

# Climate Neutrality Roadmap

2050 For the Corrugated  
Cardboard Industry



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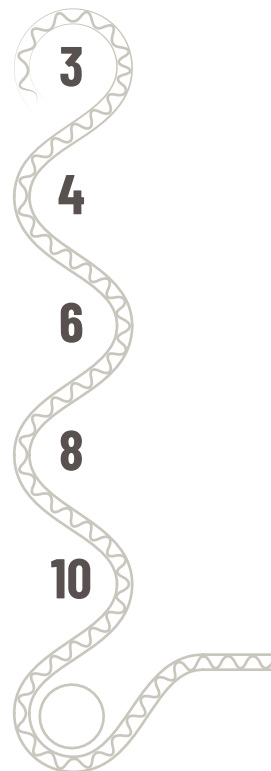
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This document is an overview of the study. More explanations can be found in the Climate Neutrality Roadmap [here](#)

# HELPING TO BUILD A CLIMATE NEUTRAL WORLD

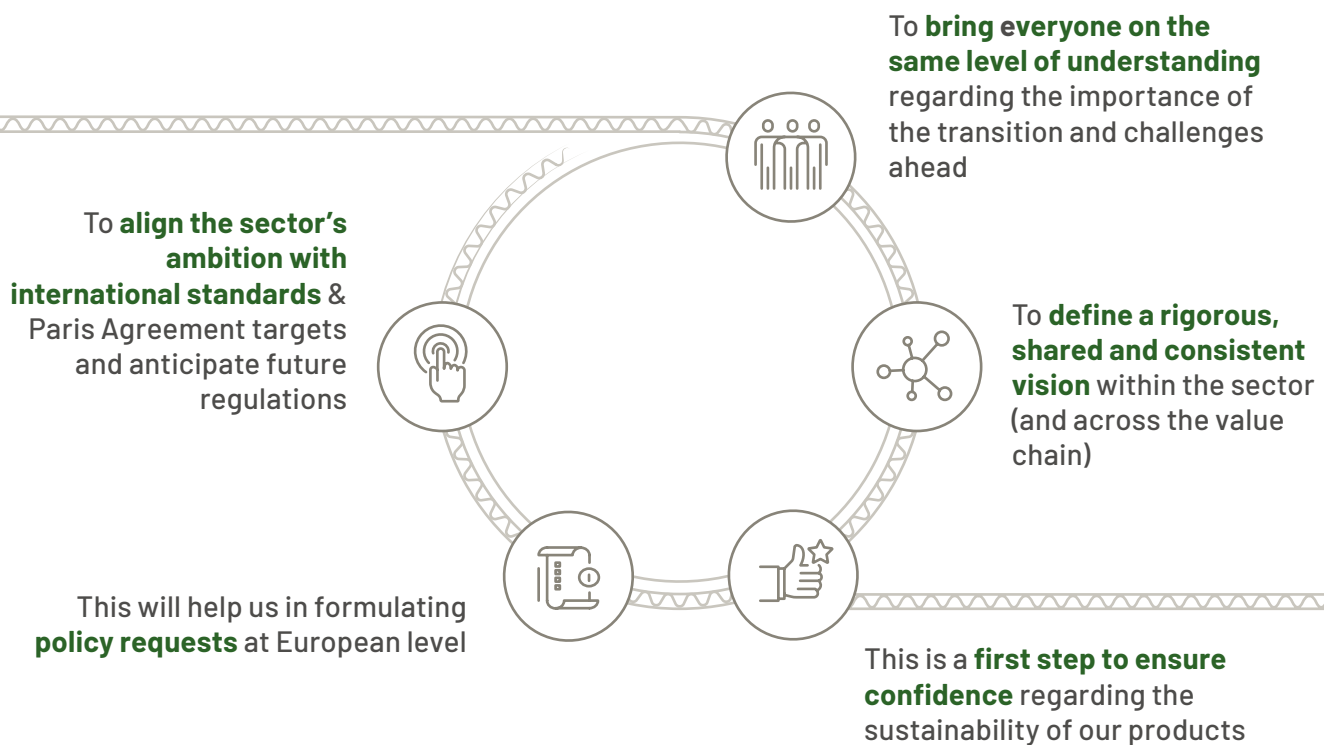
The European corrugated cardboard industry has long been a leader in the **transition to the circular economy**. Now, it is proud to announce its ambition to achieve **climate neutrality** by the year 2050, if not sooner. What follows is a roadmap that lays out in detail how the industry will achieve this goal.

