Comparative assertion on climate change impacts of packaging solutions for plastic replacement

Technical background report

Metsä Board Corporation

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Case 1: Berry tray

Virgin / Recycled PET

- Square-shaped plastic tray
- Weight of packaging 13.3 g
- Volume of packaging 990 cm3

MetsäBoard Prime FBB EB

- Four corner clued paperboard tray with dispersion barrier coating
- Weight of packaging 15.91g
- Volume of packaging 990 cm3

The specified berry tray end-use application of does not include a lid. Berries are packed inside a tray and will optionally be put inside of a plastic bag. If plastic bag is applied, it is assumed to be the same for both the plastic and paperboard tray alternative.

Case 2: Takeaway tray

Polypropylene tray (semi-transparent)

- Standard square-shaped plastic tray used for takeaway
- Weight of packaging 27 g
- Weight of packaging is in this case 53% higher than for paperboard tray. This is due to the required thickness of the plastic tray, which is around 1 mm. Reducing thickness below 1mm will decrease the stackability and cause cracking
- Impact of packaging weight to climate impact is assessed using a scenario of -50% lower packaging weight as scenario analysis

MetsäBoard Pro FSB Cup tray with PE coating

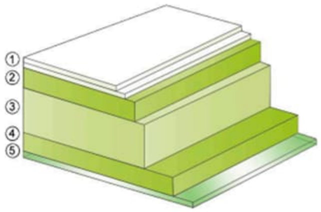
- Standard round-shaped paperboard tray used for takeaway (incl. soups)
- Weight of packaging 18.9 g (18.2g board and 0.65g PE)
- Design of the trays, trims on bottom and top gives same rigidity feeling

Lid has been excluded from this study. This is because in both cases lids are heat sealed PE film and same weight (2.1 g , 7-11% of total packaging weight). Additional climate impact from the lid would then be the same for both packages.

Product structures of Metsä Board paperboards used in the study

MetsäBoard Prime FBB EB

Structure



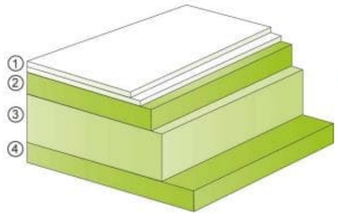
1) Double blade coating
2) Bleached chemical pulp**
3) Bleached chemi-thermo-mechanical pulp (BCTMP)**
4) Bleached chemical pulp**
5) Dispersion barrier coating

MetsäBoard Prime FBB EB is a dispersion coated barrier paperboard with a medium barrier against grease and moisture. It is lightweight and can be recycled in paper or paperboard waste streams according to local recycling schemes. MetsäBoard Prime FBB EB is the brightest OBA-free board on the market, with excellent printability.

End uses: Fresh food, Packages for selected food service, Dry food

MetsäBoard Pro FSB Cup

Structure



1) Double blade coating
2) Bleached chemical pulp
3) Bleached chemi-thermo-mechanical pulp (BCTMP) + chemical pulp
4) Bleached chemical pulp

Metsä Board Pro FSB Cup is a coated food service board which is suitable for offset, flexo and gravure printing.

MetsäBoard Pro FSB Cup has excellent printability thanks to its clay coating, ensuring that colours and designs are reproduced accurately. MetsäBoard Pro FSB Cup gives reliable performance on the press and offers good formability into cups, trays or bowls. MetsäBoard Pro FSB Cup can be used as it comes or with a PE-extrusion coating for additional barrier properties. It is hard-sized to prevent edge penetration by moisture.

End uses: Cold drink cups, Hot drink cups, Ice cream cups, Containers, Bowls, Trays

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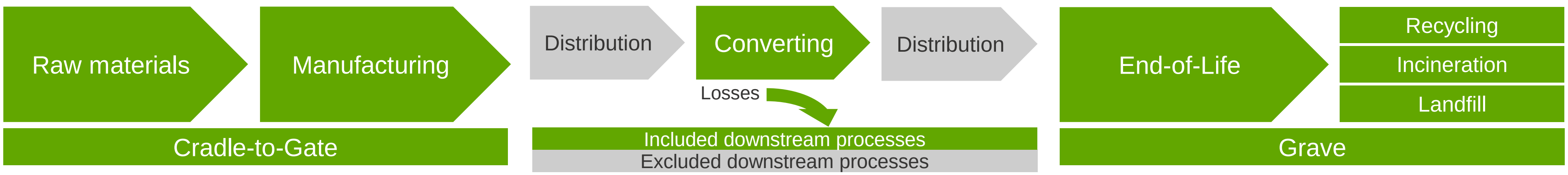
Goal and scope

Objective	Comparative assertion on climate change impacts of packaging solutions for replacing plastic with dispersion barrier and PE coated paperboard.
Target audience	All Metsä Board stakeholders (core audience: Metsä Board's customers)
Product system / functional unit	1 package with comparative stiffness properties, usability and required moisture resistance
System boundary	Cradle-to-Gate + End-of-Life
Allocation	No allocation was required in the foreground systems. Economic allocation is applied for pulp mill by-products and mass allocation for pulp and paperboard grades. Background data for plastics and downstream converting processes sourced from ecoinvent 3.10 cut-off database. Converting losses are assumed to be recycled and no burdens associated with them according to cut-off model.
Assumptions and limitations	Packaging solutions made of Metsä Board's paperboards are compared to datasets which aim to represent corresponding plastic products. The climate impact of Metsä Board's paperboards is derived from LCA's following EPD International PCR 2010:14 Processed paper and paperboard (3.1). Comparisons are not made between individual suppliers of different plastic material producers and thus the results would differ depending on the supplier. Comparative assertions includes only climate change and excludes all other environmental impact categories. The reasoning for this is that climate change has the single highest weight among all defined impact categories in EU PEF single score. End-of-life scenarios applied represent average material recycling rate, recycling rates of food service packaging might differ from the average due to food contamination. This contamination is expected to be same for both cases and especially assessed to be insignificant in berry tray application.
Geographical coverage	Paperboards are manufactured either in Finland or Sweden, converted in Europe. Plastics are manufactured, extruded and thermoformed in Europe. Trays made of either paperboard or plastic are consumed and waste is managed in Europe, North America or China.
Assessed end-of-life scenarios	100% incineration of material, European recycling scenario based on Eurostat 2021, North American recycling scenario based on EPA 2018 and Chinese recycling scenario based on Statista 2020. In case of recycling carbon emissions from likely incineration after later product life cycles is not reported in this life cycle (cut off). This method has been used consistently for both board and plastic and this is why the study also includes 100% incineration scenario.
Impact Assessment	Impact assessment is based on IPCC GWP 100, including biogenic CO2 and land use change

