




THE ALLIANCE FOR  
BEVERAGE CARTONS  
AND THE ENVIRONMENT

March 2021



# THE BEVERAGE CARTON ROADMAP TO 2030 AND BEYOND



**Transforming from an essential,  
recyclable, low carbon packaging,  
to the most sustainable packaging for  
resilient food supply systems which is  
renewable, climate positive and circular**

[www.beveragecarton.eu](http://www.beveragecarton.eu)



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## INTRODUCTION AND VISION

Our world is facing major challenges all requiring urgent action to ensure the well-being of our and future generations. We know that climate change is a serious threat to human existence.

Packaging is part of our daily life and our way of living has changed over the decades, but packaging has and continues to offer essential functionalities: protecting food and beverages, allowing their safe use and transport, and preventing food wastage.

Therefore, packaging can and should contribute to the EU Green Deal ambitions and in particular to climate neutrality, circularity, biodiversity and resilient food systems objectives, while not compromising on health and safety for consumers.

Beverage cartons are a recyclable low carbon packaging solution today and as such contribute to a variety of societal and environmental objectives, including those mentioned above.

**Building on these assets, ACE's (the Alliance for Beverage Cartons and the Environment) members have adopted an ambitious vision for the future: we will deliver the most sustainable packaging for resilient food supply systems which is renewable, climate positive and circular.**

Our industry has adopted **tangible and ambitious 2030 commitments** that will enable us to achieve this vision. However, we cannot achieve this alone. To reach our ambitions we also **need an enabling EU policy framework** to support our investments in innovation over the next decade.

We will **measure and report on our progress on a regular basis** and where metrics do not currently exist, we will contribute to developing the metrics to do so.



### OUR VISION

**We deliver the most sustainable packaging for resilient food supply systems which is renewable, climate positive and circular.**

2030

2020



## OUR STATUS TODAY

Beverage cartons have been protecting food and beverages for decades. Today, beverage cartons are a low carbon, recyclable<sup>1</sup> packaging solution with an essential role to secure access to safe and nutritious food, limiting contamination and preventing food waste. Thanks to their efficient and effective functionality, beverage cartons allow products with a long shelf life to be kept without having to add preservatives and with no deterioration of the content.

Beverage cartons are predominantly made from **renewable material** (75% on average). The **fibres used to produce beverage cartons all come from sustainably managed forests**, as certified by recognised international certification schemes such as FSC or PEFC<sup>2</sup>.

Different LCA (life cycle analysis) studies show that beverage cartons have the lowest carbon footprint of their category (milk and juice). Among many other outcomes, the meta study carried out by Circular Analytics<sup>3</sup> highlights that, on average, beverage cartons yield significantly better results than PET bottles and single-use glass bottles in terms of global warming potential (in gram CO2 equivalents). Different elements can explain this performance, including the renewable source of the main raw material used to produce beverage cartons, the significantly higher packaging efficiency (mass of primary packaging per liter) and transport efficiency of beverage cartons compared to single-use and reusable glass bottles.

According to the Circular Analytics study, beverage cartons have a similar carbon footprint compared to reusable glass bottles. Another study carried out for Reloop and Zero Waste Europe says that beverage cartons have a lower carbon footprint compared to reusable glass bottles<sup>4</sup> thanks to the lower emissions associated with production of an aseptic carton.

**Beverage cartons are recyclable and are recycled at scale.** In 2019, the recycling rate for beverage cartons in Europe (EU-28) reached **51%** and we expect this to continue to increase<sup>5</sup>. When combined with sustainable renewable sourcing, recycling reduces the overall footprint of products. Therefore, **beverage cartons offer circularity both in terms of sourcing and end-of-life.**

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<sup>1</sup> Eunomia report for the European Commission "Effectiveness of the essential requirements for packaging and packaging waste and proposals for reinforcement" that "beverage cartons are recycled at scale across the EU, however, so based upon this consideration they should be categorised as recyclable packaging".

<sup>2</sup> FSC: Forest Stewardship Council – PEFC: Programme for Endorsement of Forest Certification

<sup>3</sup> "Supporting evidence- environmental performance of beverage cartons" – Circular Analytics, December 2020

<sup>4</sup> [Reusable vs Single-Use Packaging: A Review of Environmental Impacts | Reloop Platform](#)

<sup>5</sup> Using the existing calculation method according to which recycling is accounted to the predominant material (in our case paper). (EC Decision 2005/270).

