# Packaging Sustainability in Motion

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# What we are going to talk about?

Trends, Interactions, Movements Inside the Packaging Value Chain

Packaging Sustainability: Understanding Performance Trade offs

Current Changes and Developments Inside the Packaging Producing and Printing Value Chain

# Packaging Value Chain

Brand Owners, FMCG‘s

Packaging Producers

Retailers

Consumers

Regulators

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**52% of consumers worldwide claim to have changed their shopping habits due to concerns about global warming and the environment.**

Wunderman Thompson, June 2023

Source: Trend Watching


XSYS

**89%** of consumers in Asia Pacific believe that they can positively impact climate change by changing their lifestyle.

Dentsu & Kantar, January 2023

Source: Trend Watching


XSYS

**Products making ESG-related claims averaged 28 percent cumulative growth over the past five-year period, versus 20 percent for products that made no such claims.**

Source: McKinsey
Consumers about sustainability and back it up with their wallet (study from 2017-2022)


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# Why it matters that New York state is suing PepsiCo over single-use plastic

The state alleges PepsiCo misled the public about the damage caused by single-use plastics.

By Heather Clancy | December 8, 2023

Source: Trellis (Dec 2023)

A Mallard duck swims amid plastic pollution in the Buffalo River. Source: Lawsuit filed by New York Attorney General

# Los Angeles County sues PepsiCo and Coca-Cola over plastic pollution

Oct 31 (Reuters) - Los Angeles County has sued beverage makers PepsiCo (PEP.O) and Coca-Cola (KO.N), accusing them of polluting the most populous U.S. county with plastic bottles and misleading the public about the environmental impact and recyclability of their containers.

The county in a lawsuit filed on Wednesday in Los Angeles Superior Court said the companies were contributing to plastic pollution with their single-use plastic bottles and were engaging in a campaign to deceive consumers into believing they were recyclable.

Source: Reuters (Nov 2024)



# Nestle R&D lead on the products and packaging of the future

Source: CNBC (Dec 2023)




## FOOD

Developing more Plant based products

Reduce carbon footprint impact along the value chain

**Nestle R&D lead on the products and packaging of the future**

Source: CNBC (Dec 2023)




## PACKAGING

Decrease the amount of packaging
(Reducing 900,000 tons of packaging material from 2020-2022)

Simplify the type of plastics in used

Paperization

Explore more Biodegradable aspects

**Nestle R&D lead on the products and packaging of the future**

Source: CNBC (Dec 2023)


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# Is there any type of Packaging we have today that basically has no future?

Not sustainable

Super resource intensive

Has better solutions that are coming up behind them

E-commerce acceleration leads to optimization among primary, secondary and tertiary packaging to make it more efficient to ship things to consumers

