RECYCLING:

WHY GLASS ALWAYS HAS A HAPPY CO_2 ENDING

FEVE

In a nutshell

You know there is a direct link between recycling and reducing our carbon footprint. You also probably know that glass recycling has many positive environmental and societal benefits. But you might be surprised to learn how effectively glass recycling reduces CO_2. This is the eternal story of glass and CO_2.

Glass bottles are made in a closed-loop recycling system. Bottles which have been used by consumers are collected and re-melted in a glass furnace to produce new bottles. This action can be repeated over and over again as the glass never loses its quality.

CO_2 savings from recycling glass occur both at the glass plant, and all along the supply chain. Recycling glass containers minimises waste, preserves natural resources, reduces energy use and creates jobs in the recycling industry.

CO_2 savings at the glass plant

The glass industry is able to quantify the savings in CO_2 emissions at the factory when recycled glass (known as cullet) is used in the furnace. On average, a 10% increase of cullet in the furnace decreases its energy use by 3% and CO_2 emissions by 5%.

Less CO_2 is emitted as less energy is required for melting cullet. Cullet also replaces some ingredients which naturally contain carbon, such as limestone (CaCO3). These materials release carbon dioxide when they are melted in the furnace while cullet does not.

CO_2 savings over the entire lifecycle

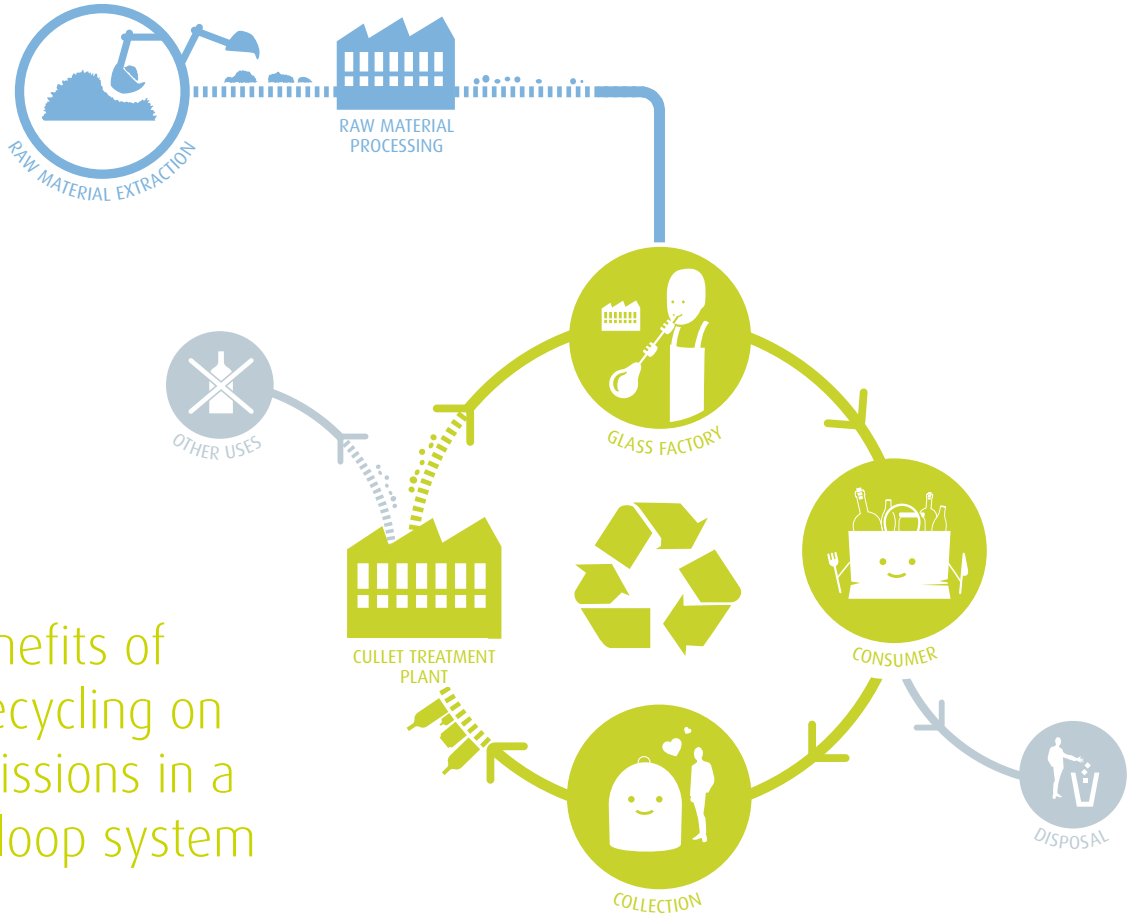
To obtain a complete picture of the CO_2 savings when recycling glass, a Life Cycle Assessment (LCA) must be carried out. The LCA quantifies all of the environmental impacts along the supply chain.

