia/Zero Waste Europe report (“the report”) on “[Decarbonisation of Single Use Beverage Packaging](#)”. This report is predicated on assuming decarbonisation is a choice for industry, rather than it being mandatory by law¹ for all industries to maintain the right to operate in the EU. The risk factors defined for the various carbon-free technologies are not only your subjective aspersions but are also completely irrelevant as all industries will have no choice but to fully decarbonise by implementing these technologies or they will not be able to operate in the EU. This report is also based on partial, unchecked, and inaccurate assumptions. We are addressing all these in the technical analysis below, commenting on both the general approach and the inaccuracies which influence the overall result.

It is also extremely short-sighted for an NGO such as Zero Waste Europe to completely ignore plastic pollution but continue to play the plastics game by only maintaining a narrow focus on CO₂ emissions and weight as indicators of sustainability. Their incomplete study and recommendations do not take into account all other key indicators such as closed loop recycling, raw material sustainable sourcing, food quality preservation and shelf life, and the impact of marine littering, contamination of the food chain, and migration of chemical substances from packaging to food that are crucial components of sustainable packaging. Sustainability is surely environment, but not only. As you recently pointed out in one of your own [reports](#), “‘safety’ and ‘sustainability’ concepts are directly interlinked: in order for food packaging to be truly sustainable, it needs to be safe for both human and environmental health”.

The report clearly is intended to cause reputational damage to our sector, and the lack of consultation with our sector and the lack of transparency as to how the overall energy use and CO₂ emissions have been calculated, puts this report on unstable ground. We ask ZWE to retract your report and would welcome the opportunity to meet you to discuss these various issues in more details.

Yours sincerely,

Dr Nick Kirk
Technical Director, British Glass

Fabrice Rivet
Technical Director, FEVE

¹ Defined under the Emission Trading Directive (ETS) and the EU Climate Law



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Comments on the general approach of the report:

We are quite surprised to see such a document published **without any prior consultation** with the container glass industry. Should such a consultation have taken place, it would have avoided obvious shortcomings like ignoring key official references such as the Glass BREF² or declaring (on page 16 or 27) that no recycled content figure is available at EU level, while there is an official figure³ provided by FEVE which is the peer reviewed reference figure used by LCA practitioners in the EU Commission PEF methodology (it amounts to 52%, while apparently, 42% has been used in the report).

On decarbonisation, **the report also completely overlooks the mandatory reduction trajectories** defined under the Emission Trading Directive (ETS) and the EU Climate Law, imposing a 62% reduction for ETS sectors (glass included) between 2005 and 2030 and a complete decarbonisation of the EU as a whole by 2050. **The risk factors as defined in the study for the various carbon-free technologies (such as electrification or hydrogen) are therefore completely irrelevant as all industries will have no choice but to fully decarbonise** by implementing these technologies or the industry will not be able to operate in the EU. The report's central claim, based on your subjective opinion, that the glass packaging sector will not be able to comply with EU law is an illegitimate assumption and will have a negative impact on glass packaging and consumer choice. The whole methodology is based on subjective unfounded opinions which is very questionable.

There are many different paths to decarbonisation. Several roadmaps have been published (e.g. Germany, France, Netherlands) none of which are referenced and utilised. There are also recent commitments⁴ by glass makers to invest and test new technologies to overcome the existing risks linked to decarbonisation. **The container glass industry wants to maintain its production in the EU rather moving production to other continents**, the EU is one of the leading glass manufacturing centres in the world. The European container glass sector has always embraced and met the challenge to become more sustainable. It is significantly more energy efficient than 25 years ago, a similar time frame to the decarbonisation timeframe ahead of us today. It has achieved this by dedicated research and development and investment in new technology. It embraced real closed loop recycling long before competing materials. It has stepped up to the challenge to reduce carbon emissions since the establishment of the EU emissions trading scheme in 2004 and will actively engage in the process, like it has with all other environmental challenges. To make this hugely important transition, we need public support with an enabling policy framework, providing a clear signal from authorities to develop the necessary infrastructure to bring carbon-free energy sources to society.

² The Glass BREF is an official document published by the EU Commission giving an overview of the glass industry and the best available techniques: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/GLS_Adopted_03_2012_0.pdf

³ https://eplca.jrc.ec.europa.eu/permalink/Annex_C_V2.1_May2020.xlsx

⁴ See e.g.: <https://www.glass-international.com/news/ardagh-builds-nextgen-hybrid-furnace-in-germany> or <https://www.formesdeluxe.com/article/verallia-details-electric-furnace-project-at-cognac-site.59947> or <https://www.glass-international.com/news/verescence-plots-electric-furnace-glass-decarbonisation-plan>



A final but important comment is that, whilst it is important for packaging materials to decarbonise, **carbon-intensity should not be the sole factor in comparing the sustainability of packaging materials**. As ZWE rightly emphasised in the report *How FCM safety is fundamental to sustainability*, “in order for food packaging to be truly sustainable, it needs to be safe for both human and environmental health”. **Recyclability, marine pollution, microplastics and migration of chemicals from food contact materials** are also important considerations which should be considered when comparing materials.