Source: McKinsey Consumer and Retail Podcast: Interview Ron Delia Amcor CEO

Brand Owners, FMCG‘s

Packaging Producers

Retailers

Consumers

Regulators

## How sustainable do you think each of the following packaging types are?

Glass bottles and Jars

PET bottles

Other rigid plastic containers

Aluminum foil

Paper and Cardboard

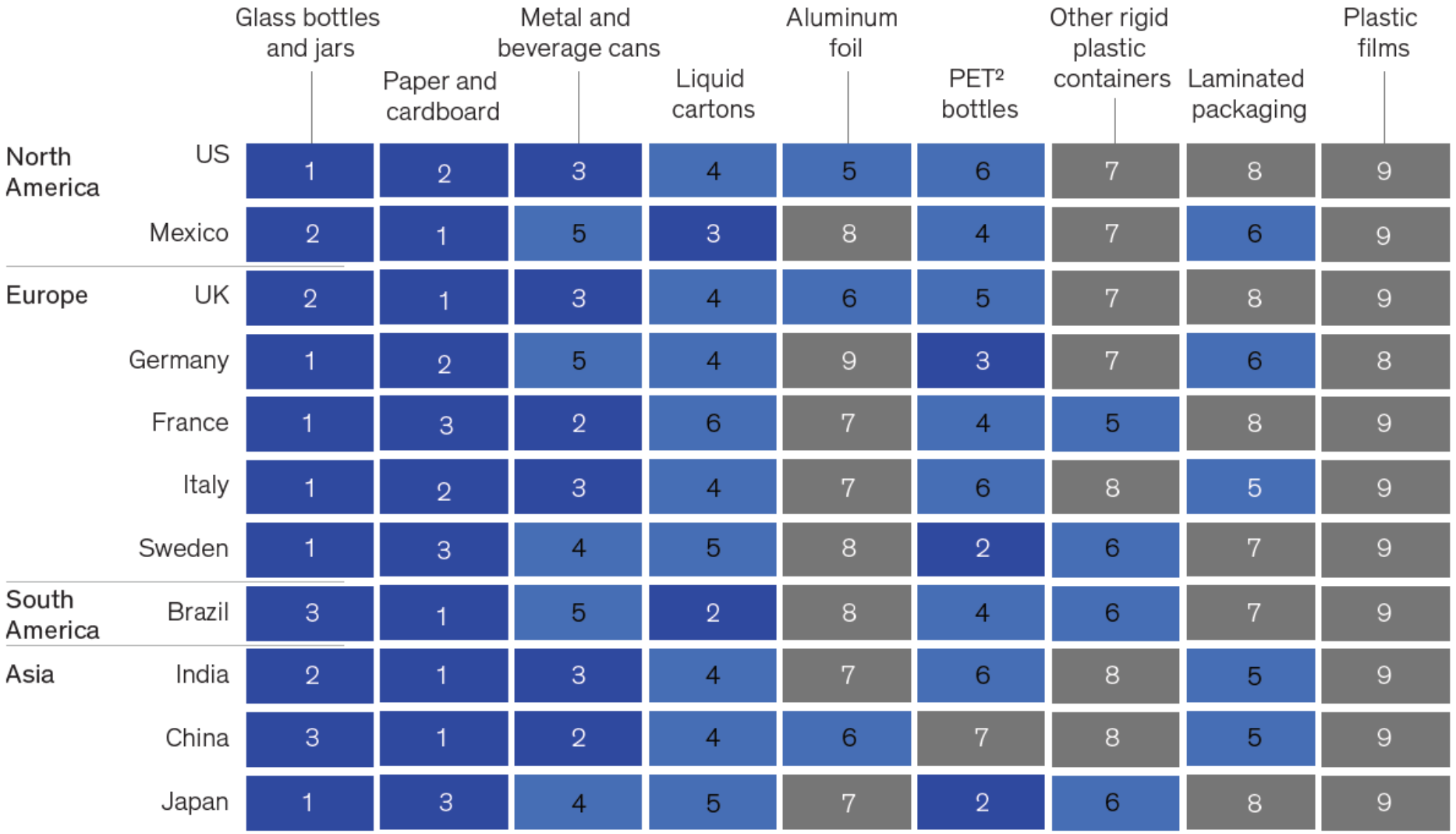
Laminated Packaging

Metal and Beverage Cans

Liquid cartons

Plastic films

# How sustainable do you think each of the following packaging types are?




**PET bottle collection rates:**

More than 80%
Germany, Sweden, Japan

33% USA

26% South East Asia

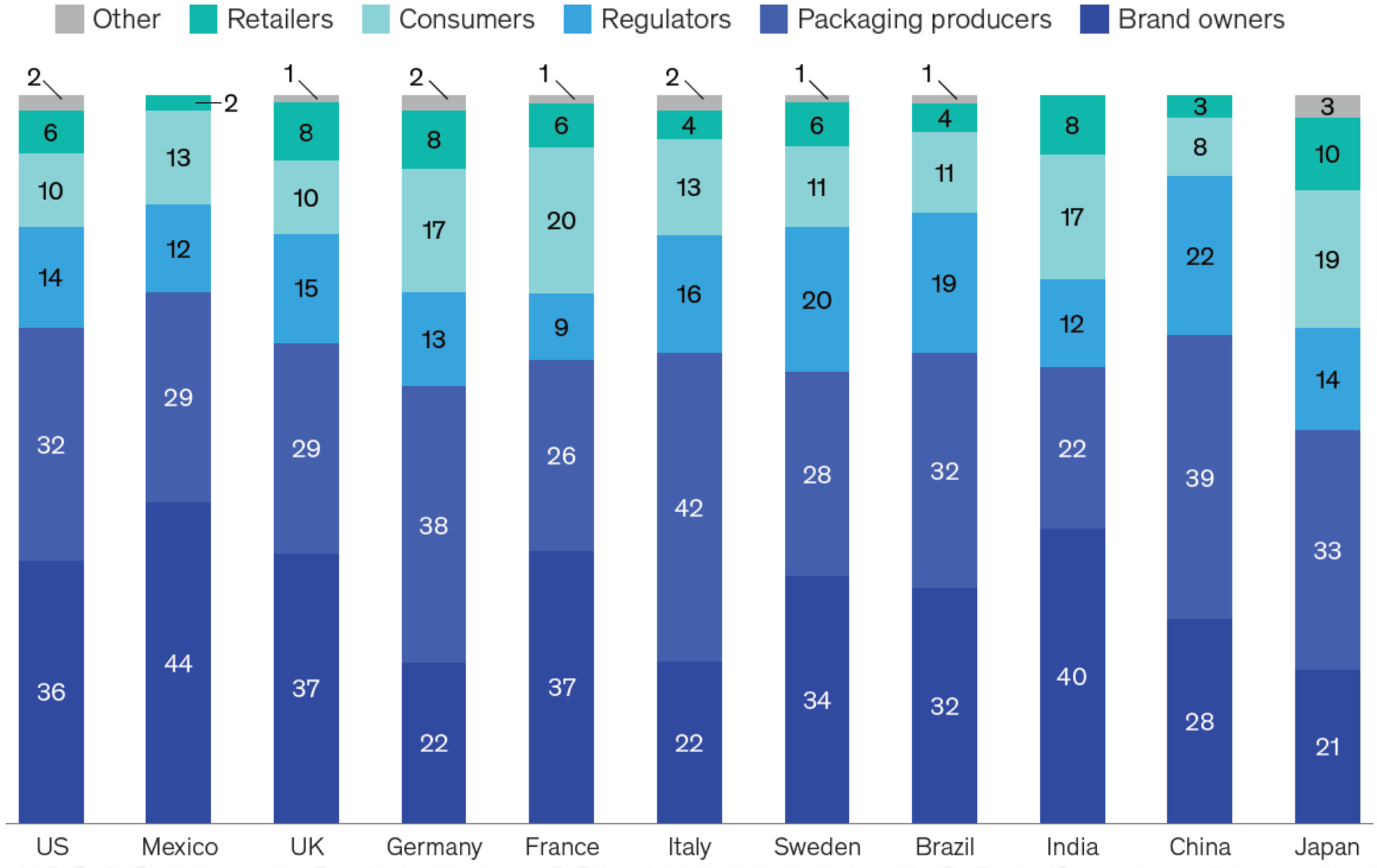
Source: McKinsey

# Considering sustainable packaging: How important are the following characteristics to you?

| | | Recyclable | Made of recycled content | Compostable | Reusable | Lightweight or made of less material | Low $CO_2$ impact | Bio-based |
|---|---|---|---|---|---|---|---|---|