When glass is recycled, there is no need to produce, process or transport the virgin raw materials, so less fuel is used. Some additional steps must be accounted for, such as the energy needed to run the cullet treatment plant. However, the CO_2 burden of recycling is small compared to its benefits.

Through FEVE, the European container glass industry contracted PE International to undertake a full LCA study to quantify the environmental impact of glass bottle production and recycling.

The FEVE LCA study shows that, on a cradle to cradle basis, every tonne of recycled glass saves 670 kg of CO2 (EU average). Expressed in terms of percentages, melting 100% cullet reduces the CO2 emissions by about 58% compared to a situation where no cullet is used.

The benefits of glass recycling on CO_2 emissions in a closed loop system



Recycling glass is beneficial to the environment

Eighty percent of European consumers know that glass can be infinitely recycled without any loss of its qualities, and that glass recycling has many positive benefits for the environment[1].

Each time one tonne of glass containers is recycled in a furnace:

- Less CO_2 is emitted as less energy is needed to melt cullet. Emissions from virgin raw materials breaking down in the furnace are avoided.
- The amount of packaging waste going to landfill is reduced by one tonne.
- 1.2 tonnes of virgin raw material does not need to be quarried, processed and transported.

There are other benefits for the environment and for society:

- Glass is collected and recycled locally. Therefore, CO_2 emissions from transport have a very limited impact on the overall production cycle.
- Glass recycling is a responsible and measureable action that consumers can take to help the environment.
- Glass recycling creates employment in collection schemes and cullet treatment centres.

[1] European Consumers Survey 2010 – InSites Consulting – see www.feve.org

The FEVE Life Cycle Assessment: Measuring the CO_2 savings over the entire lifecycle

FEVE contracted PE International to carry out a full LCA of the glass packaging industry. The assessment covered 72% of European production, representing more than 200 glass manufacturing plants. PE International is a global organisation which provides both consultancy services and software that help companies and industry bodies to gain a complete picture of the CO_2 impact of their businesses.

The study was carried out in accordance with international standards (ISO 14040/44) and measured the environmental costs of producing one kilogram of formed and finished glass which is ready to use. This enables us to meaningfully estimate the overall environmental impact of a single bottle. All aspects of a product's life, including end-of-life and recycling, are accounted for. This is known as a cradle-to-cradle LCA. The work of PE International was peer-reviewed by four independent academic and industry experts.

The FEVE LCA shows that, on a cradle to cradle basis, 1 tonne of recycled glass (cullet) replaces 1.2 tonnes of virgin raw material, saving 0.67 tonnes of CO2 (see graph) for every tonne of finished glass (EU average). In other words, by replacing 100% of the virgin materials with recycled glass, CO2 emissions are cut by about 58%.