## Climate change (g CO<sub>2</sub>eq/liter content)

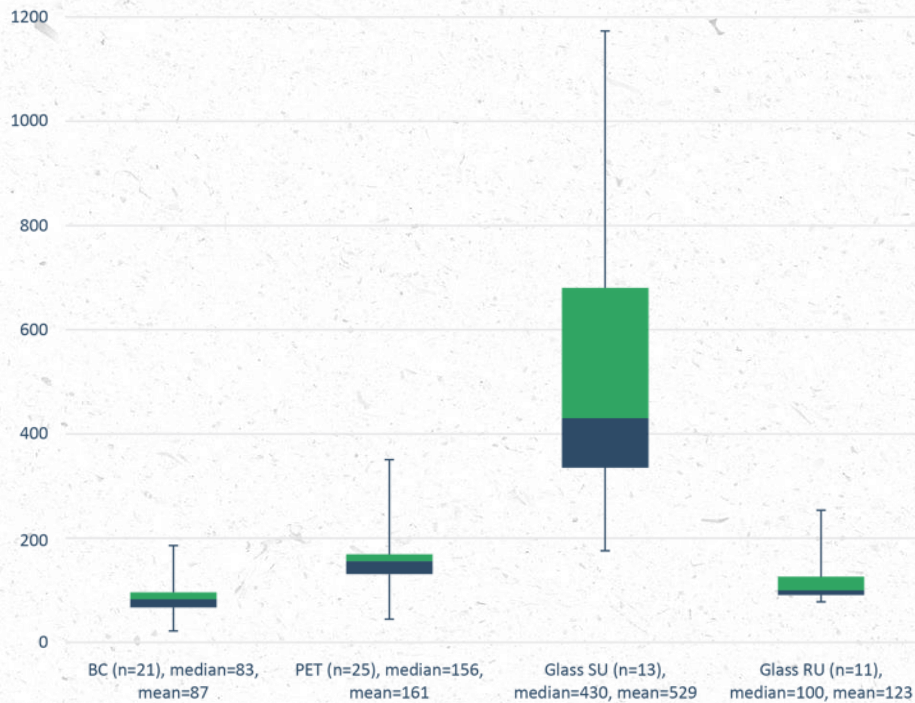


Figure 1: Box plot chart for LCA meta-analysis (BC: beverage carton, Glass SU/RU: glass single use/reusable) <sup>6</sup>

## Packaging efficiency

The great environmental performance of beverage cartons has several reasons. Beverage cartons are very efficient and requires only **LOW AMOUNTS OF PACKAGING MATERIAL**.<sup>7</sup>



<sup>6</sup> Compared to packaging with the same functionality (juice and milk). “Supporting evidence- environmental performance of beverage cartons” – Circular Analytics, December 2020

<sup>7</sup> Compared to packaging with the same functionality (juice and milk). “Supporting evidence- environmental performance of beverage cartons” – Circular Analytics, December 2020



## Less transport

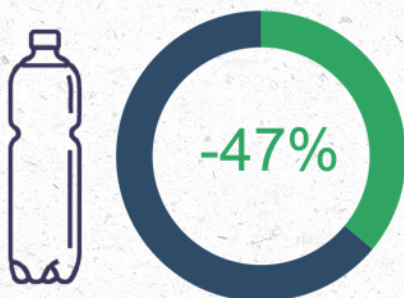
The great packaging efficiency of beverage cartons also takes trucks off the road, since **MORE CAN BE TRANSPORTED IN ONE GO.**<sup>8</sup>



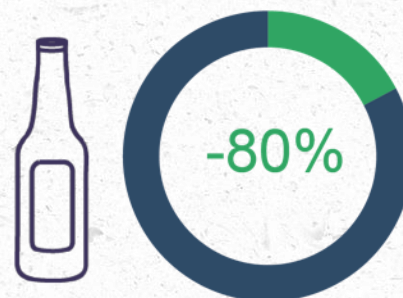
## Less carbon

The beverage carton has a **LOWER CARBON FOOTPRINT** in comparison to other single use packaging for the same functionality.

While they are similarly as good as reusable glass bottles, they save on average:



Compared to PET bottles



Compared to single-use glass bottles 9

<sup>8</sup> “Supporting evidence- environmental performance of beverage cartons” – Circular Analytics, December 2020

<sup>9</sup> Compared to packaging with the same functionality (juice and milk). “Supporting evidence- environmental performance of beverage cartons” – Circular Analytics, December 2020



## OUR VISION AND THE BEVERAGE CARTON ATTRIBUTES



**Our vision:** we will deliver the most sustainable packaging for resilient food supply systems which is renewable, climate positive and circular.