To create this roadmap, FEFCO worked closely with all members across Europe.

In addition, a steering committee, several meetings with energy experts from the sector, and multiple bilateral interviews brought input and guidance. The corrugated industry is proud to speak with a **single unified voice** when it comes to the essential topic of the green transition.

This roadmap covers the EU 27 + EAA countries + the UK.

## LAYING OUT AN AMBITIOUS CLIMATE NEUTRAL ROADMAP IS AN IMPORTANT FIRST STEP FOR THE CORRUGATED INDUSTRY.



# THE CORRUGATED CARDBOARD SECTOR TODAY



Annual production of

**+50 BILLION M<sup>2</sup>**

of corrugated boards



**400** companies

**660** plants

**100 000**  
direct employees



Large improvements over  
the last 20 years:

**9%** weight decrease,

**88%** of recycled  
content in 2021\*

The industry is represented by approximately **400 companies** that directly employ **100,000 people**. Corrugated cardboard is widely used as a packaging material, protecting about 75% of all goods on their journey from producer to customer.

Corrugated packaging consistently scores well on sustainability indicators. It is a highly **circular** and **easy-to-recycle** material.

Corrugated products have on average **88% recycled content**. According to Eurostat data from 2019, about 82% of all paper and board packaging is recycled at end-of-life.

\*FEFCO industry statistics for 2021, excluding Turkey from 75% in 1996 to 88% in 2021

## THE REAL CIRCULAR ECONOMY CHAMPION



Recyclable, based on renewable sources and bio-degradable, corrugated packaging is circular by nature.

## ECO-DESIGN BUILT IN



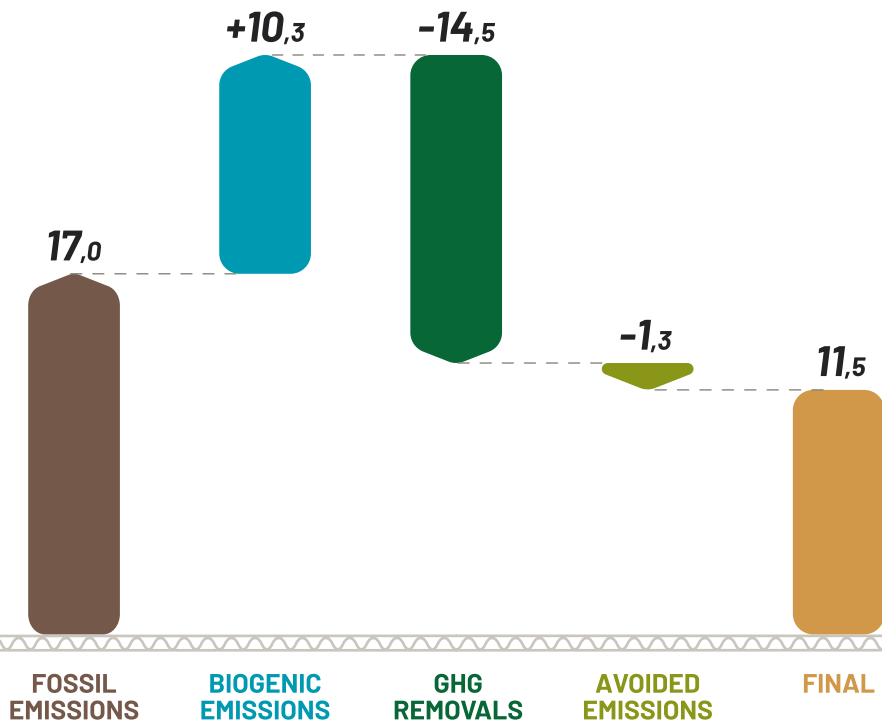
Corrugated packaging can be easily shaped for cost efficient logistics, storage handling and recycling - saving time, energy and money while preserving the environment.

