



**PRO CARTON**  
PACKAGING FOR  
A BETTER WORLD



INSTITUTO DE  
EMBALAGENS

Ensino & Pesquisa

# **Cartonboard and cartons in Europe – leading the way to circularity**

## **Challenges and opportunities in 2022 and beyond**

**Winfried Mühlring, General Manager, Pro Carton**



# Pro Carton: Who we are...

Pro Carton is the **European Association of Carton and Cartonboard manufacturers**. It represents members operating 50+ board machines in over 40 mills in 14 different countries in Europe and the carton converting industry.

Its purpose is to promote the use of cartons and cartonboard to brand owners, the trade as well as designers, the medium, and policymakers as an economically and ecologically balanced packaging medium, that is **renewable, biodegradable and recyclable**.

It also highlights innovative uses of carton and cartonboard by students, designers and brands through its annual awards programmes.



# Pro Carton members:

 BILLERUDKORSNÄS	 BUCHMANN KARTON	 Fiskeby	 FOLBB
 Graphic Packaging INTERNATIONAL	 HOLMEN IGGESUND	 Kartonsan	 LA ROCHETTE CARTONBOARD PAPETERIE TECHNIQUE EN SAVOIE
 MM BOARD + PAPER	 MEL CARTONBOARD MAKERS	 Metsä	 PANKABOARD
 RdM	 STORÖNSÖ	 WEIG KARTON <i>driven by care</i>	 WestRock

# Fibre-based packaging leads the way to circularity

- Paper for recycling is not a waste product rather a **valuable raw material** for new packaging
- Our ambition is to collect all paper and cartonboard material back from the market
- Well established and consumer trusted collection and recycling system all over Europe
- We have a sound balance of recovered and virgin fibre-based packaging materials across Europe
- High collection and recycling rates combined with strong fibre performance during recycling creates the best base for circularity.



**Recycling centre in Switzerland, separate collection works!**



# Why Cartons?



## 82% recycling rate

Paper and board is the **most recycled packaging material** in the EU – 82% in 2019 (Eurostat 2019)

Pro Carton wholeheartedly supports the industry target to increase recycling rates to **90% by 2030**.



## High Recyclability

According to research by TU Graz, the fibres that make up cartonboard can be recycled **more than 25 times**.

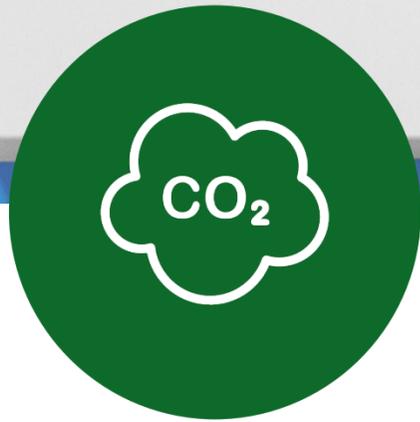
Cartons are made from a renewable resource, making them **biodegradable and renewable**.



## Circularity in Packaging

From the forest to cartonboard, to the folding carton, to the retailer, to the consumer and back to recycling in the carton value chain. The cartonboard industry is a strong **leader in circular economy**.

# Why Cartons?



## Reduced emissions

- Direct CO<sub>2</sub> emissions of the European pulp and paper industry reduced by 26% between 2005 and 2020.
- Paper-based products only account for 0.8% of European greenhouse gas emissions.



## Trusted by Consumers

- 52% of Europeans believe cartonboard/cardboard is the most environmentally-friendly packaging.
- 81% of consumers would choose cartonboard packaging over plastic.
- Trusted collection and recycling infrastructure



## Sustainable Forest Mangement

- 90% of the wood fibres used in the European paper and board industry come from European forests.
- Not only are they a renewable resource, but new growth exceeds the wood harvested by an area equivalent to 1,500 football pitches every day.

# We are working in Cross-Industry Alliances



A European-wide effort to explain how the fibre industries make 2050 **climate neutrality** target a reality.

Its four priorities include forests/biodiversity, responsible industry, circularity and climate friendly forest fibre-based products.



A cross-industry alliance, 4evergreen fosters synergies among companies promoting low-carbon and circular fibre-based packaging. **Perfecting Circularity.**

It has more than 90 members, spanning the entire value chain, and works with over 140 industry experts.



Coalition of six leading trade associations representing industries involved in forestry, pulp, paper, board and carton production and recycling.