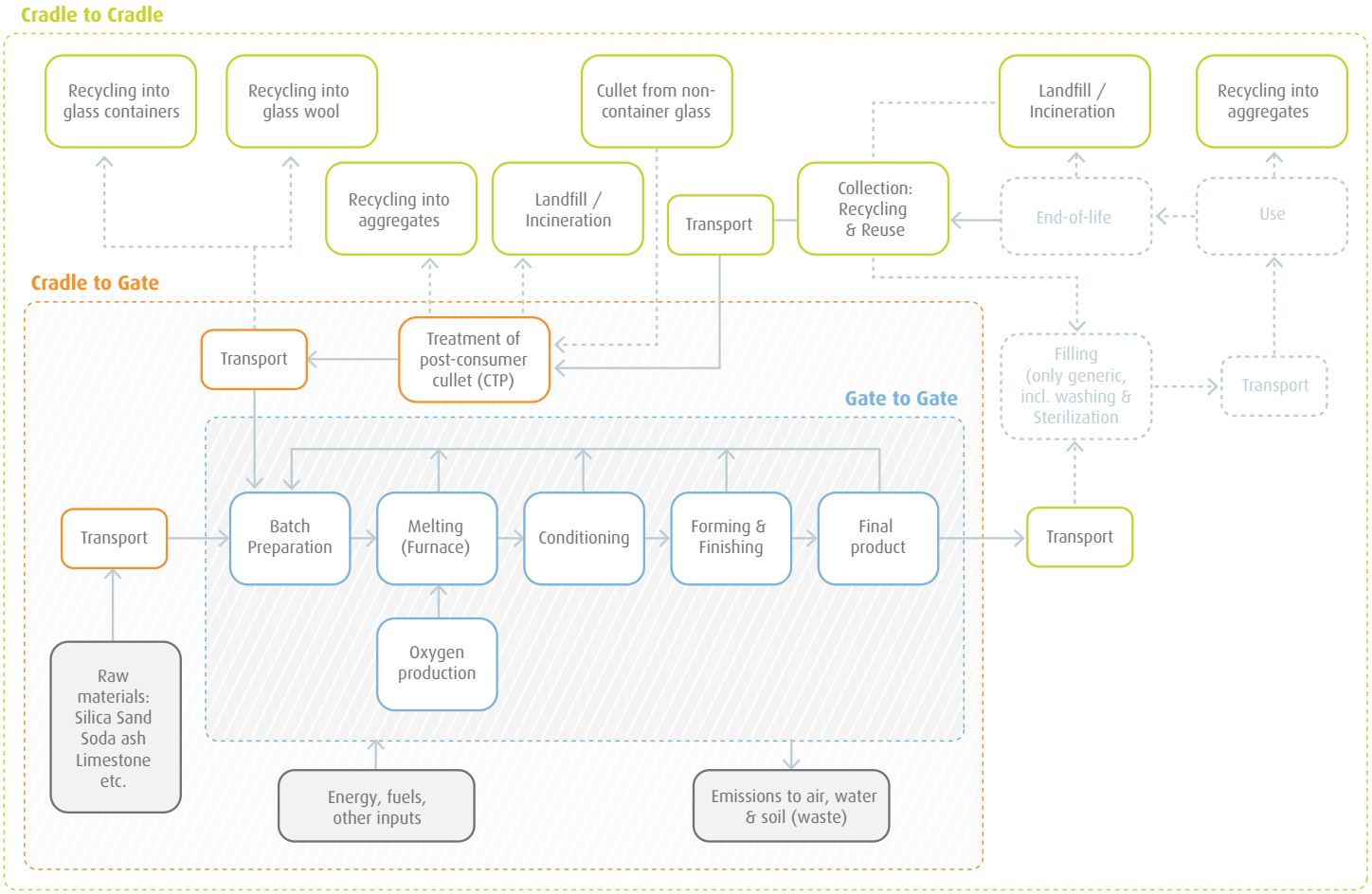
The LCA study took into account the product's full life cycle: from the extraction of resources, production, recycling, to the disposal of wastes. Indicators help to quantify the contributions to environmental impacts such as climate change, smog or acidification.

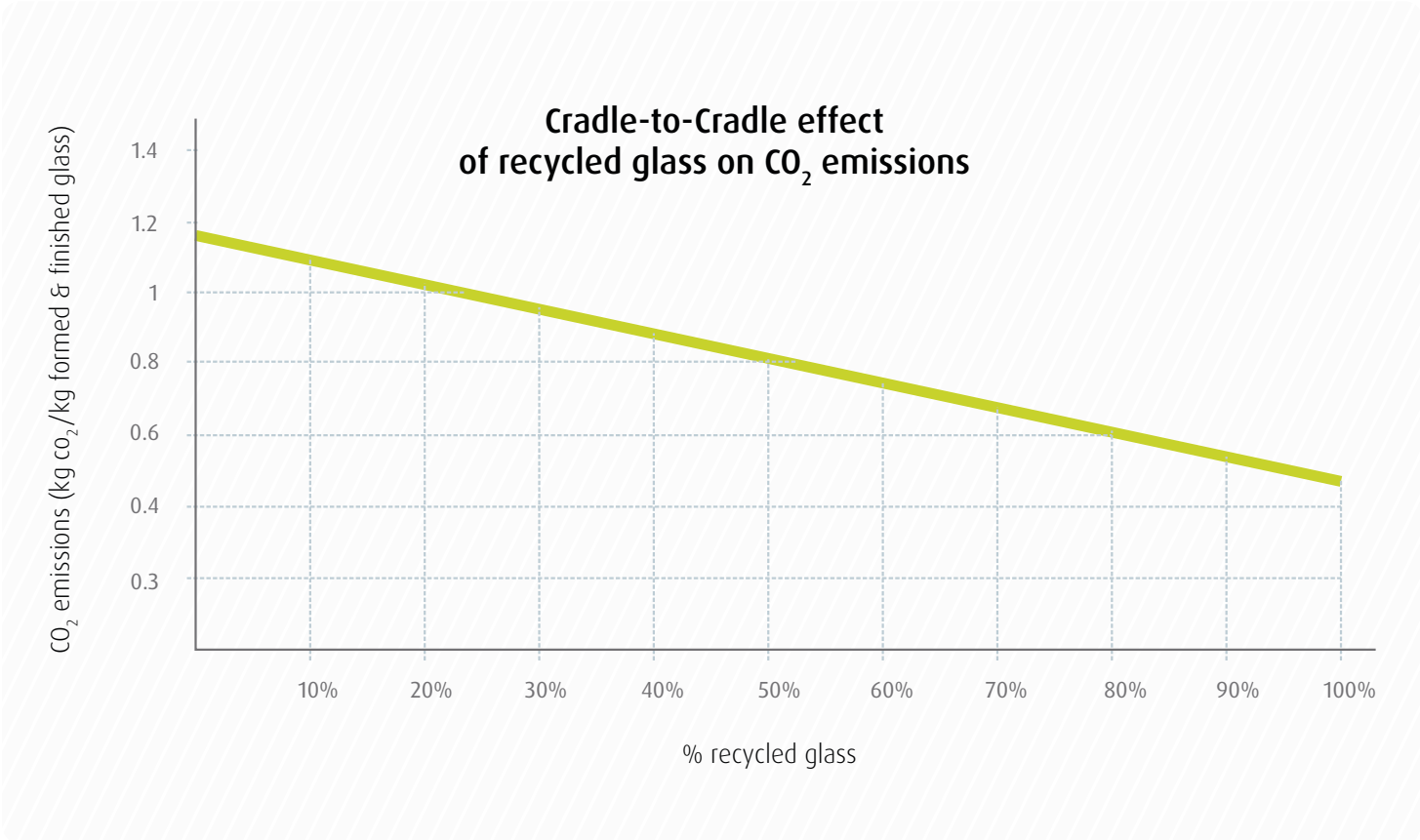
An LCA does not measure the health impacts of a product, or whether it is fit for purpose. Nor can the LCA methodology capture the impact of the other major environmental benefits of glass such as longer shelf life, impermeability, taste preservation, price stability, natural resource availability, or the sustainability of the post-consumer glass market.