## ADDING VALUE AFTER USE



Today's market for recycled paper as a secondary raw material provides value to every stakeholder across the supply chain.

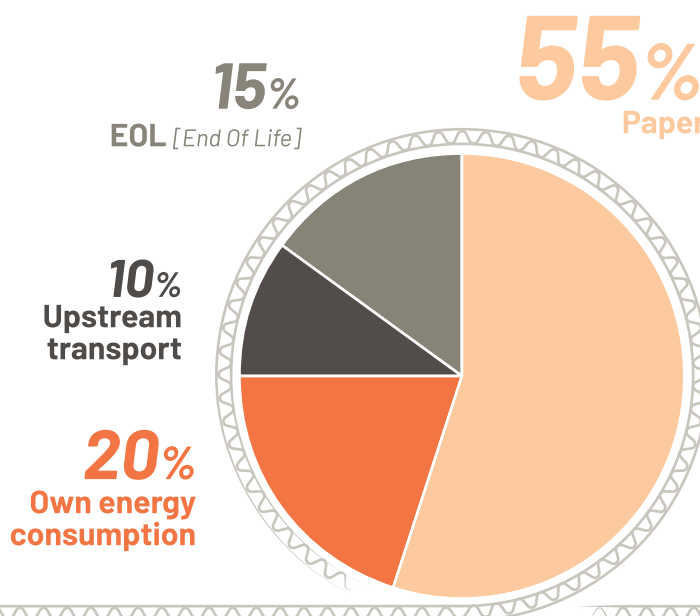
## IN 2020, THE SECTOR-WIDE FOOTPRINT WAS 11,5 MT OF CO<sub>2</sub><sub>EQ</sub>



Source: Based on LCA studies performed for FEFCO.

See <https://www.fefco.org/lca/> Including fossil emissions, biogenic emissions, emission removals, and avoided emissions.

## MAIN EMISSION SOURCES:



When looking at the different sources of emissions throughout the supply chain, upstream emissions from paper production are by far the largest source of GHG\* emissions (55%), followed by the sector's own energy use (20%), upstream transport (10%) and incineration at end-of-life (15%, mainly biogenic emissions).

\* GHG = Greenhouse Gases



# FEFCO'S ROADMAP TO ACHIEVING CLIMATE NEUTRALITY

Over the last 20 years, the corrugated cardboard packaging sector has decreased its carbon footprint by approximately **40%**.

It aims to decrease it even further, thus achieving **climate neutrality** by no later than the year 2050. In practice, this would mean that throughout the supply chain, the sector does not release more fossil or biogenic greenhouse gases into the atmosphere than the amount of GHG that are removed from the atmosphere due to the sector activities.

Future energy use depends on the eventual technology and fuel mix which will be used to supply the sector with the required energy.

## THE CORRUGATED CARDBOARD INDUSTRY CONSIDERED THE FOLLOWING SCENARIOS TO REACH CLIMATE NEUTRALITY :

1



### BUSINESS AS USUAL

This scenario simulates how the sector would evolve if no measures would be implemented

2



### ELECTRIFICATION

- Heavy focus on electrification (75% of total demand)
- Remaining heat is supplied through combination of hydrogen (40%) and biofuels (60%)

3



### BIOFUEL

- Heavy focus on use of biofuels (82,5% of total supply)
- Remaining heat is supplied through combination of direct electrification (10%) and hydrogen (7,5%)