| North America | US | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Mexico | 1 | 3 | 6 | 2 | 5 | 4 | 7 |
| Europe | UK | 1 | 2 | 5 | 3 | 6 | 4 | 7 |
| | Germany | 1 | 3 | 6 | 2 | 5 | 4 | 7 |
| | France | 1 | 3 | 4 | 2 | 6 | 5 | 7 |
| | Italy | 1 | 4 | 2 | 3 | 6 | 5 | 7 |
| | Sweden | 1 | 3 | 6 | 2 | 5 | 4 | 7 |
| South America | Brazil | 1 | 3 | 7 | 2 | 6 | 4 | 5 |
| Asia | India | 1 | 6 | 2 | 3 | 7 | 4 | 5 |
| | China | 1 | 4 | 3 | 2 | 6 | 5 | 7 |
| | Japan | 1 | 4 | 6 | 3 | 5 | 2 | 7 |

Source: McKinsey

# Who do you see as most responsible for sustainability in packaging?




Source: McKinsey

# Packaging Value Chain

# True Packaging Sustainability: Understanding Performance Trade-Offs

XSYS
Print solid. Stay flexible.

Source: McKinsey

# True Packaging Sustainability: Understanding Performance Trade-Offs

XSYS
Print solid. Stay flexible.

Retailers and brand owners often focus on circularity and greenhouse-gas emissions, but consumers are increasingly concerned about leakage.