In line with the vision of ACE members, every beverage carton will be:

- Made only from renewable and / or recycled material
- Fully recyclable and recycled
- Made entirely from sustainably sourced raw materials
- The packaging solution with the lowest carbon footprint

## OUR COMMITMENTS BY 2030

In our journey to 2030, the beverage carton industry commits to:

 <b>PRODUCE</b> beverage cartons only from renewable materials	 <b>AND/OR PRODUCE</b> beverage cartons from recycled materials	 <b>USE</b> more fibre and less plastic	 <b>DECARBONISE</b> our value chain in line with 1.5°C target	 <b>DELIVER</b> the lowest carbon footprint packaging
 <b>DESIGN</b> for circularity	 <b>ACHIEVE</b> a 90% collection rate of beverage cartons for recycling	 <b>ACHIEVE</b> at least a 70% recycling rate verified by third parties	 <b>MEET</b> the highest sustainability sourcing standards for all materials	 <b>INCREASE</b> carbon sequestration, enhance biodiversity and increase forest growth

### Sourcing

As a significant user of paperboard, our industry has been leading on responsible sourcing of primary materials for decades. The **fibres used to produce beverage cartons all come from sustainably managed forests** as certified by internationally recognised certification schemes.

By progressively replacing fossil fuel-based plastics with bio-based/renewable ones, ACE members contribute to the EU ambition to become more independent from imported finite materials and to reduce greenhouse gas emissions by at least 55% by





2030. The **renewable materials we use in our cartons have lower greenhouse gas emissions** than the alternative fossil-fuel solutions<sup>10</sup>.

Today, beverage cartons contain much less plastic and have a much lower carbon footprint than alternative packaging solutions.



Even when made of a significant amount of recycled content, plastic bottles will have a higher share of plastic from fossil sources.

11, 12

7-9g plastic consumption



## Forestry

In 2007, Tetra Pak, Elopak and SIG Combibloc signed a voluntary global commitment to achieve 100% chain of custody certification for all paperboard purchased by 2015. In addition, the ACE members achieved 100% certification of their own manufacturing plants for packaging material by 2018. These commitments were achieved in less than ten years and are verified by an external third party.

## Sustainable Forest management

According to the Food and Agriculture Organization (FAO) of the United Nations, sustainable forest management is defined as "the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems".

Sustainable forest management, such as third party certified managed Nordic forests, guarantees that only the wood increment volume is harvested (meaning, the added volume), without impacting the base forest stock. Over the past decades, this method has allowed for forest restoration, with an increased set-aside area (ca. 25%) and improved natural forest structures, for example, containing more old trees. Concretely, this means the Nordic forest area remains constant and standing stock volume increases.

**Sustainably managed forests strengthen biodiversity through different measures** such as the preservation of areas of high conservation value or trees.

In the EU, the liquid packaging board (LPB) used in beverage cartons is sourced from sustainably managed Nordic forests. This means no more is harvested than what is being regenerated. In the last decade, the surface of Nordic forests increased by the surface of Belgium. After replanting, which happens about every twenty years, forest must be thinned out to increase quality of future harvest. This means a number of trees are removed to provide additional light and space for the remaining trees,

<sup>10</sup> "Supporting evidence- environmental performance of beverage cartons" – Circular Analytics, December 2020 <https://www.european-bioplastics.org/bioplastics/>

<sup>11</sup> When compared to packaging with the same functionality (juice and milk).

<sup>12</sup> "Supporting evidence- environmental performance of beverage cartons" – Circular Analytics, December 2020 "even if 90% of all PET bottles will eventually be collected, this would not automatically result in the production of 90% recycled materials. According to a report by Deloitte [43], the assumption of a 90% pre-treatment and a 78% recycling efficiency by 2030 is plausible, leading to a recycling output rate of 63% for a 90% collection rate. Depending on the mass of a PET bottle, this will result in a plastic consumption of 11 to 14 g per litre"





enabling them to grow at a faster rate. The thinner trees are harvested and used for pulp production e.g. to make LPB. At the regeneration harvest, thick trunks are produced as lumber and its by-products (wood chips and sawdust) are later used for pulp production, representing ca. 50% of the material used to produce LPB.

