FEFCO
Corrugated Packaging

RECYCLING PERFORMANCE
OF CORRUGATED CARDBOARD IN EUROPE

MARCH **2026**

A methodological framework to assess the recycling rate for corrugated board.

FEFCO OVERVIEW OF STUDY RESULTS

CIRCULAR BY NATURE

Corrugated Cardboard is **the most recycled packaging material in Europe,** benefiting from **well established collection systems** and **highly efficient** recycling infrastructure. To meet increasing regulatory expectations and industry demand for accurate reporting, FEFCO, The European Federation of Corrugated Manufacturers, has developed a **refined methodology to calculate the recycling rate specifically for corrugated board material.**

This white paper presents the purpose, scope, and methodological approach of this work, providing a transparent and replicable framework aligned with EU legislation.

KEY RESULT

THE RECYCLING RATE FOR CORRUGATED BOARD

EXCEEDS 90% IN EUROPE

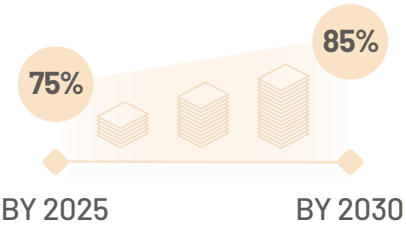
STUDY PURPOSE & SCOPE

REGULATORY DRIVERS

EU 2025/40 Packaging and Packaging Waste Regulation (PPWR)

PPWR requires that all materials are recyclable by 2030 while introducing ambitious recycling rate targets for packaging materials, including paper and cardboard (85% by 2030), with the aim of **increasing resource efficiency and reducing environmental impacts.**

Paper & Board Packaging Recycling Rate Targets in PPWR



These evolving requirements, in addition to consumers being increasingly attentive to the environmental performance of packaging, place strong emphasis on accurate measurement and reporting of recycling rates. **It makes it essential for all sectors to adopt robust and transparent calculation methods.**

WHY A CORRUGATED-SPECIFIC APPROACH?

After consideration of the overall recycling rate of paper and board packaging at 87% (Eurostat 2023), and wishing to progress on circularity, **FEFCO has conducted research into existing methodologies that generally addess paper and board packaging recycling rates at a broad level.** Furthermore, FEFCO now aims to refine these approaches by **focusing specifically on corrugated board.** This targeted approach will allow for a **more accurate assessment of recycling performances** within the sector and **provides tailored insights to support industry and policy development.** Circpack by Veolia was mandated to support FEFCO and its members with the development of such methodology: **providing the keys to estimate the proportion of end of life corrugated board** that can be effectively recycled compared to the total amount placed on the market and thus establish an estimate of the recycling rate for corrugated board.

SCOPE

GEOGRAPHIC:
EU 27+3 (Norway, Switzerland and UK)

MATERIAL:
corrugated board, primarily used for packaging and transport (shipping boxes, protective sheets, household, commercial and industrial packaging...) as well as other applications such as point-of-sale displays and promotional stands.

PROJECT:
established an estimate of the recycling rate for corrugated board, with publicly available data, replicable year after year, in line with Commission Decision 2005/270/EC for calculating recycling rate.

SOURCES

- **CEPI:** data on production, utilisation of paper for recycling and import-export flows
- **Containerboard Europe:** data on production of containerboard
- **Ademe:** data on humidity rate, unwanted materials and packaging used for trade of goods
- **Eurostat & ITC TradeMap:** data on import-export flows

METHODOLOGY SNAPSHOT

The recycling rate is calculated as:

$$\text{recycling rate} = \frac{\text{recycled packaging}}{\text{packaging waste generated}}$$

Recycled packaging is what is sent to recycling (paper for recycling) **as described by CEPI,** the Confederation of Paper Industries which **provided data on production, utilisation of paper for recycling and import-export flows.**

CEPI provides the utilisation of paper for recycling by grade, corrugated cardboard can be found in Class I and Class II:

- **Class I materials** correspond to "Mixed Grades" and refer to a blend of various types of recovered paper with different paper qualities and packaging materials. These generally contain a fraction of corrugated board (see 3.2.4).

- **Class II materials** correspond to "Corrugated and Kraft" and include recovered paper grades primarily composed of used corrugated board and kraft paper (see 3.2.4).

