LCA of Tetra Pak: In a nutshell

12 February 2021

This is a synopsis of a wider LCA study - for full report go to https://tinyurl.com/LCA-TetraPak

thinkstep-anz carried out a Life Cycle Assessment (LCA) which compared the environmental performance of Tetra Pak packaging systems to a range of competitive packaging options. The results of this assessment provide Tetra Pak with a factual basis with which it can make statements to clients about the environmental performance of its packaging when compared to other systems.

We compared eight different packaging materials to cartons

We assessed the most commonly used beverage and food packaging systems that were available in Australia and New Zealand at the end of 2019. These primary packaging materials include:

The study considered a range of:

packaging size classes
(from 200 mL to 2 L)

product categories
(long-life milk, fresh milk, juice, water, and food)

filling types
(fresh and aseptic)

Cartons (Tetra Pak*) | **PET bottles** | **Recycled PET bottles (rPET)** | **HDPE bottles** | **Pouches** | **Aluminium cans** | **Tinplate steel cans** | **Glass bottles** | **Glass jars**

* We studied Tetra Pak and other cartons designed for beverages and food.

Cartons performed best across almost all factors we considered

Cartons were found to have the lowest (or lowest-equal) carbon footprint out of all packaging formats we assessed. We identified this result across all size classes and product categories.

In some cases, we found similar carbon footprints for pouches, lightweight PET, and 100% recycled PET (rPET). However, all three alternatives require more plastic for every litre of product than cartons. Cartons are also more efficient at containing products using less packaging than all other packaging systems we considered, except pouches.

Australasian beverage and food producers who wish to minimise their carbon footprint should strongly consider cartons as a preferred packaging choice.

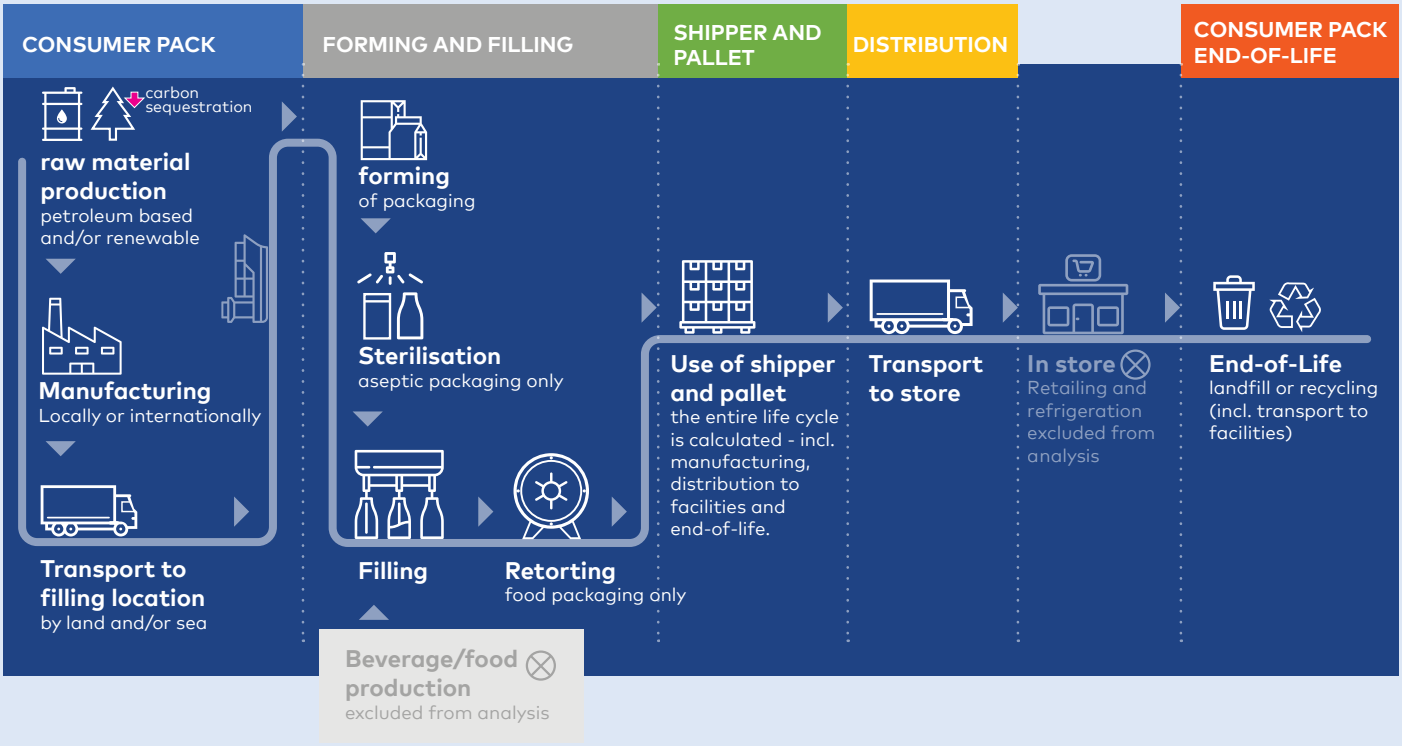
The scope of the study included the entire packaging life cycle