Targeting support to reach targets for the **EU Green Deal** while campaigning for improved EU legislations.

# Increasing leverage by aligning forces



 RENEWABLE RECYCLED RESPONSIBLE EUROPEAN PAPER	 European Pulp Industry Sector	 PRO CARTON PACKAGING FOR A BETTER WORLD	 THE ALLIANCE FOR BEVERAGE CARTONS AND THE ENVIRONMENT
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[www.eugreensource.org](http://www.eugreensource.org)

[www.4evergreenforum.eu](http://www.4evergreenforum.eu)

[www.procarton.com/members/](http://www.procarton.com/members/)

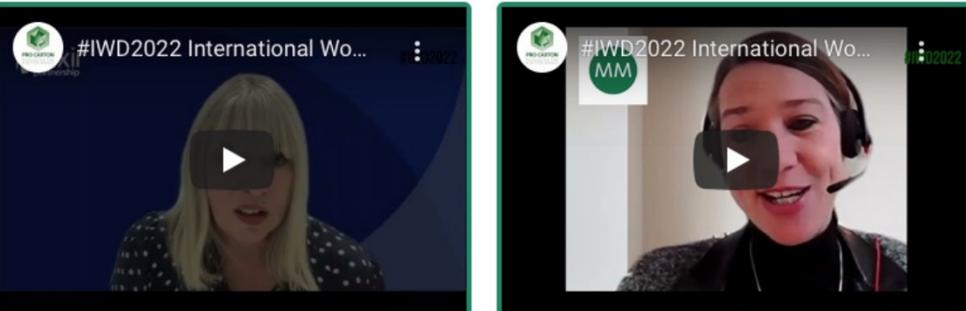
# Latest social media campaigns



**#CircularitybyDesign Guideline Series: Jesus Aisa, Global R&D Sustainability Lead, Unilever**

**#CircularitybyDesign Guideline Series: Steven Stoffer, Group VP Corporate Affairs, Smurfit Kappa**

- ### 4evergreen: Circularity by design guideline
- 8 cross industry speakers
  - Benefits of circularity by design guideline
  - Including speakers from Unilever and Nestle
  - April 2022 ongoing



**#IWD2022 International Women's Day – Claire Summersby, Head of Creative, Alexir Partnership**

**#IWD2022 International Women's Day – Alexandra Moser, Team Lead Marketing Communication, MM Group**

- ### International Women's Day
- 3 female leaders from converters and cartonboard producers
  - Leadership in the packaging industry
  - Call for young professionals to join the industry
  - March 2022



**Pro Carton speaks to Rene Eckhart, Senior Scientist, TU Graz about the claim that cartonboard can be recycled 25 times (at least)**

**Cartonboard can be recycled at least 25 times**

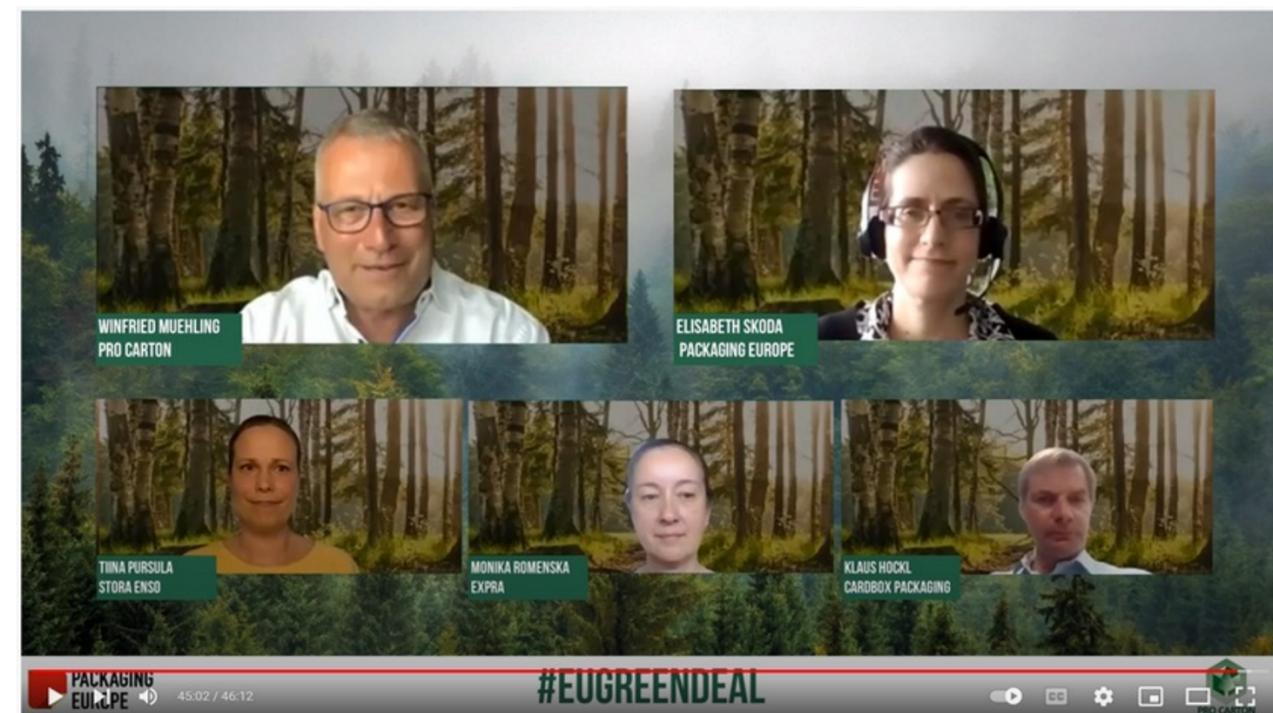
- ### 25 recycling loops
- Dr. Rene Eckhart, Technical University Graz
  - Research results
  - „25 is not the limit“
  - January 2022