This allows to define recycled packaging as below:

recycled packaging =

$$\alpha_{II} * (LU_{II} + \beta_{II} * MER_{II} - MIR_{II}) + \alpha_{I} * (LU_{I} + \beta_{I} * MER_{I} - MIR_{I}) * (1 - \Delta_{HR}) * (1 - UW)$$

- α — Share of corrugated board in Class II and Class I materials
- LU — Local Utilisation of Class II and Class I materials = use of paper for recycling as material
- β — Share of Class II and Class I exports for which recycling took place under conditions that are broadly equivalent to those prescribed by the relevant Union legislation
- Δ_{HR} — Difference between natural humidity rate and humidity rate of the packaging waste
- MER & MIR — Class II and Class I materials exported and imported as paper for recycling
- UW — Share of Unwanted Material

packaging waste generated = packaging placed on the market

$$= cf * (LP * (1+y) + IM_{empty} - EM_{empty}) + IM_{filled} - EM_{filled}$$

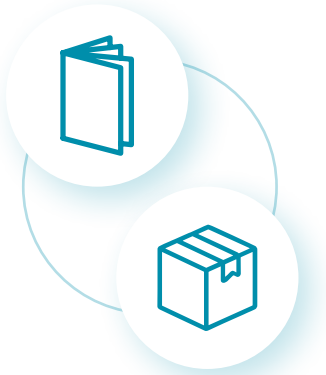
- cf — Conversion factor Containerboard to corrugated cardboard
- LP — Local production of containerboard
- y — Share of adhesives and inks applied during box making
- IM_{empty} & EM_{empty} — Imports and exports of corrugated board empty of goods
- IM_{filled} & EM_{filled} — Imports and exports of corrugated board via trade of goods

Given the challenge in establishing precise uncertainty margins, we have **adopted a range-based approach by determining a "higher" and a "lower" value when possible.** These reflect the most optimistic or the most conservative assumptions, eventually used to calculate a confidence interval for the corrugated board recycling rate.

Note however that the primary objective of this report remains to establish a robust methodological framework that will enable FEFCO to perform this calculation annually and monitor trends over time.

INTERPRETATION & INSIGHTS

Paper and cardboard are the most recycled material in Europe. In 2023, the recycling rate for paper and cardboard packaging is 87% (EUROSTAT), and the recycling rate for paper and cardboard (including special papers, tissues, etc.) is 75% (CEPI).



Corrugated cardboard contributes positively and pushes this figure upwards thanks to **well established separate collection systems, quality and cleanliness of the stream, at scale capacities of recycling paper mills and integration of recycled fibres to make new packaging.**

Corrugated cardboard is the recycling champion targeting to close the loop.

QUALITY ASSURANCE & CREDIBILITY

Methodology Development CIRCPACK by VEOLIA

- The methodological framework has been **developed by Circpack By Veolia**
- **Project manager and technical development of the model:** **Joseph Lemoine,** Senior Packaging & Recycling Consultant

Independent Peer Review ifeu

- The methodology and model credibility **were critically reviewed by ifeu**
- **Reviewer:** **Frank Wellenreuther,** ifeu - Institut for Energy and Environmental Research

IMPLICATIONS FOR POLICY & INDUSTRY

This allows to define recycled packaging as below:

1. **robust evidence** supporting corrugated board's contribution to EU circularity targets,
2. **transparent data** to inform policymaking under PPWR and related legislation,
3. a **reliable monitoring tool** for producers, recyclers, and policymakers,
4. a foundation for identifying **future optimisation opportunities** within collection, sorting, and recycling systems.

CONTACT & ACCESS TO FULL STUDY

The full technical report and calculation files are available upon request.

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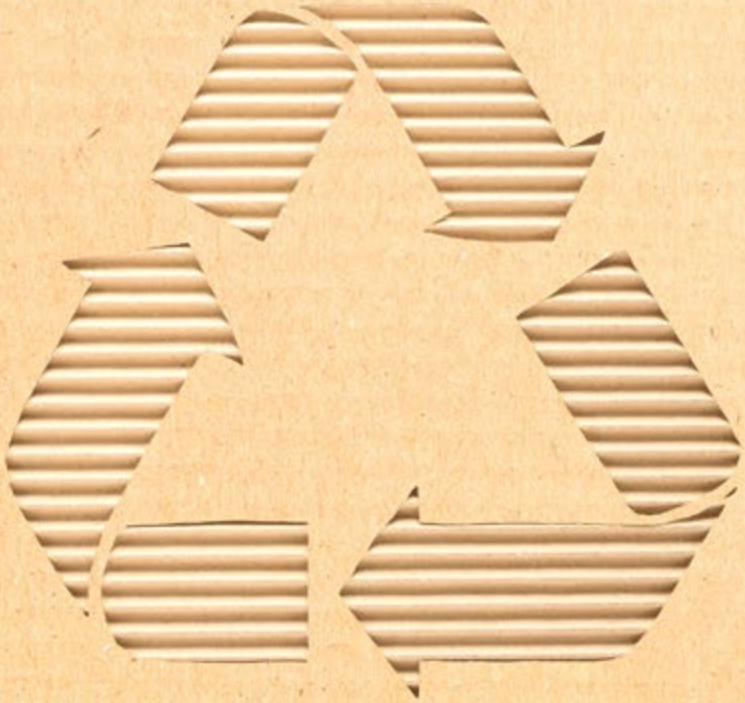

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