**Leakage into the environment**

Minimize harm from nonrecycled material leaking into the environment[1]

**Greenhouse-gas (GHG) emissions across the value chain**

Assess GHG emissions per packaging material through a holistic approach, taking into account full life cycle

**Circularity—recyclability and recycled content**

Save energy and reduce pressure on natural resources

Improve the overall sustainability performance of packaging

# Beverage Containers (e.g. Soda)

PET Bottle


Aluminum Can


Glass Bottle

# Consumer perception of recyclability doesn't always align with the actual carbon impact of packaging.

## Packaging and food service, preliminary estimates

| Example applications | Alternative materials | Greenhouse-gas impact, kg $CO_2e$[1] per functional unit (High – Low) | Global recycling rate, % (High – Low) | Key considerations |
|---|---|---|---|---|
| Beverage container (eg, soda) | PET bottle (27 g) | 250–300 | 40–50 | Material production<br>Material disposal<br>Recycling rate<br>Transportation cost<br>Breakage |
| | Aluminum can (13 g) | 550–600 | 65–75 | |
| | Glass bottle (208 g) | 1,650–1,700 | 40–50 | |

# Flexible Packaging Has Lifecycle Benefits Over other Packaging Types

| | Fossil fuel usage (MJ- equivalent) '000 | Greenhouse gas emissions (Kg-$CO_2$ equivalent) '000 | Water usage (Liters) '000 | Product to package (weight percentage) | Transport (Empty units per tonne) '000 |
|---|---|---|---|---|---|
| Flexible packaging | 89 | 5 | 12 | 3% | 204 |
| Composite carton | 95 | 6 | 72 | 4% | 108 |
| Aluminum can | 276 | 27 | 92 | 5% | 109 |
| Glass bottle | 327 | 26 | 210 | 35% | 6 |

**...but there's a negative perception due to end of life**

Source: Flexible Packaging Association (www.flexpack.org) "A Holistic View of the Role of Flexible Packaging in a Sustainable World"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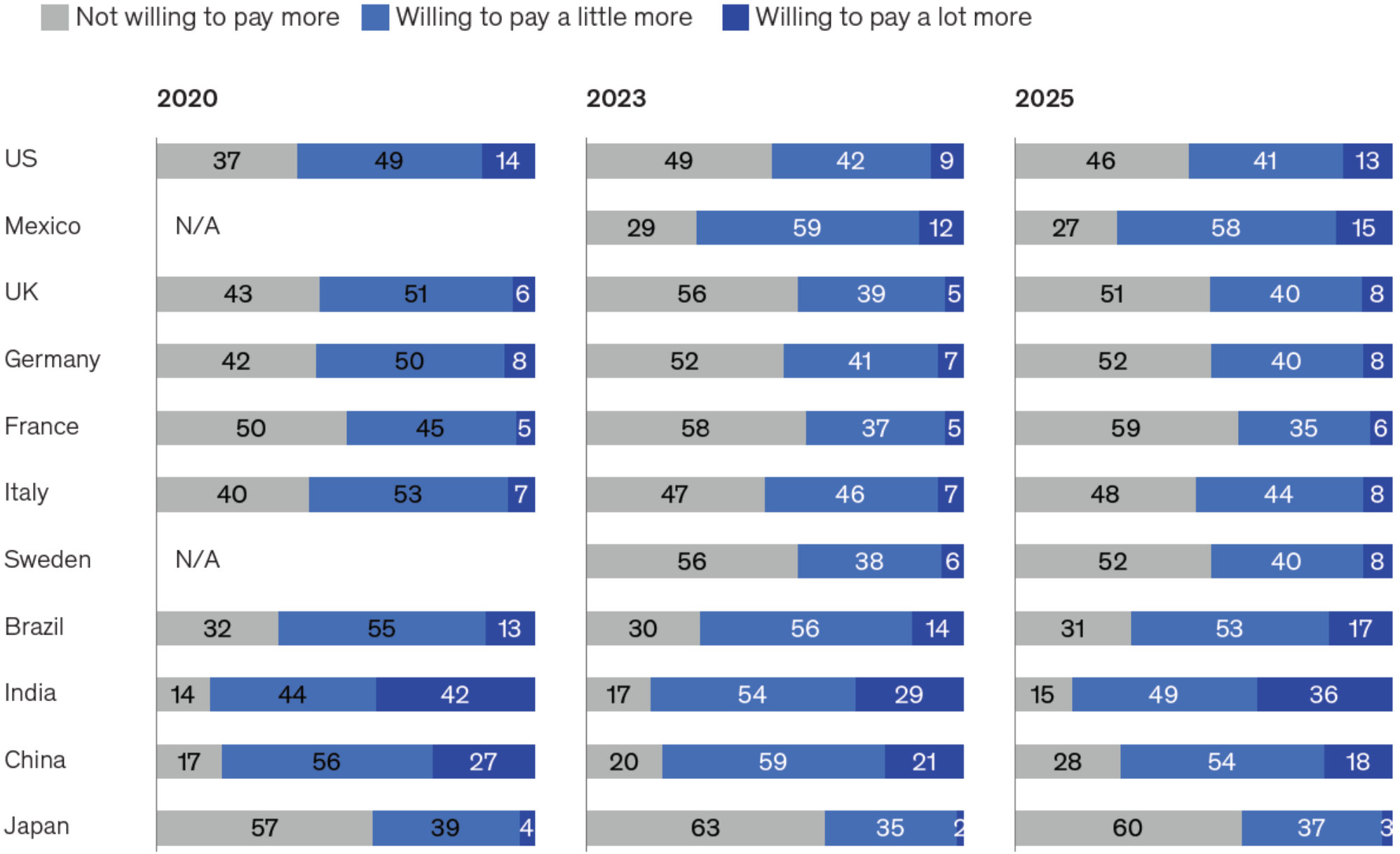
# Consumer Experience Engagement **Green Theater**