Applied system boundary



Cradle-to-gate includes all processeses in product value chain from the nature or recycling facility until the the exit gate of either paperboard mill or plastic granulate mill

Specific cradle-to-gate system boundary applied to paperboard is show in the page 4. Corresponding system boundaries for plastics presented in ecoinvent 3.10 database.

See LCI at page 12 of this document.

This module includes the downstream processes of extrusion coating, paperboard converting and plastic film thermoforming.

Losses happening in these processes have been accounted for as increased requirement of raw material based ecoinvent 3.10 documentation. Losses happening in carton converting processes are derived from Pro Carton 2023 ”The Carbon Footprint of Carton Packaging” study.

Impacts from distribution are excluded.

See LCI at page 13 of this document.

This module includes processes of material recycling, incineration and landfilling. The share of different end-of-life options are based on jurisdictional waste management statistics but also 100% incineration has been modelled.

For landfill two different datasets have been used for sensitivity analysis, one being sanitary landfill and other open dump.

See LCI at page 14 of this document.

Standards, tools and methodologies used

Metsä Board assess the life cycle impacts of own paperboards following EPD International PCR 2010:14 Processed paper and paperboard (3.1) which are in conformity with ISO 14040(2006) and ISO 14044 (2006). Based on the available modelling also ISO 14067 methodology is being considered.

For comparative assertions we have utilized datasets from ecoinvent 3.10 database as well as industry studies for paperboard converting (Pro Carton).

System boundaries used in comparison are cradle-to-grave. Jurisdictional waste statistics are used when assessing end-of-life impacts. Any credits from recycling or from incineration of paperboard to energy replace grid electricity are not accounted for as cut-off methodology is applied. The reasoning behind the exclusion of credits is to set focus on the climate impacts that are happening within products own value chains.

Life cycle impact assessment methodology

IPCC AR6 Global Warming Potential (GWP)

- The environmental impact indicator of global warming potential is calculated in carbon dioxide equivalents (CO2-Eq.). The indicator is calculated for a 100-year time horizon and represents the sum of the different contributions of the chemical's global warming potentials within one product life cycle.
- The total GWP consists of fossil GHG emissions, biogenic GHG removal and emissions as well as land use and land use change (LULUC) related GHG emissions
- To make comparative assertions between fossil and bio-based materials all carbon flows from and to atmosphere need to be considered. This means that accounting for carbon sequestration to a wood fibre is necessary. There is no carbon sequestration happening from atmosphere to a fossil-based material which means that biogenic CO2 removal is not happening.
- The fate of any carbon in the product (whether fossil or biogenic) is determined by the end-of-life. In this study there are scenarios for 100% incineration as well as for different recycling, incineration and landfill rates based on available jurisdictional waste statistics, namely Europe, North America and China. In case of recycling values do not represent any impacts happening after products life cycle. Both of these materials will eventually be either incinerated or landfilled. This study does not seek to consider the absolute environmental impacts of each packaging system but to make an even comparison between the two.

Functional unit (paperboard quality parameters)

- The most important function of a packaging is to preserve the product inside it from damage or from contamination of any kind
- Functional unit selected for the study was 1 unit of packaging solution with comparative stiffness properties, usability and required moisture resistance
  – Technical properties of the compared packaging were tested in Metsä Board R&D laboratory and paperboards were chosen based on those studies. Both plastic and paperboard packaging had the same kind of rigidity feeling
  – Sensitivity analysis have been applied to take away food packaging to demonstrate the impact of plastic weight on climate change impact and relative performance against the studied paperboard packaging
  – Other aspects beside technical that impact material selection are brand image, availability and price of the material as well as brand owners' sustainability targets

Preservation of products in various packaging solutions

- Preservation of food in various packaging solutions depends on the type of food (moisture content, grease, structure etc.)
- The Framework Regulation (EC) No 1935/2004 on materials and articles intended to come into contact with food requires materials to be manufactured in compliance with good manufacturing practice to ensure they do not transfer their constuents to food in quantities which could:
  - endanger human health,
  - bring about an unacceptable change in the composition of the food, or
  - bring about a deterioration in the organoleptic characteristics of the food
- A study carried out by the Finnish Natural Research Institute (LUKE) examined the preservation of cherry tomatoes in selected packaging solutions (plastic, paperboard with PE coating and dispersion barrier paperboard)
  - The study found that there was hardly any difference between the boxes to the breaking point of the cherry tomatoes and their sugar content
  - By using sensory evaluation to cherry tomatoes in different boxes, it was found that cherry tomatoes preserved the best in PE coated paperboard and dispersion barrier paperboard boxes. PE coated paperboard, which performed the best kept tomatoes edible 25 days from the start of storage
  - https://www.metsagroup.com/metsaboard/news-and-publications/news/2019/paperboard-adds-value-to-cherry-tomato-packaging-in-a-recent-study/
  - https://www.procarton.com/paperboard-adds-value-to-cherry-tomato-packaging-in-a-recent-study/
- The suitability of a packaging to a specific food application **is always tested and ensured case specifically**