# EU Green Week Roundtable

Together with Packaging Europe – four value chain experts

- “Packaging Europe” moderated a discussion between four value chain experts
- Focus on the contribution of fibre based packaging on reaching targets of European Green Deal
- Campaign launching July 2022 including:
  - Roundtable video discussion
  - Write-up of discussion, published on the Pro Carton website
  - Exclusive write-up on Packaging Europe website.



**We are celebrating success of cartonboard**

**THE  
WINNER**

# Celebrating Excellence



- Joint event with European Carton Makers Association (ECMA)
- Awarding cartons in different categories
- Promoting in social media and packaging magazines
- Most relevant European carton award
- High media attention.



- Cooperation with European Design Universities
- More than 640 entries from 100 universities
- Europe's leading young packaging design competition
- Get young professionals closer to the industry.



- Promoting advantages of cartons and cartonboard
- Video story-telling on carton / cartonboard benefits
- More than 70 entries from 40 universities
- Demonstrate the attractiveness of fiber-based industry.

Please find details under: [www.procarton.com/awards](http://www.procarton.com/awards)



# Award Promotions

We actively promote the awards online and in the media across Europe

PRO CARTON  
EUROPEAN  
CARTON  
EXCELLENCE  
AWARDS

Why Cartons? ▾ Activities ▾ Awards ▾ Media ▾ News About Us Members Area

European Carton Excellence Award +

Pro Carton Young Designers Award +

Pro Carton Student Video Award +

2021 Winners' Gallery

2020 Winners' Gallery

2019 Winners' Gallery

# Conversion from plastics to fibre-based packaging



Smarties Giant Hexatube

European Carton Excellence Award

Public Award



Plastic-free toothbrush packaging

European Carton Excellence Awards

General Packaging, Recycled Fibre Award



KeelClip

European Carton Excellence Awards

Public Award & Platinum Award

We **promote** cartonboard and carton packaging

We **respect** other packaging substrates

We **avoid** plastics bashing

# Strong interest on social media

More than 20,000 followers across our social media channels

The collage features several social media posts from Pro Carton:

- Twitter:** A tweet from Pro Carton (4,778 followers) dated 3mo ago, asking "Have you eaten #Easter chocolates packed in cartonboard yet? #choosecartons".
- Facebook:** A post from Pro Carton (4,778 followers) dated 2mo ago, mentioning "some great packs in recent years in the European Carton Excellent".
- Facebook:** A post from Pro Carton (4,790 followers) dated 5mo ago, asking "We award packaging that is simply good for the environment. Do you choose your healthy foods in sustainable packaging? Do you choose your healthy foods in sustainable packaging?".
- Facebook:** A post from Pro Carton (4,790 followers) dated 4 May, asking "Do or do not! There is no try. - Yoda. Deadline is June 26th; we can't wait to watch your videos!".
- Facebook:** A post from Pro Carton (4,790 followers) dated 16 May, stating "Packaging is part of our everyday life. It protects our favourite products and adds value to them. The European Carton Excellence Award is open for entries until May 27: ...".
- Facebook:** A post from Pro Carton (4,790 followers) dated 25 March, mentioning "We didn't get to celebrate with our talented students for very long, but some of them sent us a quick snapshot after they received their awards and certificates... and we love it!".
- Facebook:** A post from Pro Carton (4,790 followers) dated 16 May, stating "European Carton Excellence Award 2022 is now open for entries".
- Facebook:** A post from Pro Carton (4,790 followers) dated 16 May, stating "It's the most powerful #marketing opportunity in #packaging of the whole year, don't miss out on entering with your best packs!".
- Instagram:** A video post from Pro Carton (4,790 followers) dated 16 May, titled "This video beautifully captures the benefits of cartonboard, don't you think?".
- Instagram:** A post from Pro Carton (4,790 followers) dated 16 May, stating "We've got an idea of what's to come this year. Three design trends in #packaging for 2022!".

The collage also includes various images of cartonboard designs, such as Easter chocolates, pencils, and a shopping basket, as well as a video thumbnail for the "STUDENT VIDEO AWARD 22" and a video player for "WHY CHOOSE CARTONBOARD?".



“No negative effect on the mechanical properties in question can be demonstrated in this study. The swelling capacity of the fibre also showed no negative trend.”

## **Cartonboard fibers can be recycled: minimum 25 times**

The findings of the TU Graz laboratory study resolutely draw a line under a common myth that fibre-based packaging can only be recycled four to seven times before it loses integrity.

Instead, it highlights that paper and board fibres are much more durable than previously considered.

Please find the full video interviews and research results on [www.procarton.com](http://www.procarton.com)



## Relevance and importance:

- Cartonboard fibres are more resilient than previously assumed
- Both recovered and virgin fibres are required and equally important
  - We have an efficient use of recycled fibres in place in Europe
  - Continued efforts to increase collection of paper for recycling
  - Virgin fibre material for special product requirements and to compensate for material losses
  - Discussion on mandatory recycled contents is counter productive
- Strengthen positioning in single use vs reuse
  - Existing and efficient collection and recycling infrastructure
  - Good balance between recovered and virgin fibres
  - Consumers trust cartonboard recycling
  - Improved results in life cycle analysis comparisons
- Strengthen positioning of closed loop circular economy

# Challenges and solutions in 2022



- Uncertainty of EU legislation
- Geopolitical crisis in Ukraine further driving inflation
- Gas supply from Russia is uncertain
- Will existing capacities be enough to secure increasing demand of fiber-based products?

# EU Legislation – decisions required

Cartonboard is recognized as material with highest recycling rates

- Highest amongst all packaging substrates
- Targeting same levels as PET bottles or
- Containers with deposits (PET, cans)

Consumers understand and trust fiber-based recycling

- Well recognized and trusted by consumers throughout Europe
- More difficulties with flexible packaging

There is a perceived preference for re-usable systems

- LCA analysis show single use fiber materials are superior to reusable systems in HORECA channels
- We insist to base any decision on professional LCA's

More details on Ramboll Study: [www.eppa-eu.org/scientific-facts/lca-studies-new.htm](http://www.eppa-eu.org/scientific-facts/lca-studies-new.htm)

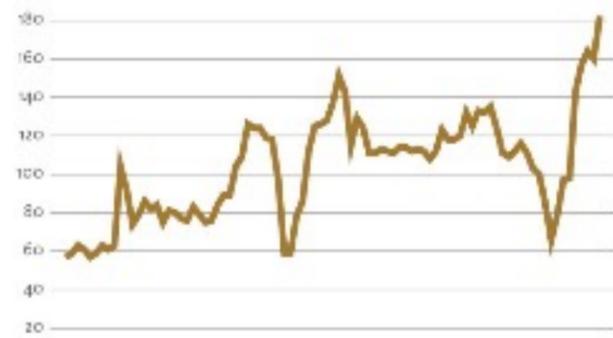


- We target fast decisions to support future directed packaging substrates
- Collaboration across industry borders are required to drive solutions
- We are well positioned to define the space for cartonboard as a problem solver for European Green Deal targets