We investigated the entire life cycle of each packaging option, as well as the packaging required for the products to reach consumers. This included*:

- consumer packaging
- a one-way shipper carton or reusable crate
- a pallet.

* We excluded the impacts from the production and refrigeration of beverage and food products.

The impact of coatings and printing inks were also excluded because these materials are used in very small quantities.



We assessed packaging using carbon footprinting and two other criteria

The environmental performance of each packaging system was determined by its carbon footprint, measured by Global Warming Potential, or GWP over 100 years.

In addition, we assessed packaging systems against two criteria:

1. The mass of product that can be contained by a certain amount of packaging (product-to-packaging ratio)
2. How much plastic packaging is required to contain a fixed volume of product (plastic-per-litre ratio)

This study complies with international standards ISO 14044:2006 for LCA and ISO 14067:2018 for product carbon footprinting. As a comparative study, it has undergone a critical review by a panel of three independent experts.

Tetra Pak® PROTECTS WHAT'S GOOD™ thinkstep anz

Cartons have the lowest carbon footprint of all packaging systems we considered

Out of all packaging systems included within this study, we found cartons have the lowest (or lowest-equal) carbon footprint. This is the case across all sizes classes and product categories we considered.

This is due to a combination of the following factors:

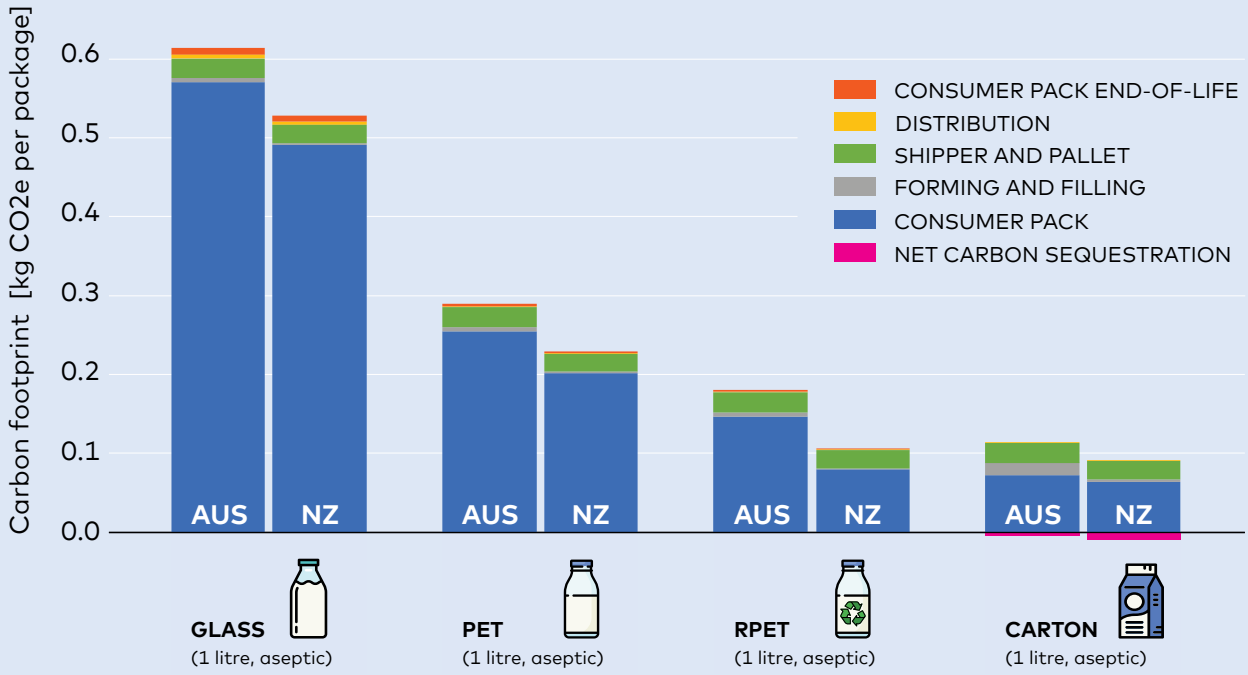
- their light weight
- the relatively low impact of paperboard per kilogram
- the carbon sequestered in paperboard during tree growth may only be partly re-released at end-of-life for products in landfill. The pink bar shows this effect in the diagram below.