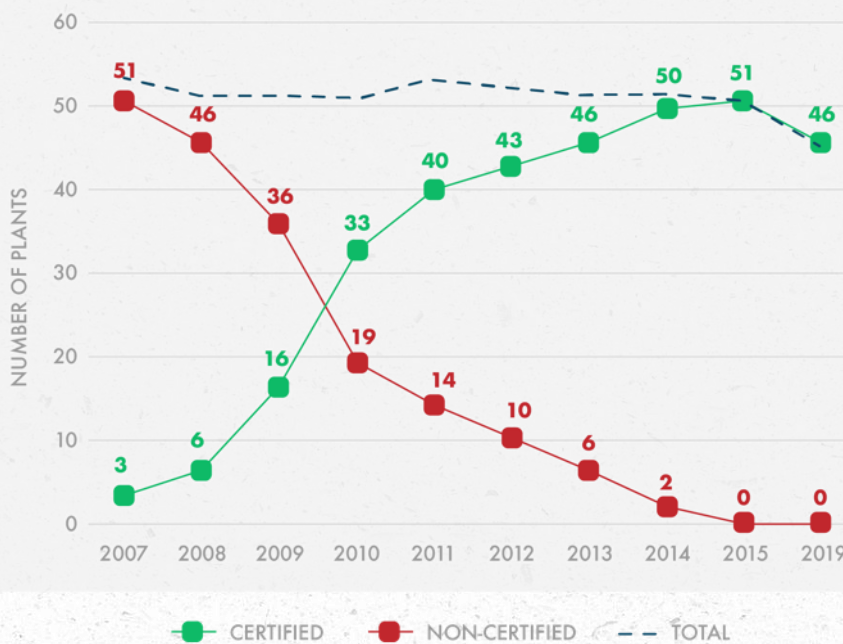
**Long-term sustainable forestry relies on:**

- Reforestation after harvest and wood sourcing from properties, countries, and regions without deforestation.
- Traceability and due diligence There is a strong link between illegal wood and poor/unacceptable forestry.
- Fulfilment of a strong and balanced Forestry Act and other legislation linked to forestry, both of which are often present in countries with high levels of governance.
- Careful planning before harvest and continuous monitoring of the forests by forest owners and the authorities.

Experts are currently developing the metrics to properly assess the impact of wood production on biodiversity. Proxies are being adopted and, through their board suppliers, the beverage carton industry is closely involved in these developments.<sup>13</sup>

Figure 1: FSC certification status of the ACE members' converting plants, 2007-2019

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<sup>13</sup> ACE converters self-commitment on third-party verified traceability systems for wood fibres - 10th annual report - (2019 figures) - 7 December 2020, ProForest

<sup>14</sup> ACE converters self-commitment on third-party verified traceability systems for wood fibres - 10th annual report - (2019 figures) - 7 December 2020, ProForest

## Climate

**Today, beverage cartons have the lowest carbon footprint of their category (milk and juice) as demonstrated by LCA studies.**

The meta study carried out by Circular Analytics<sup>15</sup> highlights that on average, beverage cartons yield significantly better results than PET bottles and single-use glass bottles in terms of global warming potential (given in gram CO<sub>2</sub> equivalents).



**The low carbon footprint of beverage cartons can be attributed to:**

- ▶ the use of renewable material coming from sustainably managed forests that store carbon
- ▶ the recyclability of beverage cartons (recycling decreases the overall carbon footprint)
- ▶ the efficient transport of products in beverage cartons
- ▶ the lightweight nature of beverage cartons
- ▶ the industry's investments to continuously reducing its carbon footprint
- ▶ the high share (>90%) of green energy produced on-site from wood residues in LPB (liquid packaging board)

The beverage carton industry is committed to playing its part in addressing this major climate challenge for future generations. To become **climate positive** means achieving **a state of net negative emissions by reducing and physically removing more greenhouse gas emissions** from the atmosphere **than the whole value chain emits**, regardless of business growth.

To achieve the reduction of greenhouse gas emissions within the value chain (scope 1-3) required to reach a 1.5°C science-based target (SBT), the **industry commits to carbon credit purchases only being made in addition** to such efforts to reach net negative emissions. Carbon credits should clearly be stated as a short to mid-term solution and should be reported separately. Meaningful, robust and lasting carbon removals should be realised to fulfil the climate positive ambition.

## Recycling

**Today, beverage cartons are recyclable<sup>16</sup> and are recycled at scale.** Recycling of beverage cartons in Europe (EU-28) has steadily increased over recent decades, with around 450,000 tonnes recycled in 2019<sup>17</sup>. This equates to one out of two cartons sold in Europe being recycled, with some countries, like Belgium or Germany, recording rates over 70%.