**Selfridges & Allbirds**

**Footwear brand highlights shoes' carbon impact with clever pop-up**

Source: Trend Watching

# To what extent would you be willing to pay more for sustainable packaging?




Source: McKinsey

# Packaging Value Chain

# Global Trends for Brand Owners

- Design for Recyclability (DFR):
  - **Mono-material substrates**
  - **PCR** (= Post Consumer Recycled) **substrates**
  - **More light-weight packages** (e.g. thinner PET bottles)

- Flexible packaging substrate savings by **printing on thinner films**

**Less packaging material**
**=**
**more sustainable + less cost**

**Heavy-weight PET bottle**

**Light-weight PET bottle**

Change from film thickness **25 µm (Gravure printing)** to **12 µm (Flexo printing)**

→ **13µm (52%) material savings**

Source: FPLMA 2025

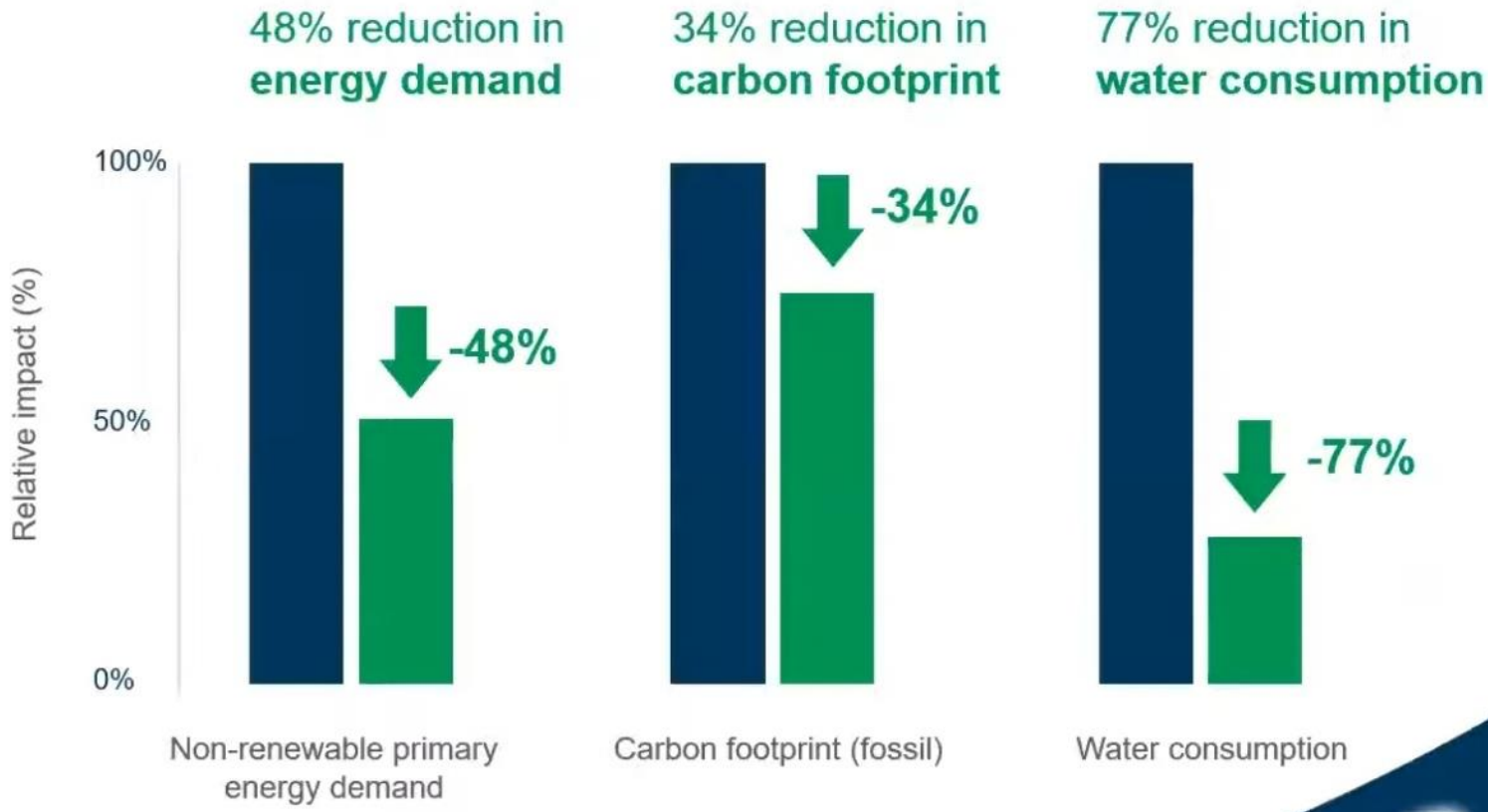
# Measuring Environmental Impact


**Baseline packaging**

Market standard:
**Paper-metalized poly**
End of life: landfill

**Proposed packaging**

Recyclable:
**High barrier PE laminate**
End of life: recycling




Source: AMCOR

# Flexo ink requirements for recyclability

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**Printed films**
PP, PE

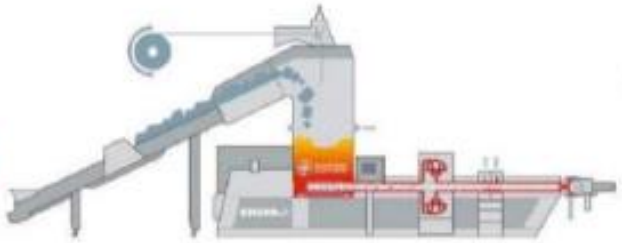

**Mechanical Recycling without De-Inking**

**Regranulates**
rPP, rPE

**Results**

Full surface printed
White pigment: $TiO_2$

Nitrocellulose (NC)
Polyurethane (PU)
Polyvinylbutyral (PVB)



Regranulation 240 – 250°C

**NC based binder**
- Colour change
- Odour
- Volatiles

**PVB based binder**
- Colour change
- Slight odour
- No volatiles