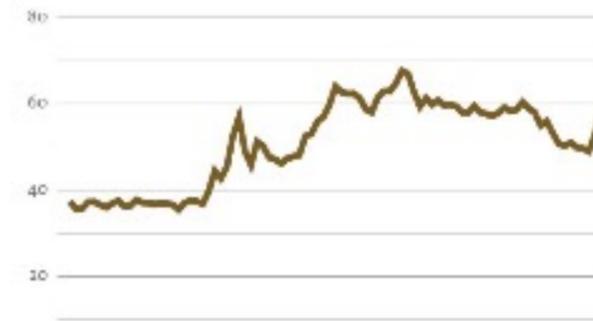
# Massive inflation impact: Raw Materials

Paper for recycling Euro/t



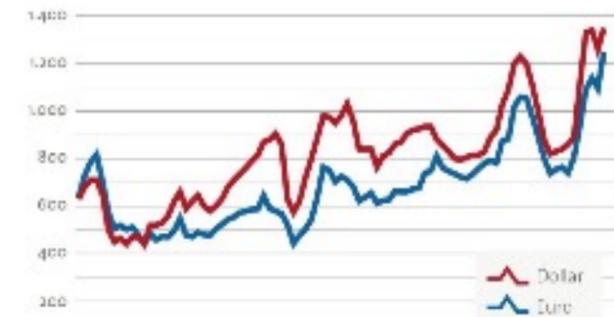
2000 2022

Wood: Euro per F/m



2000 2022

Pulp: Northern bleached Softwood Kraft USD/Euro



2000 2022

Austropapier Jahrespressekonferenz

- Inflation is back on all major raw materials
- Pandemic impact on paper for recycling



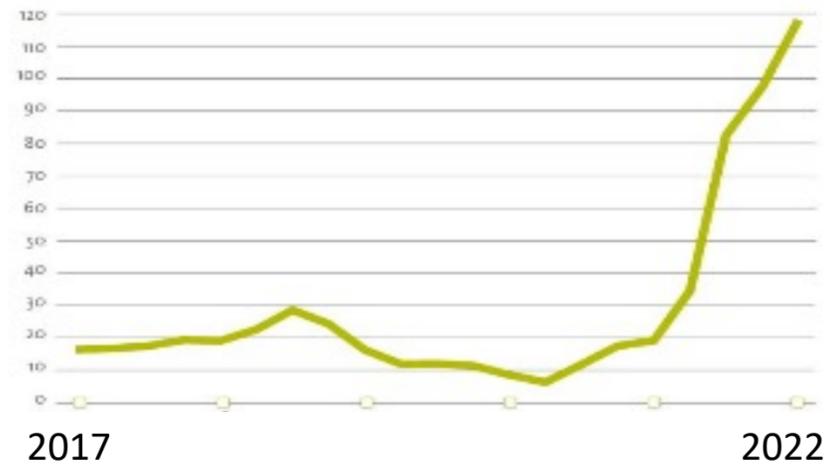
- European cartonboard industry is known for its resilience
- Most raw materials sourced from Europe
- Wood supply from Russia and Ukraine compensated by Nordic countries
- Strengthen European supply of paper for recycling and pulp
- Continue to drive sustainable forest management to secure supply base long-term



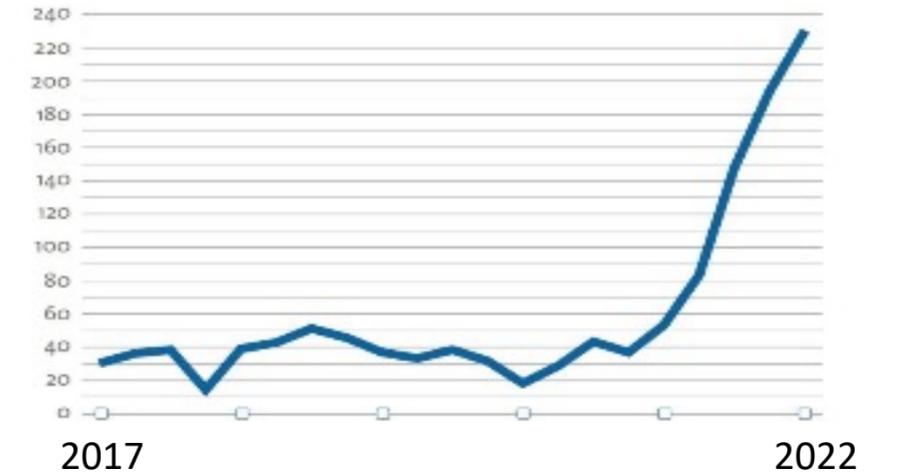


# Massive inflation impact: Energy

Gas costs in Austria Euro/MWh



Power costs in Austria Euro/MWh



Austropapier Jahrespressekonferenz

- Supply of Russian Gas is not secured
- Supply of renewable energy is not yet ready to compensate
- Markets are still to digest Russian attack on Ukraine