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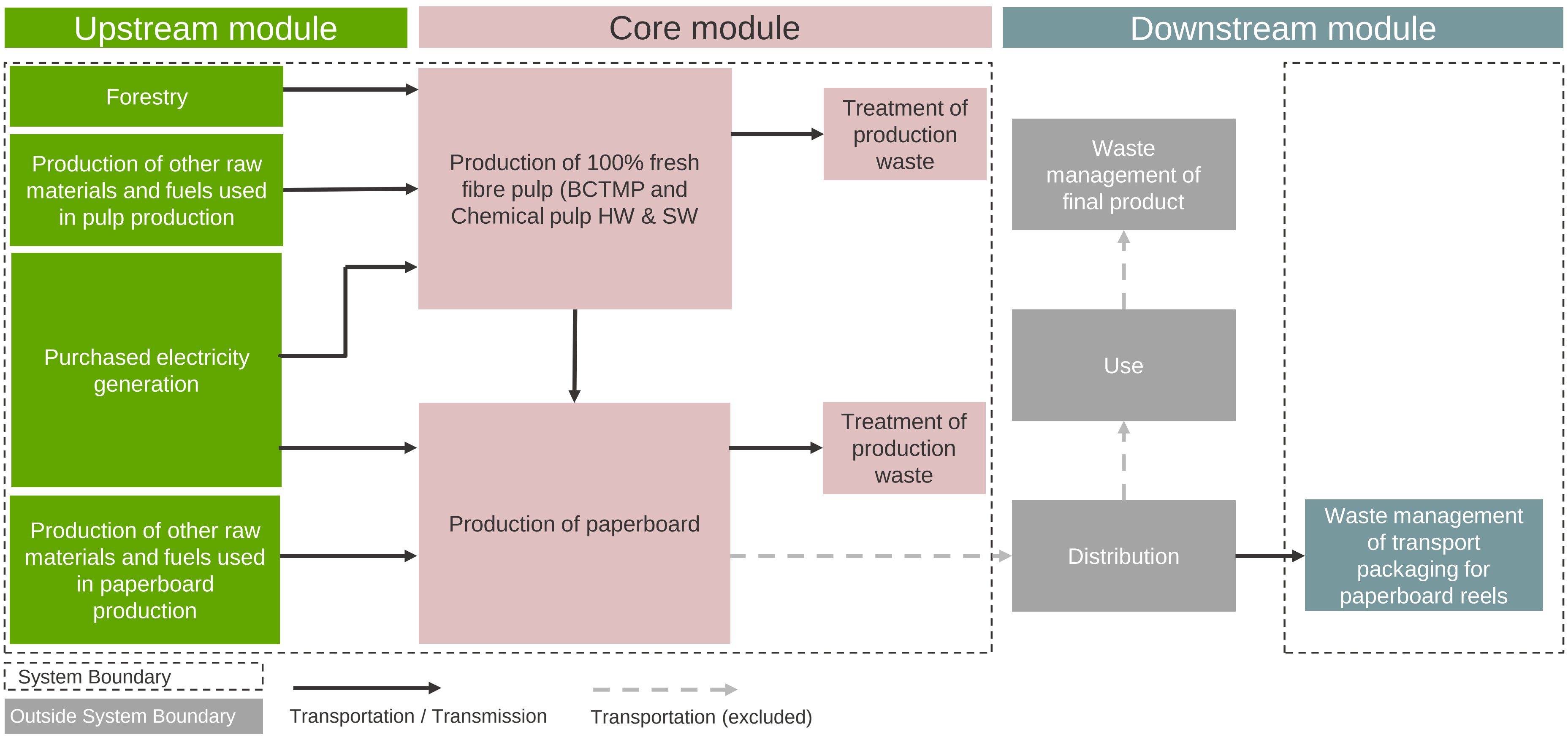
Detailed system boundaries applied for Metsä Board



Description of Life Cycle Inventory (LCI): Raw materials

	Metsä Board's paperboards	Low density polyethylene (LDPE)	Polyethylene terephthalate (PET)	Polyethylene terephthalate, recycled (rPET)	Polypropylene (PP)
LCI data	Following EPD International PCR 2010:14 Processed paper and paperboard (3.1) MetsäBoard Prime FBB EB MetsäBoard Pro FSB Cup	polyethylene production, low density, granulate 3.10	polyethylene terephthalate production, granulate, amorphous ecoinvent 3.10	polyethylene terephthalate production, granulate, amorphous, recycled ecoinvent 3.10	polypropylene production, granulate ecoinvent 3.10
System boundary	Cradle-to-gate	Cradle-to-gate	Cradle-to-gate	Cradle-to-gate	Cradle-to-gate
Data sources	Primary data: pulp and paperboard processes Secondary data: forestry and raw material production (ecoinvent 3.10 and Sphera) Third-party verified mother EPD: S-P-09340	Primary data: PlasticEurope member companies Secondary data: ecoinvent	Primary data: Eco-profiles of the European plastics industry Secondary data: ecoinvent	Based on PET recycling in the USA	Primary data: PlasticEurope member companies Secondary data: ecoinvent
Time representative ness	2023 (annual average)	2011-2023	1999-2023	2010-2023	2011-2023
Geographical representative ness	Finland and Sweden	EU27 including Norway and Switzerland	Europe (RER)	Europe without Switzerland	EU27 including Norway and Switzerland
Technological representative ness	MetsäBoard Prime FBB EB is a dispersion coated barrier paperboard with a medium barrier against grease and moisture. Metsä Board Pro FSB Cup is a coated food service board which is suitable for offset, flexo and gravure printing.	Coverage of production capacity in Europe: 72% Dataset represents commercial LDPE production technologies.	PET production out of PTA and ethylene glycol 100% virgin material.	recycled polyethylene terephthalate (PET) granulates of amorphous.	Coverage of production capacity in Europe: 76%
System model	Cut-off	Cut-off	Cut-off	Cut-off	Cut-off