**PU based binder**
- Colour stable
- Odour free
- No volatiles

Image source: hubergroup print solutions

NC and PVB ink binders **contaminate regranulates**, and need to be replaced

PU binders potential new standard (for both, solvent-based inks and water-based inks)

Flexo and Gravure can handle PU based inks

Source: FPLMA 2025

# Flexo Plates & Sustainability

Environmentally friendly raw material

Elimination of waste in manufacturing process

Increasing the plate longevity / reusability of the plates

Thermal Flexo plate processing

Reducing press waste

Plates that are suitable for new type of inks (e.g. PU based inks)

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**Flat Top Dot Family**

**Reduce cost, save time and increase your productivity and consistency**

- Photopolymer flexo plates with inherent flat top dots
- Easy creation of flat top dots with standard processing equipment
- Less dot gain tolerances – on press the flat top dots are less impression sensitive than standard digital dots resulting in improved production consistency
- Reduce cost, save time: No additional equipment, no time consuming LED exposure or any consumables required

**Thermal Processing**

**A new generation of thermal processing**

- A complete and reliable solution for thermal processing
- nyloflex® Xpress Thermal plates are available as flat top dot plates and as round top dot plates
- See detailed information in the nyloflex® Xpress brochure

**Anti Ink Filling (AIF)**

- To avoid ink filling in flexible packaging printing
- Reduce press stop for plate cleaning