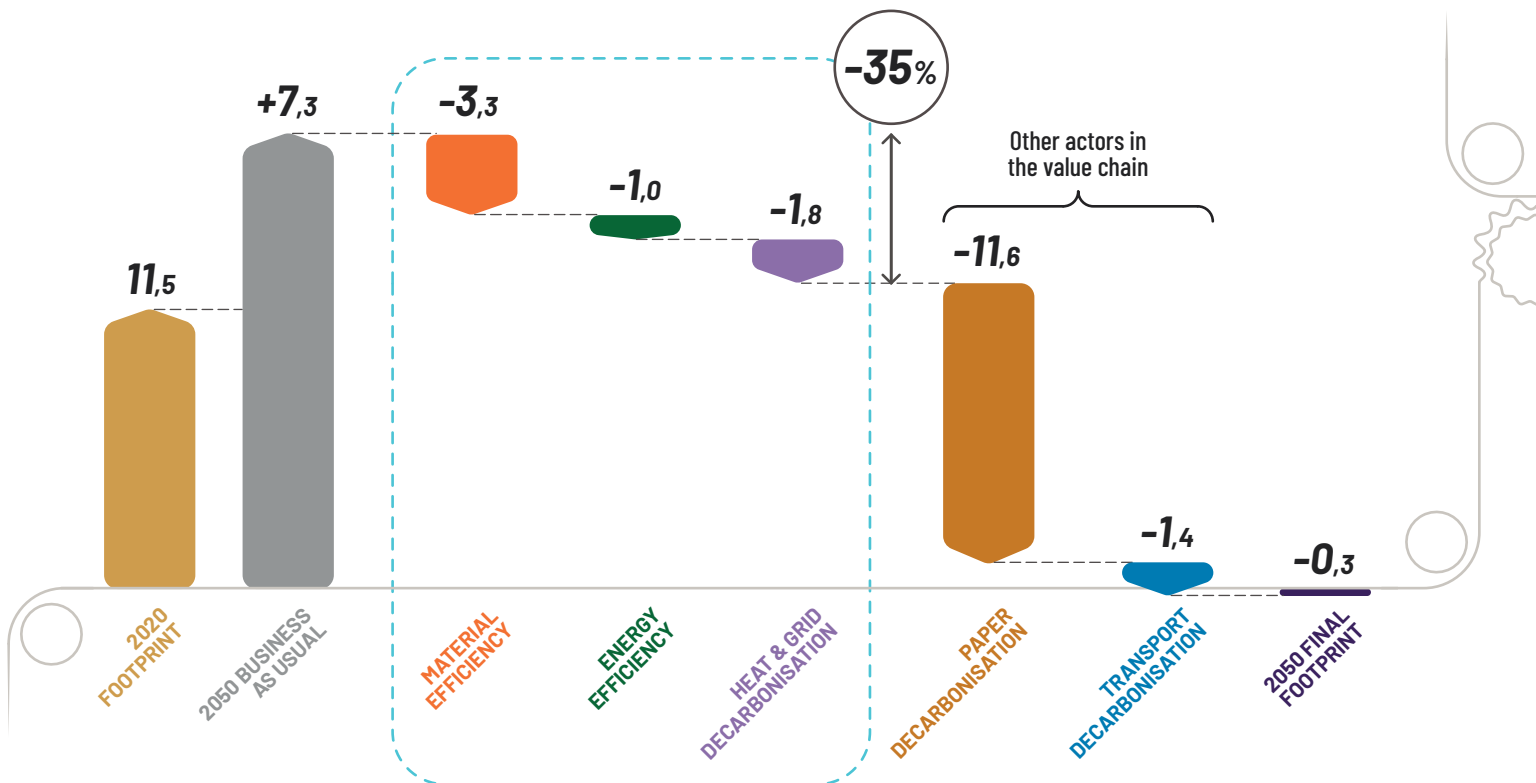
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### BALANCED

- Half of the heat (50%) is supplied by electric boilers
- 40% is supplied by biofuels (solid biomass and biomethane)
- 10% is supplied by hydrogen
- Switch to low-carbon heat supply (electrification, biofuels) and decarbonised grid electricity

## THIS IS HOW ALL SCENARIOS REACH CLIMATE NEUTRALITY BY 2050



## Actions within the corrugated cardboard industry:



Improving  
**MATERIAL  
EFFICIENCY**

**-3,3** Mt CO<sub>2eq.</sub>

Reduce the average weight of corrugated packaging, increase recyclability and recycling, minimize material losses during the production processes and improve product design.



Improving  
**ENERGY  
EFFICIENCY**

**-1,0** Mt CO<sub>2eq.</sub>

Reducing heat losses/recover waste heat, auto-production of renewable electricity (PV \*), more efficient machinery.