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Description of Life Cycle Inventory (LCI): Converting

	Paperboard LDPE extrusion	Paperboard converting	Plastic thermoforming
LCI data	RER: extrusion, plastic film ecoinvent 3.10	Approximated based on Pro Carton study 2023	extrusion of plastic sheets and thermoforming, inline ecoinvent 3.10
System boundary	Gate-to-gate	Gate-to-gate	Gate-to-gate
Data sources	Primary data: European and Swiss converting companies Secondary data: ecoinvent	Primary data: ECMA member companies Secondary data: ecoinvent	Primary data: French converting companies (covering approximately 10% of total French thermoformed packaging) Secondary data: ecoinvent
Time representativeness	1993-2023	2022	2012-2023
Geographical representativeness	Europe (RER)	Europe (RER)	Europe (RER). Modified from original France (FR) dataset with European grid mix electricity
Technological representativeness	Extruded plastic film	Converting of paperboard into packages and trays. Including the production of inks, varnish, glues etc.	Modern technologies for plastic extrusion and thermoforming
System model	Cut-off	Cut-off	Cut-off

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Description of Life Cycle Inventory (LCI): End-of-life

<table>
<tr><th></th><th>Recycling</th><th>Incineration</th><th>Landfill of board (Europe & North America)</th><th>Landfill of board (Open dump)</th><th>Landfill of plastics (Europe & North America)</th><th>Landfill of plastics (unsanitary landfill)</th></tr>
<tr><td>LCI data</td><td rowspan="6">No climate change burdens allocated to share of material (board or plastic) that is recycled.

Transportation of waste for recycling is not accounted for (assumed to be insignificant).

No credits from replacing virgin material accounted for.</td><td rowspan="6">Climate change burdens allocated to each material based on their respective carbon content.

Fibre & starch:
1.833 kgCO2/kg

Calcium carbonate:
0.44 kgCO2/kg

Plastics:
3.153 kgCO2/kg

Transportation of waste for incineration is not accounted for (assumed to be insignificant).

No credits from replacing grid electricity accounted for.</td><td>treatment of waste paperboard, sanitary landfill, ecoinvent 3.10

Data excludes waste transportation to landfill.</td><td>treatment of waste paperboard, open dump, wet infiltration class (500mm) ecoinvent 3.10

Data excludes waste transportation to landfill.</td><td>treatment of waste plastic, mixture, sanitary landfill ecoinvent 3.10

Data excludes waste transportation to landfill.</td><td>treatment of waste plastic, mixture, unsanitary landfill, wet infiltration class (500mm) ecoinvent 3.10

Data excludes waste transportation to landfill.</td></tr>
<tr><td>System boundary</td><td>Gate-to-gate</td><td>Gate-to-gate</td><td>Gate-to-gate</td><td>Gate-to-gate</td></tr>
<tr><td>Data sources</td><td>UN data, 2020. World Bank 2022, MeteoSwiss 2022.</td><td>Doka, G., 2018, Inventory parameters for regionalised waste disposal mixes</td><td>UN data, 2020. World Bank 2022, MeteoSwiss 2022.</td><td>Doka, G., 2018, Inventory parameters for regionalised waste disposal mixes</td></tr>
<tr><td>Time representativeness</td><td>1994-2023</td><td>2006-2023</td><td>1994-2023</td><td>2006-2023</td></tr>
<tr><td>Geographical representativeness</td><td>Switzerland (CH)</td><td>Global</td><td>Switzerland (CH)</td><td>Global</td></tr>
<tr><td>Technological representativeness</td><td>Sanitary (controlled) landfill for municipal solid waste</td><td>An open, uncontrolled waste dump for municipal solid waste.</td><td>Sanitary (controlled) landfill for municipal solid waste</td><td>An open, uncontrolled waste dump for municipal solid waste.</td></tr>
<tr><td>System model</td><td>Cut-off</td><td>Cut-off</td><td>Cut-off</td><td>Cut-off</td><td>Cut-off</td><td>Cut-off</td></tr>
</table>

Climate change impact of Metsä Board's paperboards following PCR 2010:14 Processed paper and paperboard (3.1)

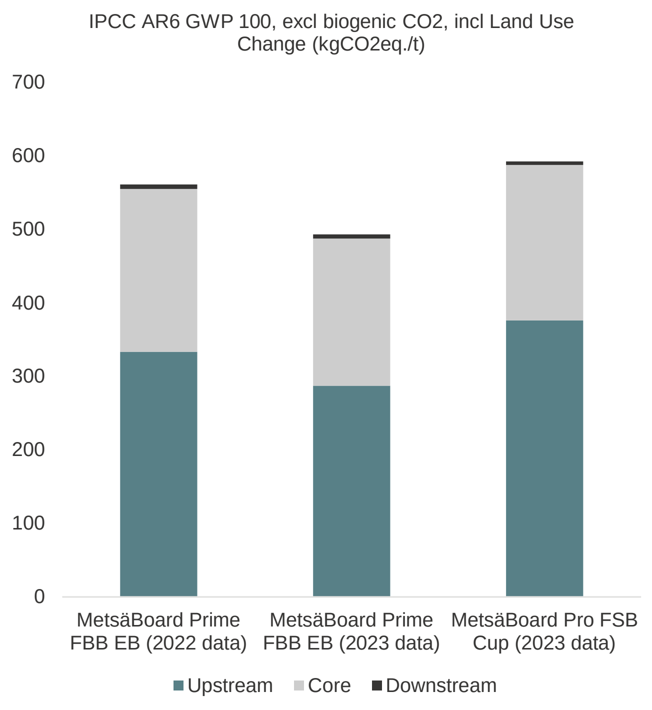
Climate impact comparison includes Metsä Board grades MetsäBoard Prime FBB EB (2023) and MetsäBoard Pro FSB Cup (2023). The climate change impact of MetsäBoard Prime FBB EB (2022) is here for reference as it is derived from third-party verified mother EPD (S-P-09340).