**Effective collection and sorting is the precondition to recycling.** Cartons are collected either with lightweight packaging or other paper-based packaging and are sorted before being sent to specialised paper mills. To enable this to happen, ACE members **call for an EU and national collection for recycling target** for beverage cartons. This will ensure that member states meet their legal obligation to collect all packaging separately, transparency around collected/recycled materials and accurate reporting of collection and/or recycling rates.

But this is not enough. **Our industry commits to significantly increasing the collection and recycling of beverage cartons to reach a 90% collection rate for recycling and at least a 70%**

<sup>15</sup> "Supporting evidence- environmental performance of beverage cartons" – Circular Analytics, December 2020

<sup>16</sup> Eunomia report for the European Commission "Effectiveness of the essential requirements for packaging and packaging waste and proposals for reinforcement" that "beverage cartons are recycled at scale across the EU, however, so based upon this consideration they should be categorised as recyclable packaging".

<sup>17</sup> Using the existing calculation method according to which recycling is accounted to the predominant material, in ACE's case, paper. (EC Decision 2005/270).



**recycling rate by 2030**, verified by third parties. We will work to ensure that the difference between the collection and recycling rates is progressively reduced and eliminated.

We are confident that **the recycling rate of beverage cartons will continue to increase** thanks to both the new separate collection of packaging for recycling requirement under EU waste legislation and efforts by the industry's pan-European recycling platform, [EXTR:ACT](#). However, this will only be achieved if proper infrastructure is in place.

**Recycling beverage cartons is not a complex process.** Firstly, the fibres are separated from the polymers and aluminium. Once recycled, the fibres are used to produce new paper products, while the remaining aluminium and polymers can be used across a variety of applications. Today, the highest share of recovered polymer and aluminium mix (PolyAl) is used for energy recovery. However, there are currently four innovation projects in place to transform the polymers and aluminium into granulates for use in new products (see EXTR:ACT's website) – and more projects are in the pipeline which will enable a progressive increase in PolyAl recycling over the coming years. In 2021, an expected one third of the PolyAL recovered from collected beverage cartons will be recycled.

The economic viability of beverage carton recycling is demonstrated via the current projects and the ongoing investments being made into fibre and PolyAl recycling.

To ensure all beverage cartons placed on the EU market are recyclable, ACE will develop stringent **Design for Recycling Guidelines** that will be issued in Spring 2021. ACE members will implement them as soon as adopted and will review the Guidelines every year to ensure that the design for recyclability best practices are always up-to-date.

## Innovation

ACE members are investing in innovative solutions to secure that the beverage cartons placed on the EU market remain the most sustainable packaging solution and all cartons are recycled. Underpinning this drive for innovation our industry's commitment is to never compromise on consumer health and food safety.

Read more about our members' innovation projects. See ACE's website for link.





## OUR DELIVERABLES AND ACTIONS

To achieve objectives set out in the Roadmap to 2030, ACE members commit to transparency through clear KPIs and reporting; accountability through strong company commitments; and, no greenwashing, instead, setting ambitious but realistic and achievable commitments.



Beverage carton converters report on existing globally recognised sustainability sourcing standards for all materials



Beverage carton converters report on renewable material and recycled content in cartons



ACE update of the industry's Design for Recycling Guidelines



Beverage carton recycling rates verified by an external third party



Beverage carton industry to identify sound metrics on plastic content in 2021



Beverage carton converters to report on value chain GHG emissions in line with 1.5°C science based target (SBT)



ACE to report on the beverage carton system climate balance



ACE to join forces with stakeholders/partners to develop the metrics to assess the impact on biodiversity, carbon sequestration and the forest growth



## OUR POLICY MAKER ASKS

The members of ACE are committed to delivering the most sustainable packaging for resilient food supply systems which is renewable, climate positive and circular.

Members have adopted ambitious commitments by 2030 and will work hard to deliver on the measurable KPIs. However, the necessary regulatory framework is critical to achieving these objectives.

### The beverage carton industry calls on EU policy makers to:

- ▶ Incentivise low carbon packaging solutions such as cartons.
- ▶ Set mandatory recycled content requirements only where market driven recycling is not well established.
- ▶ Promote the use of renewable materials in existing and upcoming EU policies such as circular economy or climate policies.
- ▶ Adopt mandatory due-diligence requirements for all materials, not only forest-based ones.
- ▶ Enhance the transparency and traceability of global value chains.
- ▶ Recognise the contribution of low carbon materials to climate neutrality.
- ▶ Adopt a mandatory beverage carton collection target.
- ▶ Ensure harmonised implementation of mandatory separate collection of all packaging.
- ▶ Set requirements for packaging to be low carbon and recyclable or reusable by 2030.