# nyloflex® Thermal Processing System


## Processor

Smallest footprint
Innovative heating
Low cost operation
Minimal maintenance
Environmental savings

## Plates

Optimized for thermal
No nonwoven pattern
Utmost consistency
Resistant to all inks
Stable formulations

## Developer

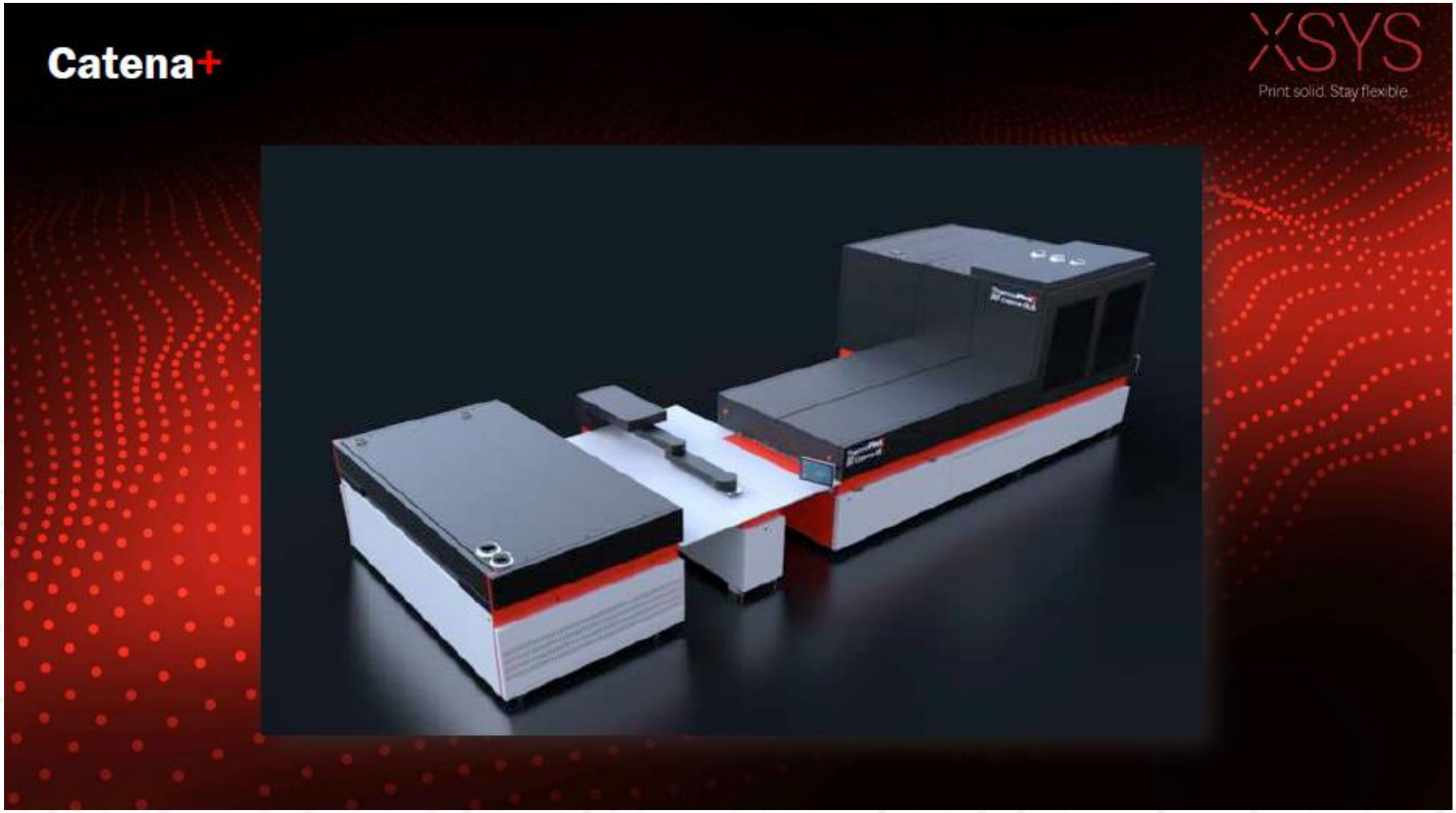
Unique fabric design
30% less density
Lighter and safer
Easy to splice
Keeps hot roller clean