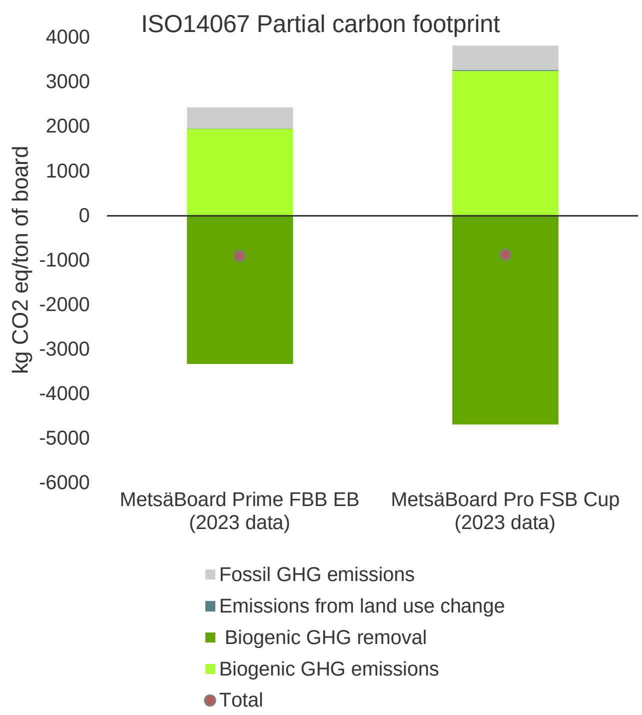
MetsäBoard Prime FBB EB

Main difference between the climate impact of MetsäBoard Prime FBB EB 2022 and 2023 is the change in electricity grid fuel mix (upstream). In 2023 purchased electricity for all Metsä Board mills was 100% fossil-free.

MetsäBoard Pro FSB Cup

Main difference between MetsäBoard Prime FBB EB and MetsäBoard Pro FSB Cup are the fuels used in mill site power plants and the amount of latex used. Also MetsäBoard Pro FSB Cup has higher share of chemical pulp than the other two grades. In this case increased chemical pulp share has contributed to higher climate impact.





Carbon footprint assessments

Case 1: Berry tray 300g

		Generic solution	New Metsä Board solution	
Materials and technical parameters	**Materials and basis weight**	Virgin / Recycled PET tray (lid excluded)	MetsäBoard Prime FBB EB tray	285 g/m2
	Description	Square-shaped plastic tray	Four corner clued paperboard tray	
	Tray volume	990 cm3	990 cm3	
	Product volume	660 cm3	660 cm3	
	Weight of packaging	13.3g	15.91g	

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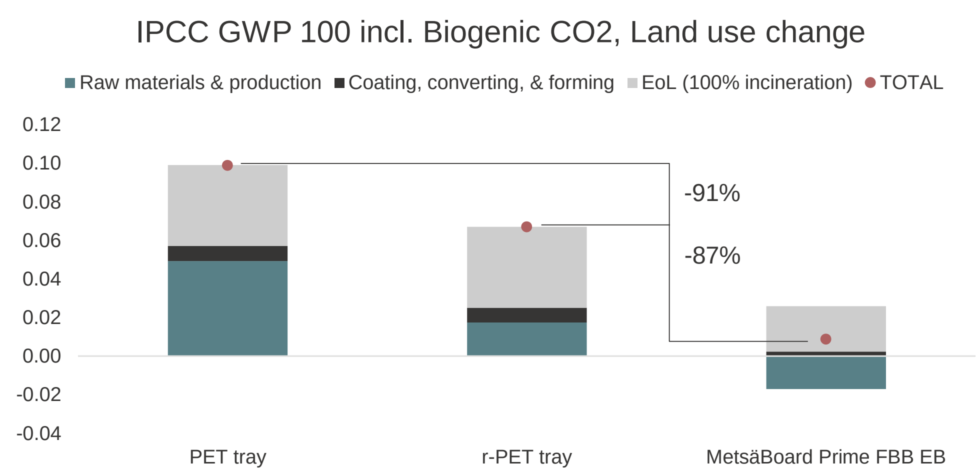
Incineration scenario: 100% incineration

Description of EoL scenario

- This is a simplified scenario which considers all packaging to be incinerated at end-of-life
- The cradle-to-gate impact of paperboard is negative as the carbon uptake associated with the wood fibre contained in the product is higher than subsequent life cycle GHG emissions combined. As 100% of packaging is incinerated in the shown scenario, all sequestered carbon dioxide is released back to the atmosphere
- Incineration of paperboard releases the carbon that was earlier in the same life cycle removed from the atmosphere during tree growth. This removal of carbon from atmosphere did not happen within fossil plastic life cycle.

Interpretation of results

- The results show that even when excluding the benefits of paperboard recycling, the climate impact of a berry tray made of Metsä Board's paperboard is significantly lower than both virgin and 100% recycled PET tray