Improving  
**HEAT & GRID  
DECARBONISATION**

**-1,8** Mt CO<sub>2eq.</sub>

Switch to low-carbon heat supply (electrification, biofuels) and decarbonised grid electricity

## Actions outside the industry:



Improving  
**PAPER  
DECARBONISATION**

**-11,6** Mt CO<sub>2eq.</sub>

The European paper sector, represented by CEPI has developed clear roadmap and aiming \* to reduce its carbon footprint by 80% (by 2050).

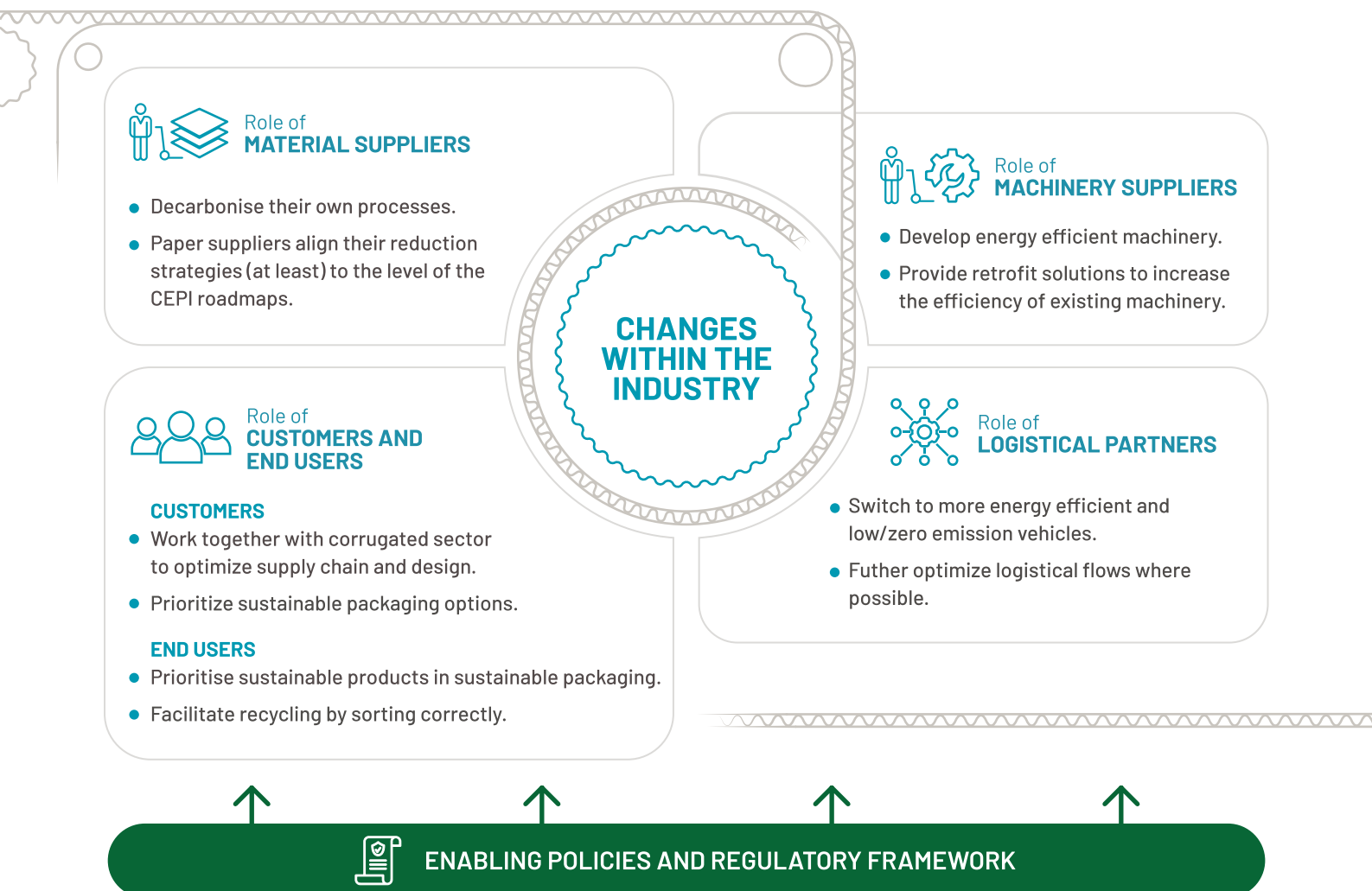
\* <https://www.cepi.org/wp-content/uploads/2020/11/Roadmap-2050-Final-2017.pdf>.