The full LCI data (Life Cycle Inventory) is available to interested customers and stakeholders. To access the LCI data, please visit our website www.feve.org or email secretariat@feve.org.

More information on the FEVE LCA - as well as on sustainability and glass - can be found on www.feve.org

Boundaries of the FEVE life cycle assessment for container glass





Glass Recycling in Europe Saves Resources

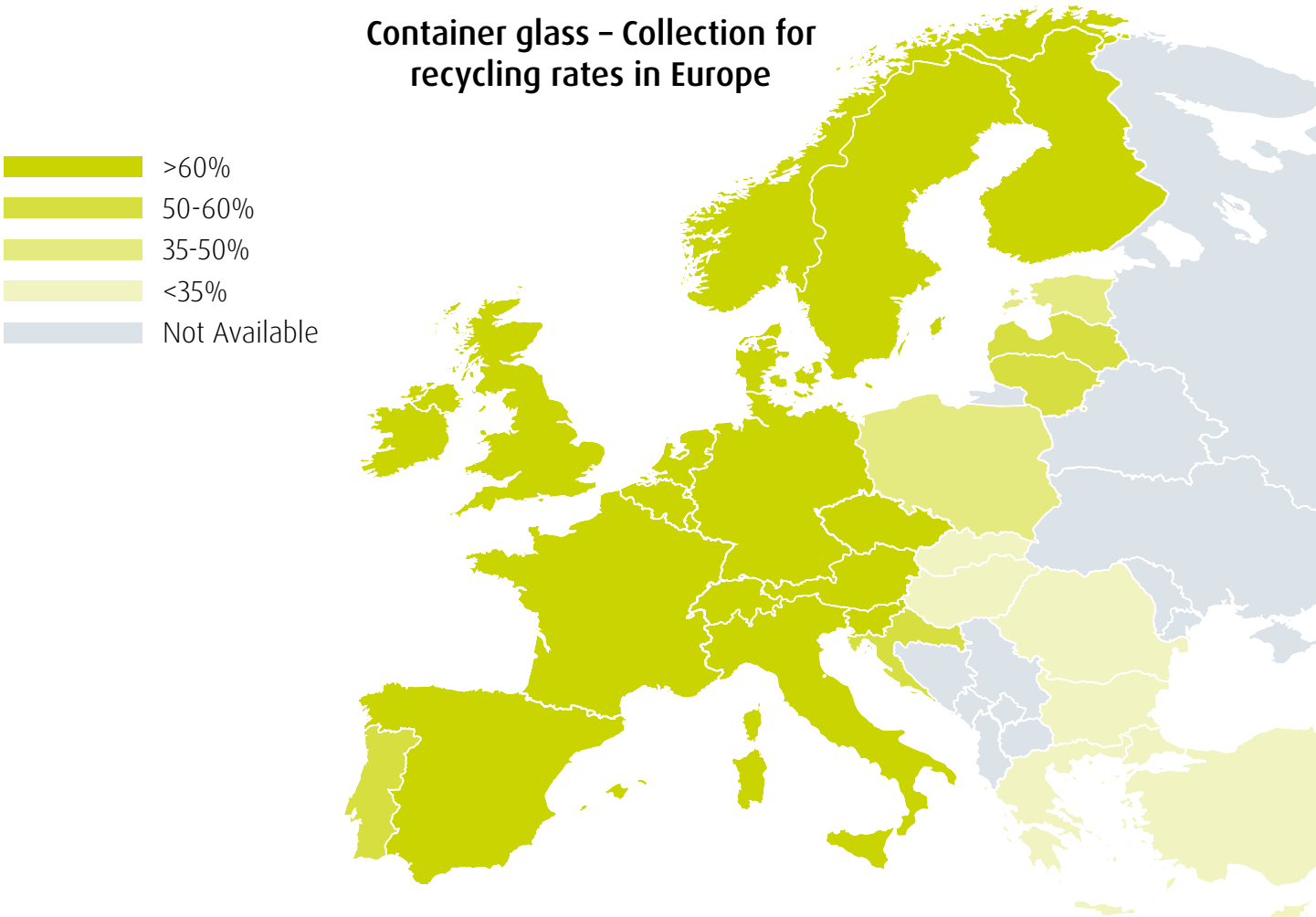
Today, more than 67% of glass bottles and jars sold to consumers in the European Union are collected for recycling. This translates into more than 11 million tonnes (over 25 billion glass bottles and jars) being collected throughout Europe. Glass recycling in Europe increases each year thanks to the commitment of citizens.