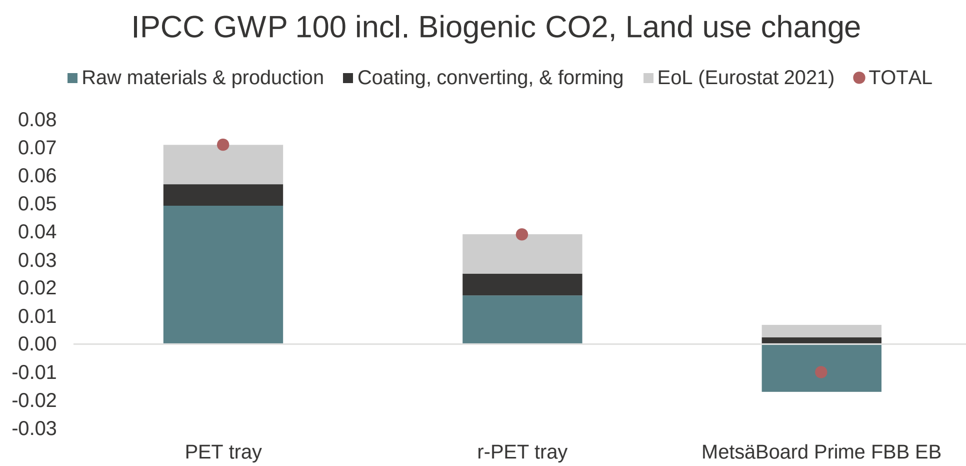
Recycling scenario: Europe

Description of EoL scenario

- This scenario accounts different recycling rates based on Eurostat 2021 statistics for individual packaging type
  - Paper and cardboard packaging: 82.5% recycled
  - Plastic packaging: 40.7% recycled
- Material that is not recycled is divided based on Eurostat 2021 municipal waste ratio of incineration and landfill
  - 54% incineration and 46% landfill

Interpretation of results

- The cradle-to-gate impact of paperboard is negative as wood fibre contained in the product is higher than other life cycle GHG emissions combined. As 82.5% of paperboard packaging is recycled in the shown scenario, total climate change impact will stay negative even after EoL phase for this life cycle.
- Similarly for fossil-based plastic, the share of material that is recycled is decreasing negative climate impact for the studied life cycle.



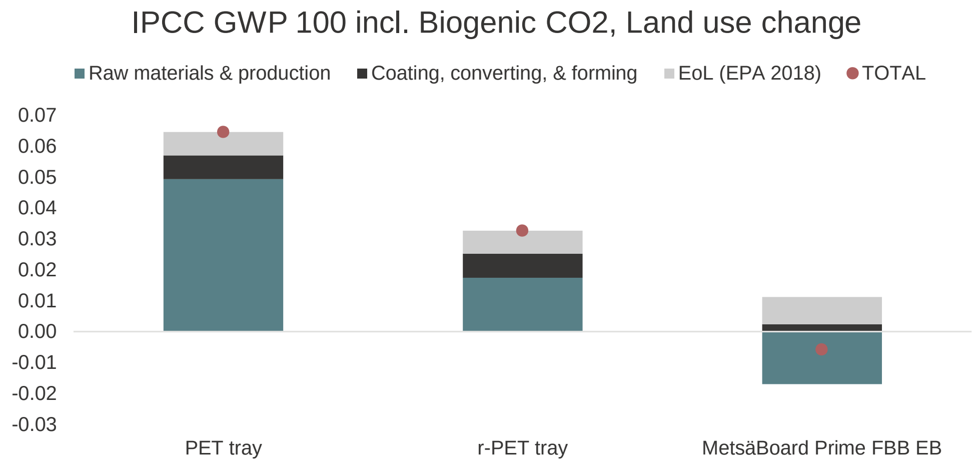
Recycling scenario: North America

EPA 2018 EoL

- This scenario accounts different recycling rates based on EPA (US) 2018 statistics for individual packaging type
  - Paper and cardboard packaging:
    - 68.2% recycled, 6.2% incinerated, 25.6% landfillled
  - Plastic packaging:
    - 8.7% recycled, 15.8% incinerated, 75.7% landfillled

Interpretation of results

- According to EPA 2018 statistics recycling rate is US of both paperboard and plastic is lower than in Europe, additionally landfilling rate is significantly higher
- While as much as 75.7% of plastic is landfilled this share is not contributing to any climate change impacts as no accountable decomposition of plastic is happening in landfills. Accumulation of plastics in landfills contributes to other negative environmental impacts. Landfilling of paperboard contributes to both CO2 and CH4 emissions and should be avoided



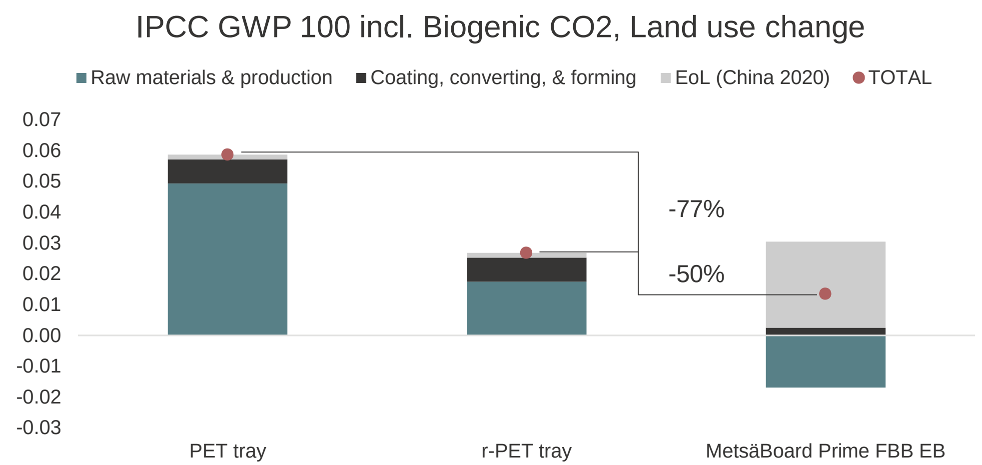
Recycling scenario: China

Statista 2020 (China) EoL

- This scenario accounts different recycling rates based on Statista statistics for individual packaging type
  - Paper and cardboard packaging:
    - 46.5% recycled, the rest 53.5% is assumed to be landfillled
  - Plastic products:
    - 17.6% recycled, the rest 82.4% is assumed to be landfillled

Interpretation of results

- As this scenario does not assume any incineration at the EoL, GWP impacts for plastics is low. On the other hand, the assumption that all packaging that is not recycled will be landfilled will increase negative impacts coming from paperboard
- Also, in this scenario the total cradle-to-grave impacts of paperboard packaging remains lower than that of recycled PET tray