- Secure independence of Russian Gas supply
- Alternative sources of supply
- Drive/accelerate development of renewable energy sources
- Further increase share of non fossil energy sources in cartonboard industry



## Ready for increasing demand

- Increasing demand for fibre based packaging material
- Driven by consumer and retailer decision
- Brand owners preferred choice of packaging
- 25% of plastics can be replaced without negative impact
- We foresee low single digit increase of demand YOY



- Secure fast and binding legislation to allow for long-term investment decisions
- Maximize utilization of existing capacities
- Maximize production on existing boardmachines
- Adjust existing capacities/capabilities to future market needs
- Align the entire value chain to secure improved forecasting and production planning
- We are ready to supply for increasing future demand



# 5 Trends in European Packaging

## 1. Sustainability

- Pull generated by consumers and retailers
- Credible recycling system –> Circularity
- Carbon neutrality
- Packaging suppliers need competence as trustable/objective consultants

## 2. Increased level of consolidation

- Bigger players become bigger, smaller players become fewer
- Cost pressure of energy and raw materials forces players out
- Margin pressure forces investments in innovation
- Survival of the most agile players

## 3. Increased importance of local supply and global supply ability

- Following experience of pandemic
- Delivery ability trumps lowest price
- Multi sites delivery ability / Crisis plans

## 4. Smaller size packaging

- Reflecting decreasing household size (single households)
- Hide inflation impact (learn from developing countries!)

## 5. Smart Packaging

- Traceability / Trackability
- Consumer Interaction / Differentiation
- Trust

# Innovation in all areas required to sustain leading position

- The presented cases are a snapshot of best practice examples.
- All Pro Carton members drive innovations to improve user experience and to create new usage occasions.
- Please check the respective websites of Pro Carton members.





## Holmen Iggesund Conic: Beyond Cartonboard

- Co-Development by Holmen Iggesund, The Loop Factory and Grow Future Packaging Lab
- Completely wood-based formable premium packaging solution
- Entry into new product category: cosmetics, 3 D shapes, tube based packaging



# Stora Enso CartoCan: new deployment, new categories

- Specially developed barrier coated paperboard
- Filling system developed by Hörauf
- Löfbergs is one of the largest family-owned coffee roasters in Nordics
- Can alternative, access to fast growing RtD market





## Metsä: 3D fibre product Muoto®

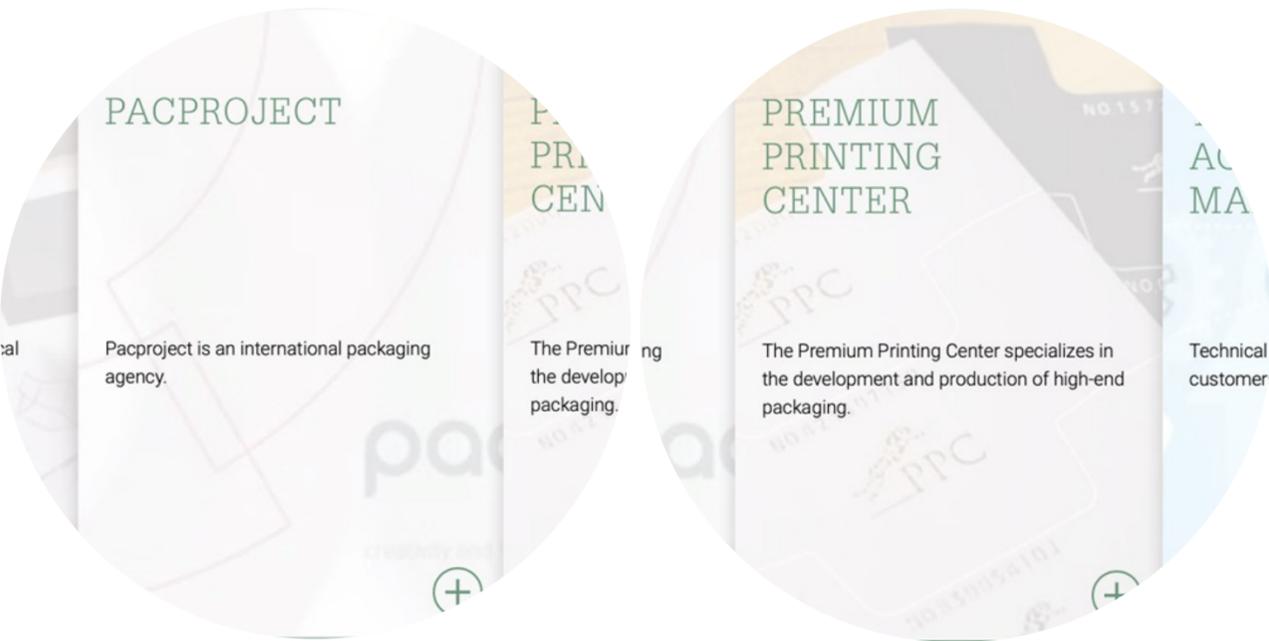
- Metsä Spring, Metsä Group's innovation company, launched Muoto® in June 2022
- Using brand new technology, the products are pressed into their final form
- Properties can be tailored during the production process according to the intended purpose