About the diagram

Averages of carbon footprint results are shown for products in Australia and New Zealand within the aseptic, 1 litre size class. Product categories include long-life milk, juice, and water.

The vertical axis shows the carbon footprint (Global Warming Potential) over 100 years.

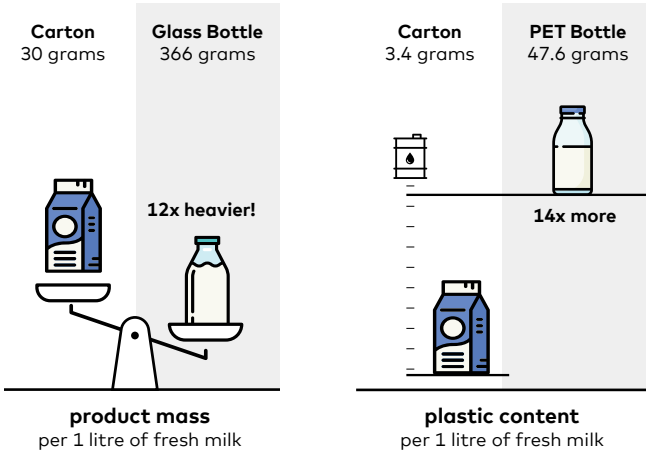
Different stages of the entire life cycle are represented and described in the legend (see previous diagram).



Cartons require less packaging per product than most alternatives

Our study shows that cartons require less packaging to contain the same amount of product than all other packaging systems we considered, except for pouches.

Cartons also have a low plastic-per-litre ratio. However, the amount of plastic required for every litre of product varies greatly between cartons depending on whether the carton is fresh or aseptic, and if it has a lid, cap, or straw.



Tetra Pak® PROTECTS WHAT'S GOOD™ thinkstep anz

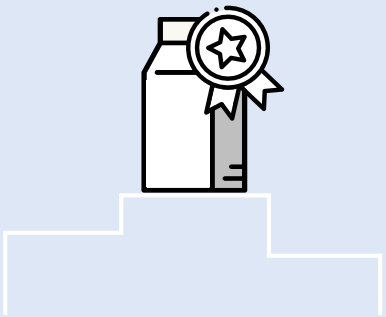
Our assessment of other environmental indicators shows cartons perform well

We also assessed a wide range of other environmental indicators to make sure that we were taking all environmental impacts into account. Cartons were a top performer, though not always the best. There were some cases where other packaging systems, such as pouches, performed better.

We tested our approach to confirm our conclusions

We are able to confirm that our conclusions are accurate from an analysis of possible variations in the data and our main assumptions. We considered many scenarios, including differences in how cartons are processed at end-of-life and variations in the mass of plastic bottles.

Regardless of these variations, our analyses show that cartons have a low carbon footprint compared to all other packaging systems we assessed.



About Tetra Pak

Tetra Pak is a world leading food processing and packaging solutions company. Working closely with customers and suppliers, Tetra Pak provides safe, innovative and environmentally sound products that each day meet the needs of hundreds of millions of people in more than 160 countries.

Tetra Pak
Level 2/5 Burwood Rd
Hawthorn VIC 3122
Australia

+61 3 8561 3800

Tetra Pak
6-8 Melody Ln
Ruakura, Hamilton 3216
New Zealand

+64 7 859 1442

www.tetrapak.com/en-au

This study was conducted on behalf of Tetra Pak Oceania

About thinkstep-anz

At thinkstep-anz, we are passionate about enabling organisations to succeed sustainably. We underpin sustainability initiatives with facts and figures to contribute quantifiable business value. Our clients value our ambition to tailor solutions to their specific needs, no matter how large or small.

thinkstep ltd
11 Rawhiti Road
Pukerua Bay 5026
New Zealand

+64 4 889 2520

thinkstep pty ltd
25 Jubilee Street
South Perth WA 6151
Australia

+61 2 8007 3330

meet@thinkstep-anz.com
www.thinkstep-anz.com

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Certified B Corporation

Wellington | Auckland | Hamilton | Christchurch | Sydney | Perth | Canberra

Tetra Pak® PROTECTS WHAT'S GOOD™

thinkstep anz