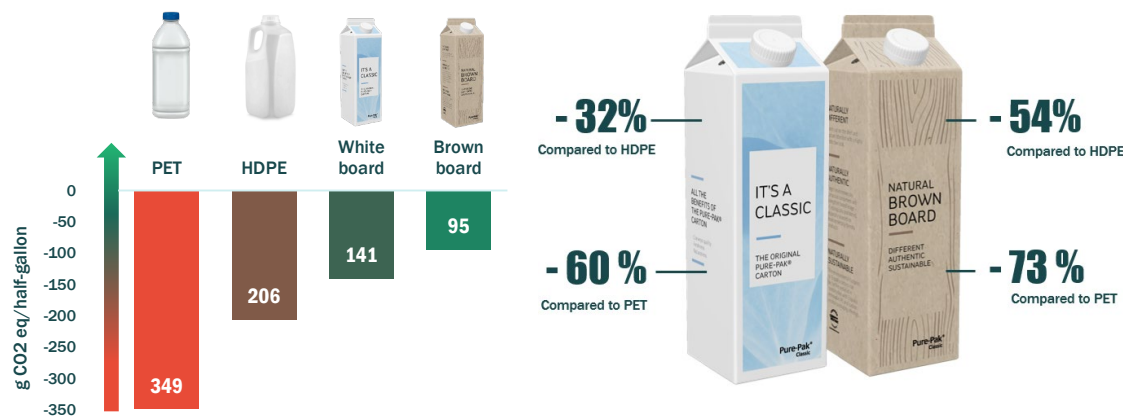


**Summary of the comparative life cycle assessment of Elopak beverage cartons and alternative packaging solutions for fresh milk and fresh juice in North America (Canada and USA) – May 2021**

A Life Cycle Assessment (LCA) is a tool to quantify the environmental impacts associated with a product, throughout its life cycle. The system boundary for each product system in this LCA was “cradle-to-grave”, which comprises: the extraction/cultivation and processing of raw materials, manufacturing, forming and filling processes, end-of-life, and all transportation and waste stages.

An independent panel of experts carried out a critical review of the study to ensure compliance with the ISO standards for LCA (ISO 14040 and 14044).

In this LCA, it was assumed that plastic bottles contained post-consumer recycled content, 15% for HDPE bottles and 7,5% for PET bottles which was seen as a conservative assumption in respect of cartons (i.e. favoring competitor bottles to Elopak).



A key focus for this study was the Global Warming impact category, measured in carbon dioxide equivalent.

Over its full life cycle, the average Pure-Pak® carton presents a lower carbon footprint than a typical HDPE bottle or PET bottle used in the same way, in the North American market.

**Overview of all impact categories assessed in the LCA, indicating where cartons perform better than plastic bottles**

Key Criteria	White carton	Natural brown carton	Key Comments
1 Global Warming	✓	✓✓	Significant CO <sub>2</sub> e reduction versus PET and HDPE
2 Fine Particulate Matter Formation	✓	✓✓	Significant reduction versus PET and HDPE
3 Fossil Resource Scarcity	✓	✓✓	Significant reduction versus PET and HDPE
4 Fresh Water Eutrophication	✓	✓✓	Significant reduction versus PET and HDPE
5 Marine Eutrophication	✓	✓✓	Significant reduction versus PET and HDPE
6 Mineral Resource Scarcity	✓	✓✓	Significant reduction versus PET and HDPE
7 Terrestrial Acidification	✓	✓✓	Significant reduction versus PET and HDPE;
8 Stratospheric Ozone Depletion	✓	✓✓	Impact mostly from the paperboard production and the coating material production. Nylon production is one of the main contributors.
9 Ozone Formation Human Health	✗	✓✓	Impact mostly from fossil fuels-derived energy and direct emissions at paper mills during paperboard production in North America (white carton)
10 Ozone Formation Terrestrial Ecosystems	✗	✓✓	Impact mostly from fossil fuels-derived energy and direct emissions at papermills during paperboard production in North America (white carton)
11 Land Use	✗	✓✓	Forest-based products require some use of land, however, Elopak source only from responsibly managed forests, secured through third party verified certified or controlled sources.
12 Ionizing Radiation	✓	✗	Nuclear power in the grid electricity mix in Sweden (40% nuclear) where the brown paperboard is produced
13 Water Consumption	✗	✗	Cooling water for nuclear power plants in Sweden (brown paperboard) and paperboard production in North America (white carton)

**Contact your Elopak sales representative if you wish to have a presentation of the complete results**

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Detailed information on the methodology, data sources, assumptions, references and results is available upon request.