**No Solvent**

**<22 min** to develop full sized plate

**4 Gallons/15 Litres** of Gasoline saved per job

# Thermoflex Catena+ Fully automated Flexo plate processer



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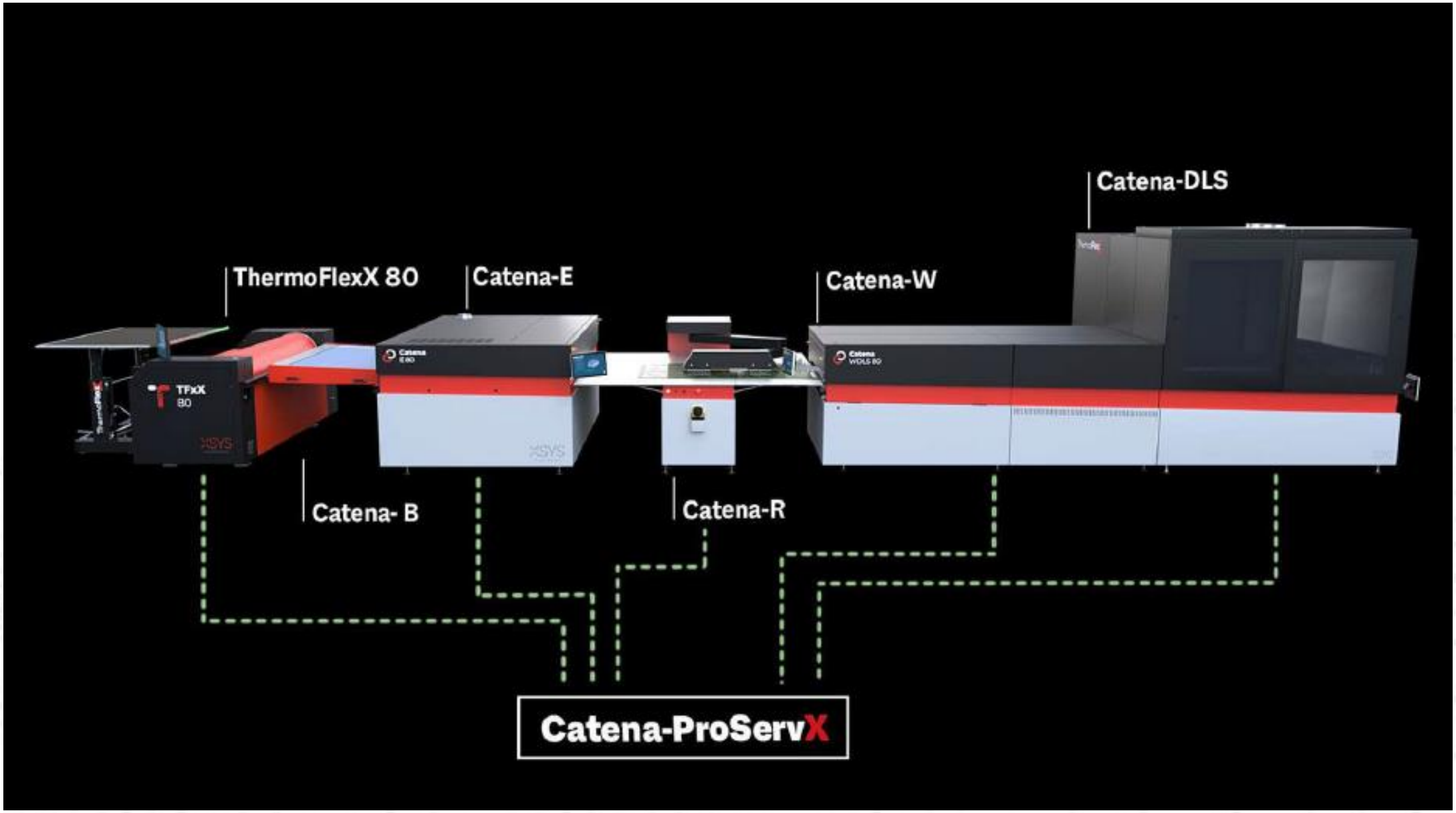

# The Connected Package

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Value chain monitoring

Data collection – customer understanding

Tracking of individual products

Transparency

Connection between brands and consumers

Waste reduction – Sustainability and Circularity

Source: Tetra Pak

Every step leaves a footprint,
no matter how small.

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