Improving  
**TRANSPORT  
DECARBONISATION**

**-1,4** Mt CO<sub>2eq.</sub>

## ACTION NEEDED THROUGH THE ENTIRE VALUE CHAIN - AND BY REGULATORS



## THE POLICY LANDSCAPE NEEDED FOR SUCCESS

- 1** A PREDICTABLE AND STABLE REGULATORY FRAMEWORK TO STEER INVESTMENTS.
- 2** AVAILABLE AND AFFORDABLE CLIMATE-FRIENDLY ENERGY CARRIERS.
- 3** ADEQUATE AND ROBUST ENERGY INFRASTRUCTURE.
- 4** POLICIES AND MEASURES TO ENABLE THE DECARBONISATION OF THE PAPER AND TRANSPORT SECTORS.
- 5** POLICIES TO IMPROVE THE QUALITY OF WASTE STREAMS FOR RECYCLING.



## ALL CLIMATE NEUTRAL SCENARIOS REACH CLIMATE NEUTRALITY BY 2050 AND -32% BY 2030 COMPARED TO 2020



Climate neutrality by 2050 is the way that the European Commission foresees its future growth strategy. The FEFCO Secretariat considers it as a duty to guide and assist the corrugated cardboard industry to enable climate neutrality in its manufacturing operations.



**ELENI DESPOTOU**

FEFCO Director General

# CONCLUSION OF THE ROADMAP

The **European corrugated cardboard** sector has the ambition to achieve climate neutrality by 2050 at the latest. This ambition covers the sector's full carbon footprint; to reach its goal, it involves working with the entire value chain and relying on prerequisite enabling conditions.



## THE CORRUGATED CARDBOARD INDUSTRY

The **industry, alongside its suppliers and customers**, should optimise the material efficiency of its products and improve its machinery's energy efficiency, and decarbonise its energy mix.

These will reduce the sector's emissions significantly and allow the corrugated cardboard industry to achieve its climate neutrality.



## DECARBONISED ENERGY SUPPLY

The corrugated cardboard sector counts on the full **decarbonisation of the energy supply of the EU electricity grid** to achieve its ambition by 2050.



## SUPPLIERS AND VALUE CHAIN

The decarbonisation of the **industry's upstream emissions**, mainly the paper and transport sectors, is **essential** to reach climate neutrality.



## EU POLICIES

The industry needs enabling policies and a stable regulatory framework to take on the investment required to decarbonise the corrugated cardboard sector.

EU policies must consider the following measures:

- To ensure a sufficient, **secure and affordable supply of carbon neutral energy carriers** (renewable electricity and bio-based fuels).
- To **enable** the **decarbonisation** of the **paper** and **transport** industry.

The corrugated cardboard sector can achieve climate neutrality if the paper sector reduces its (fossil) carbon footprint by 80% by 2050. It can even become climate negative if the paper sector fully phases out its fossil emissions.

The paper sector has announced in [its manifesto](#) that with strong political support, it can and will contribute - with product substitution, sustainable forest management and decarbonised production - to reaching the 2030 goal and European carbon neutrality in 2050.

## ABOUT FEFCO

FEFCO (European Federation of Corrugated Board Manufacturers) represents the interests of the European Corrugated Board Manufacturers. Headquartered in Brussels, FEFCO has 16 Association members, all European national corrugated packaging organisations. The role of the Federation is to investigate economic, financial, technical and policy issues of interest to the corrugated packaging Industry, to analyse all factors which may influence the industry, and to promote and develop its reputation.

## ABOUT CLIMACT

CLIMACT is a consulting company active in the energy transition and climate change since 2007. It is based in Louvain-la-Neuve and Brussels (BE) and has about 40 employees. CLIMACT empowers its clients to act on climate change. It uses its expertise and experience to identify and remove barriers hence facilitating the implementation of adequate solutions.

VIEW THE EXECUTIVE SUMMARY OF  
THE ROADMAP [HERE](#)





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