Case 2: Takeaway food tray

		Generic solution		New Metsä Board solution	
Materials and technical parameters	**Materials and basis weight**	Polypropylene tray (semi-transparent)	450 g/m2	MetsäBoard Pro FSB Cup tray with PE coating	305 g/m2 + 11 g/m2
	Description	Standard square-shaped plastic tray used for takeaway		Standard round-shaped paperboard tray used for takeaway (incl. soups)	
	Tray volume	1290 cm3		1290 cm3	
	Ridgity	Equal ridgity feeling for the consumer			
	Weight of packaging	27g		18.9g (18.2g board and 0.65g PE)	

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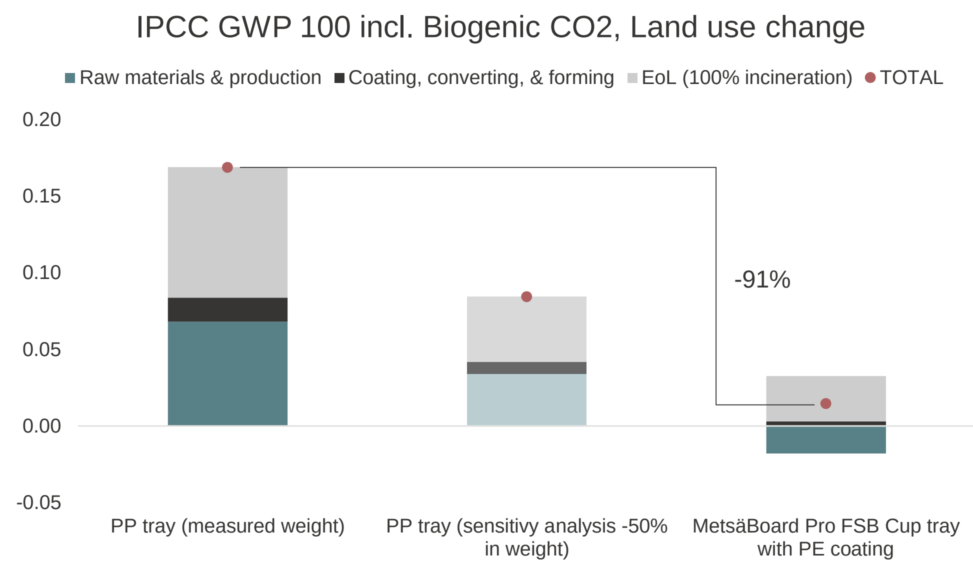
Incineration scenario: 100% incineration

Description of EoL scenario

- As in the first case this is a simplified scenario which considers all packaging to be incinerated at end-of-life
- The cradle-to-gate impact of paperboard is negative as the carbon uptake associated with the wood fibre contained in the product is higher than subsequent life cycle GHG emissions combined. As 100% of packaging is incinerated in the shown scenario, all sequestered carbon dioxide is released back to the atmosphere
- Incineration of paperboard releases the carbon that was earlier in the same life cycle removed from the atmosphere during tree growth. This removal of carbon from atmosphere did not happen within fossil plastic life cycle.

Interpretation of results

- The results show that even when excluding the benefits of paperboard recycling, the climate impacts of a takeaway tray made of Metsä Board's paperboard is significantly lower than both virgin PP tray



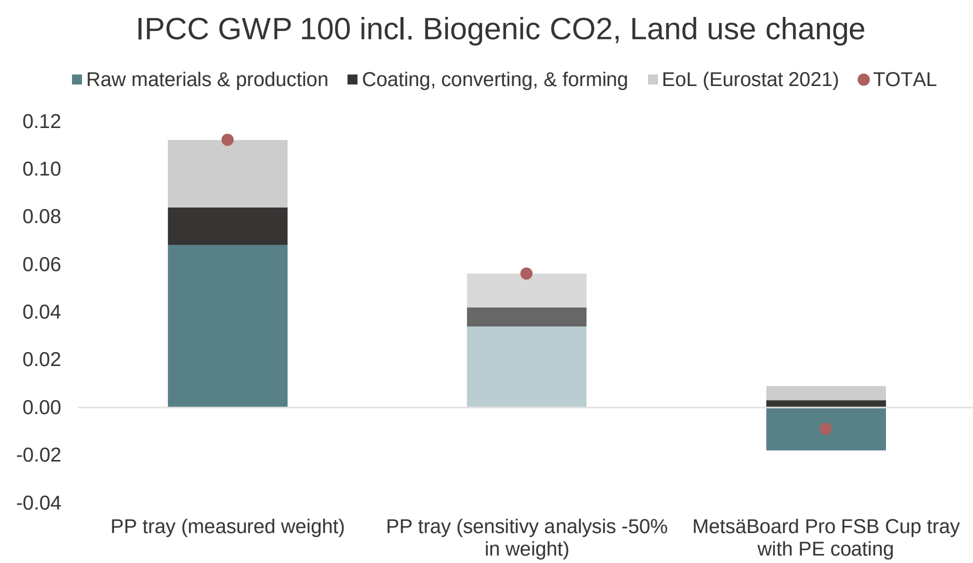
Recycling scenario: Europe

Description of EoL scenario

- This scenario accounts different recycling rates based on Eurostat 2021 statistics for individual packaging type
  - Paper and cardboard packaging: 82.5% recycled
  - Plastic packaging: 40.7% recycled
- Material that is not recycled is divided based on Eurostat 2021 municipal waste ratio of incineration and landfill
  - 54% incineration and 46% landfill

Interpretation of results

- The cradle-to-gate impact of paperboard is negative as wood fibre contained in the product is higher than other life cycle GHG emissions combined. As 82.5% of paperboard packaging is recycled in the shown scenario, total climate change impact will stay negative even after EoL phase for this life cycle.
- Similarly for fossil-based plastic, the share of material that is recycled is decreasing negative climate impact for the studied life cycle