# **RDM: Winner of the World Finance Sustainability Award 2022**

- Award granted for the packaging category
- ESG focus increasingly important
- Award given for outstanding achievements in reducing CO2 emissions along entire value chain



## Mayr Melnhof: More than the carton

- Following customer requirements on objective consultancy
- End to end services to improve customer experience
- Professional expertise during the design phase
- Accelerate time to market



## Metsä Board Excellence Center:

- Co-Creation
- Co-Development
- Access to designers and R&D
- Joint Exploration, testing

# Lightweight cartonboards reduce carbon footprint

- Up to 30% lighter than regular grades with comparable strength, lightweight cartonboard helps reduce CO2 emissions during the whole product life cycle
- Up to 50% smaller carbon footprint with packaging made from lightweight cartonboard compared to packaging made of recycled fibre or SBS.\*
- Less energy, water and raw material consumption
- Less transport weight
- Less packaging volumes.



\* Figures from Metsä Board Ecoinvent database

# Cartonboard barrier coating roadmap

PE extrusion  
coating



Dispersion  
coating



Biobarrier

- Plastic reduction/replacement
- Reduction of fossil-based material
- Direct food contact
- Recyclable in paper and cartonboard recycling streams
- Opening access to new categories

- Humidity
- Oxygene
- Grease
- Sealability



\*Illustration from Stora Enso



# We are leading the circularity race

- Fibre based industry is the frontrunner in circularity
- Demonstrating a proven and trusted system
- Easy to understand and well executed across Europe
- We are living circularity with every sqm of cartonboard produced and every carton delivered
- We earned high level of consumer trust and credibility
- Flexible packaging under pressure to deliver solutions for 2025 pledges
  - Long way to move from 'recycle ready' to 'recycled'
  - More work to do to move from 'recycled' to 'circular'
- We see further growth potential for fibre based packaging in Europe
- New applications, new categories, 3D shapes
- Studies show 25% of plastics material in Europe can be converted without negative product/consumer impact

# Required next steps:

- Further increase collection rates from retailers and consumers
- **Harmonization of collection** across Europe
  - **Separate collection** of all fibre-based materials
  - Defines the base for improved quality of recycling material
  - Increases the volume of available material for recycling
- Further improvement of recycling processes
  - Example: Improve capability on material with food residues and two side coated materials
- Reduce fibre losses in grading process during preparation
- Strictly use **circularity by design guidelines** at early stage of development process
- Drive innovation in (bio) coatings with focus on recyclability and functionality



A photograph of a sunlit forest. The scene is filled with tall, slender trees, likely pines or spruces, with their trunks reaching towards a bright sky. Sunlight filters through the canopy, creating a warm, golden glow and casting long, soft shadows on the forest floor. The ground is covered in a thick layer of green moss and small plants, with some fallen branches scattered about. The overall atmosphere is peaceful and natural.

The future for cartonboard is bright!

For regular updates please follow Pro Carton on  
LinkedIn, Facebook, Twitter and Instagram