Technical comments

1. Page 9: total container glass GHG emissions are quoted to be 11.5MT per year. Where is this figure coming from? It seems quite high compared to our own estimates (rather 9MT)
2. Page 10: as explained above, the approach based on risk factors per technology is irrelevant. By law, all industries need to be carbon-neutral by 2050, so these technologies will be implemented, even if more costly. When considering risks, the report also fails at addressing the relative evolution of energy prices. Fossil fuels will become more expensive because of the associated carbon prices, while costs of renewables are expected to decrease thanks to economies of scales and low OPEX. Current costly or risky technologies will become lower cost and less risky in the future.
3. Page 16: as stated above, please use the official data from the PEF where glass recycled content figures are available at EU level (52% on average).
4. Page 16: why is there a quote on energy reduction by using recycled glass while the report focuses on GHG? Which figure has been used to estimate the GHG reduction when using recycled glass?
5. Page 17: the report quotes a 2003 source for the limitation on cullet use in electric furnace. While this is still technically true, glass makers are investing in R&D and this hurdle might very quickly be overcome (see e.g. <https://www.glass-international.com/news/ardagh-builds-nextgen-hybrid-furnace-in-germany>).
6. Page 17: here again, why is there a quote on energy reduction by using recycled glass while the report focuses on GHG? Which figure has been used to estimate the GHG reduction when using recycled glass?
7. Page 26: see comment 2.
8. Page 27: it is not true that no recycled content figure is available at EU level: an official figure⁵ provided by FEVE is largely being used by LCA practitioners in the EU Commission PEF

⁵ https://eplca.jrc.ec.europa.eu/permalink/Annex_C_V2.1_May2020.xlsx



methodology (it amounts to 52%, while apparently, 42% has been used in the report). Why is France considered as “more representative”?

9. Page 28: the 1.2 tonne of inputs per tonne of glass quoted in the table A.4 is valid for glass produced from virgin raw materials but decrease when using recycled glass. Has this figure been adapted according to the cullet percentage?
10. Page 28: it is not true that no recycled content figure is available at EU level: an official figure⁶ provided by FEVE is largely being used by LCA practitioners in the EU Commission PEF methodology (it amounts to 52%, while apparently, 42% has been used in the report). Why is France considered as “more representative”?
11. Page 28: why are energy figures quoted here for soda ash and limestone while the report focuses on GHG? If our societies decarbonise and move towards renewable energies, the energy consumption is no longer an issue. There are numerous other energy figures quoted within the report, so it is not clear which ones have been used in the calculations. However, the report misses the important fact that electric melting is much more energy efficient transferring around 95% of the energy directly into the glass compared to a natural gas furnace that could be around 60% due to structural heat loss and depending on the age and design of the furnace. Therefore, with the gradual implementation of electric furnaces over coming years there will be a significant reduction in specific energy per tonne of packed container glass.
12. Page 28: Soda Ash – The report assumes that the sector only uses synthetic soda ash which is produced by the energy-intensive Solvay process. The container glass sector uses a mix of synthetic and naturally occurring soda ash. The production of natural soda ash is considerably less energy intensive.
13. Page 28: Limestone – The report wrongly assumes that container glass manufacture uses precipitated CaCO_3 , which is produced by an energy-intensive process. Container glass production uses quarried limestone which is crushed and graded into the correct particle size. This is not an energy-intensive process.
14. Page 28 (footnote 37): one of the main reasons why glass collection rate is higher than recycled content is that the glass industry is a net exporter of (filled) bottles. The collection rate, based on glass put on the market is therefore higher than the recycled content, which is based on total production.
15. Page 29: The appendix report gives the following data for furnace process emissions per tonne of glass: Limestone 0.37 tCO₂, Soda Ash 0.34 tCO₂. The total process emissions for the production of glass from virgin raw materials is approximately 0.2 t CO₂/t melted. If these figures have been used in the calculations, then this will have a significant impact on the findings of the report.

⁶ https://eplca.jrc.ec.europa.eu//permalink/Annex_C_V2.1_May2020.xlsx



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16. Page 29: Using data from Chinese glass furnaces for the EU production is highly questionable. Please refer to the Glass BREF (see above) to have official EU data on energy consumption by container glass furnaces. You will see that the average energy consumption (including electricity) is around 7 GJ/tonne glass. It should be explained in the report which exact value was used and how it was translated into CO2 emissions.

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