The glass industry is able to turn waste glass into a valuable resource to make new bottles and jars, avoiding the use of virgin raw materials and reducing both energy consumption and greenhouse gas emissions. Glass recycling creates secure economic growth and local employment in Europe because the glass is locally collected, locally recycled and locally produced.

Glass is a totally self-supporting packaging system that fits very easily into today's ambitions for a circular economy. Glass helps to create a society where recycling is the key factor to reduce waste, and where waste is considered as a valuable resource.

Glass recycling is truly an eternal story with priceless benefits for the environment and for society. With the commitment of all stakeholders, we can redouble our efforts to increase the amount of glass that is recycled even further. We ask the general public, municipalities, waste management companies, food and drink manufacturers and retailers to work with glass manufacturers to reach this goal.

Container glass – Collection for recycling rates in Europe



Source: www.feve.org - Data Year 2009

About FEVE

FEVE is the association of European manufacturers of glass containers and machine-made glass tableware. The members of FEVE produce over 20 million tonnes of glass per year. The association has 60 members , the most of which are represented in 20 independent corporate groups . Manufacturing plants are located across 23 European states and include global blue chip and major companies working for the world's biggest consumer brands.

The container glass industry accounts for 60% of the total glass production in Europe (including Switzerland and Turkey). There are over 160 plants in the region, employing 46,000 people. The EU is the world's largest producer of container glass. For more information on the glass industry, go to www.feve.org

About Glass

As a packaging material, glass containers ensure the preservation, safe delivery and attractive presentation of a vast array of consumer products. Whether used for drinks, food, cosmetics, perfumes or pharmaceuticals, glass plays a vital role in supporting European trade and commerce. Glass is 100% recyclable, virtually inert and preserves the original taste of the products it contains.

About Friends of Glass

Friends of Glass is a European consumer community of more than 21,000 people who support and promote the consumers' right to choose food and drink products in glass packaging. A number of enticing tools are available on the multi-language website www.friendsofglass.com. They include Hank the Singing Bottle, the Bottle Bank Test and the Pass the Bottle Facebook game. The objective is to make consumers aware that glass is 100% recyclable infinitely, that it is locally recyclable in a 'bottle-to-bottle' system, and that glass recycling is sustainably sound.

Friends of Glass was initiated in 2009 in response to a pan-European survey commissioned by FEVE. The survey, conducted by the research institute InSites, found that 74% of European consumers prefer glass packaging for their food and drinks.

GLASS RECYCLING SAVES RESOURCES

FEVE
The European Container Glass Federation

Avenue Louise, 89/4 • B - 1050 Brussels
Tel: +32 (0)2 536 00 80 • Fax: +32 (0)2 539 37 52
secretariat@feve.org • http://www.feve.org
Follow us on Twitter: http://twitter.com/#!/FeveEU