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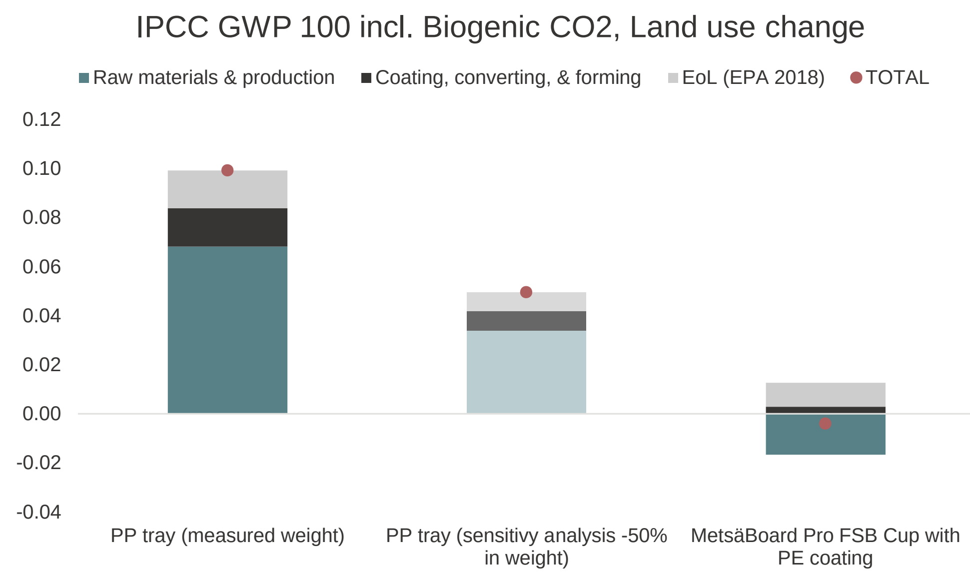
Recycling scenario: North America

Description of EoL scenario

- This scenario accounts different recycling rates based on EPA (US) 2018 statistics for individual packaging type
  - Paper and cardboard packaging:
    - 68.2% recycled, 6.2% incinerated, 25.6% landfillled
  - Plastic packaging:
    - 8.7% recycled, 15.8% incinerated, 75.7% landfillled

Interpretation of results

- According to EPA 2018 statistics recycling rate is US of both paperboard and plastic is lower than in Europe, additionally landfilling rate is significantly higher
- While as much as 75.7% of plastic is landfilled this share is not contributing to any climate change impacts as no accountable decomposition of plastic is happening in landfills. Accumulation of plastics in landfills contributes to other negative environmental impacts. Landfilling of paperboard contributes to both CO2 and CH4 emissions and should be avoided



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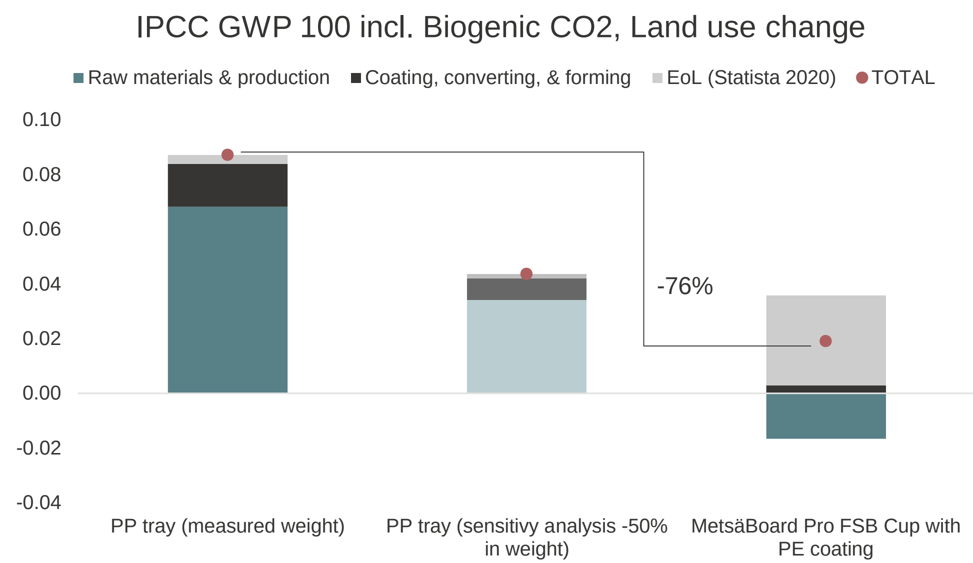
Recycling scenario: China

Description of EoL scenario

- This scenario accounts different recycling rates based on Statista statistics for individual packaging type
  - Paper and cardboard packaging:
    - 46.5% recycled, the rest 53.5% is assumed to be landfillled
  - Plastic products:
    - 17.6% recycled, the rest 82.4% is assumed to be landfillled

Interpretation of results

- As this scenario does not assume any incineration at the EoL, GWP impacts for plastics is low. On the other hand, the assumption that all packaging that is not recycled will be landfilled will increase negative impacts coming from paperboard
- Even with this scenario the total cradle-to-grave impacts of paperboard packaging remains negative and significantly lower than that of PET plastic packaging



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References

EPD® SYSTEM

The International EPD System. Product Category Rules (PCR): PCR 2010:14 Processed paper and paperboard (3.1). The International EPD System.

EN ISO 14040+A1

Environmental management - Life cycle assessment - Principles and framework

EN ISO 4044:2006

Environmental management — Life cycle assessment — Requirements and guidelines

EN ISO ISO 14067:2018

Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

Metsä Board’s third-party verified EPDs:

MetsäBoard Prime FBB EB (https://www.environdec.com/library/epd9340)

MetsäBoard Pro FBB Bright (https://www.environdec.com/library/epd4273)