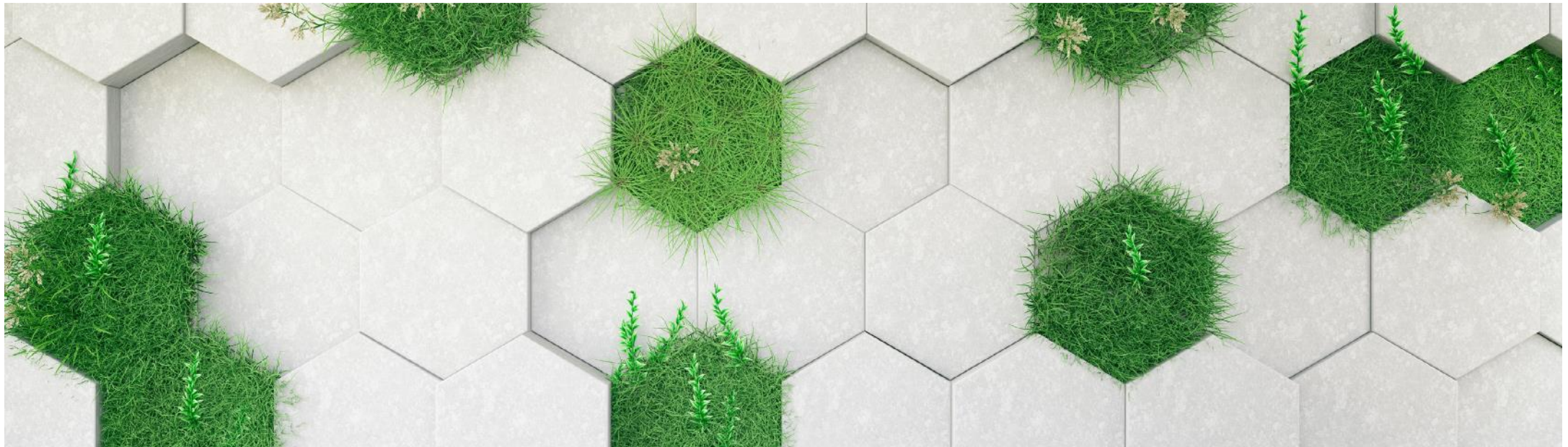
Nikos Nikolakakos

- CEMBUREAU
- Environment and Resources Manager

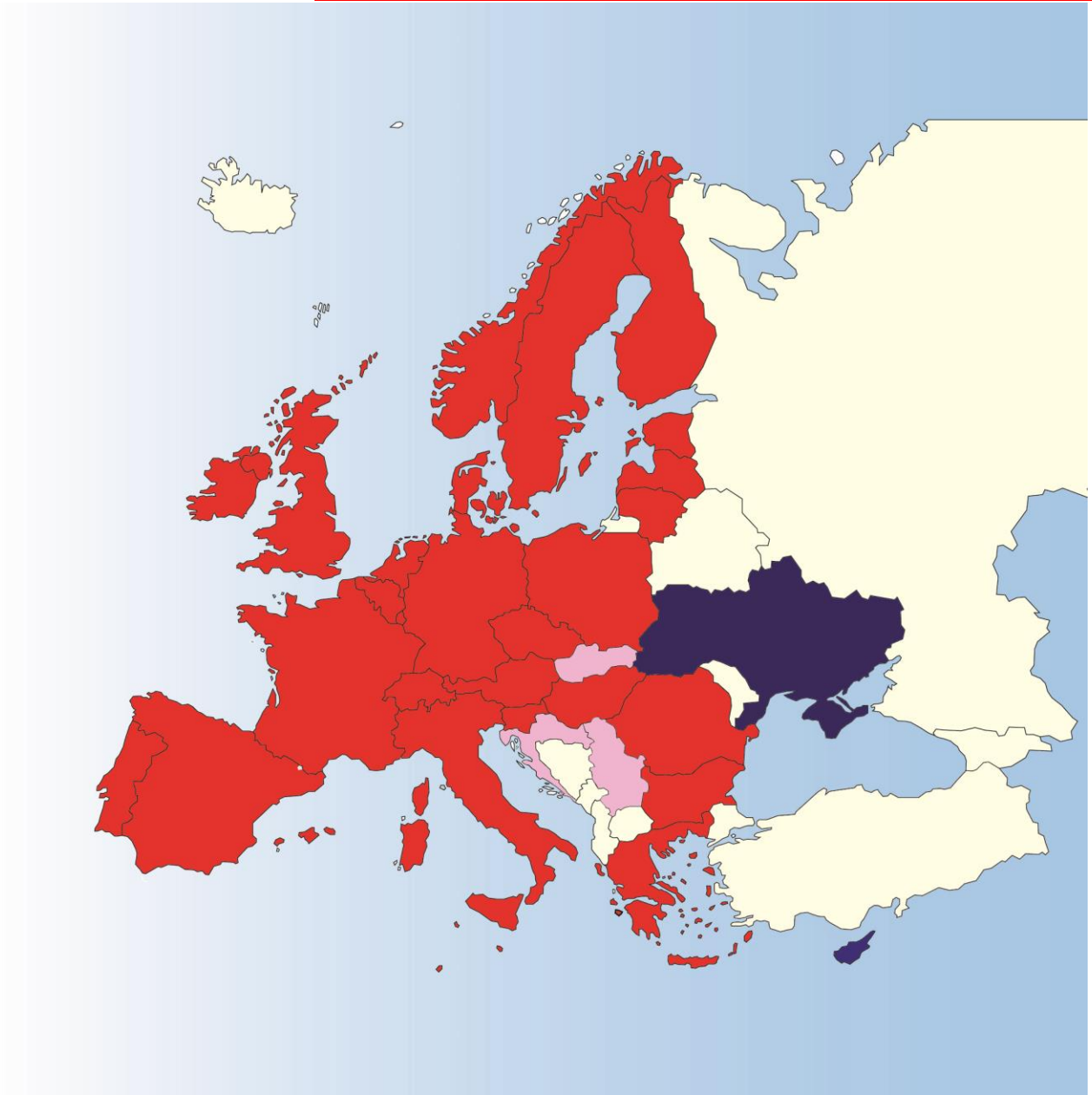
PLAST
INDUSTRIEN

NEXT-GEN COMPOSITES RECYCLING

Nikos Nikolakakos



CEMBUREAU
The European Cement Association



Today: 29 Members
(26 full Members and
3 Associate Members)

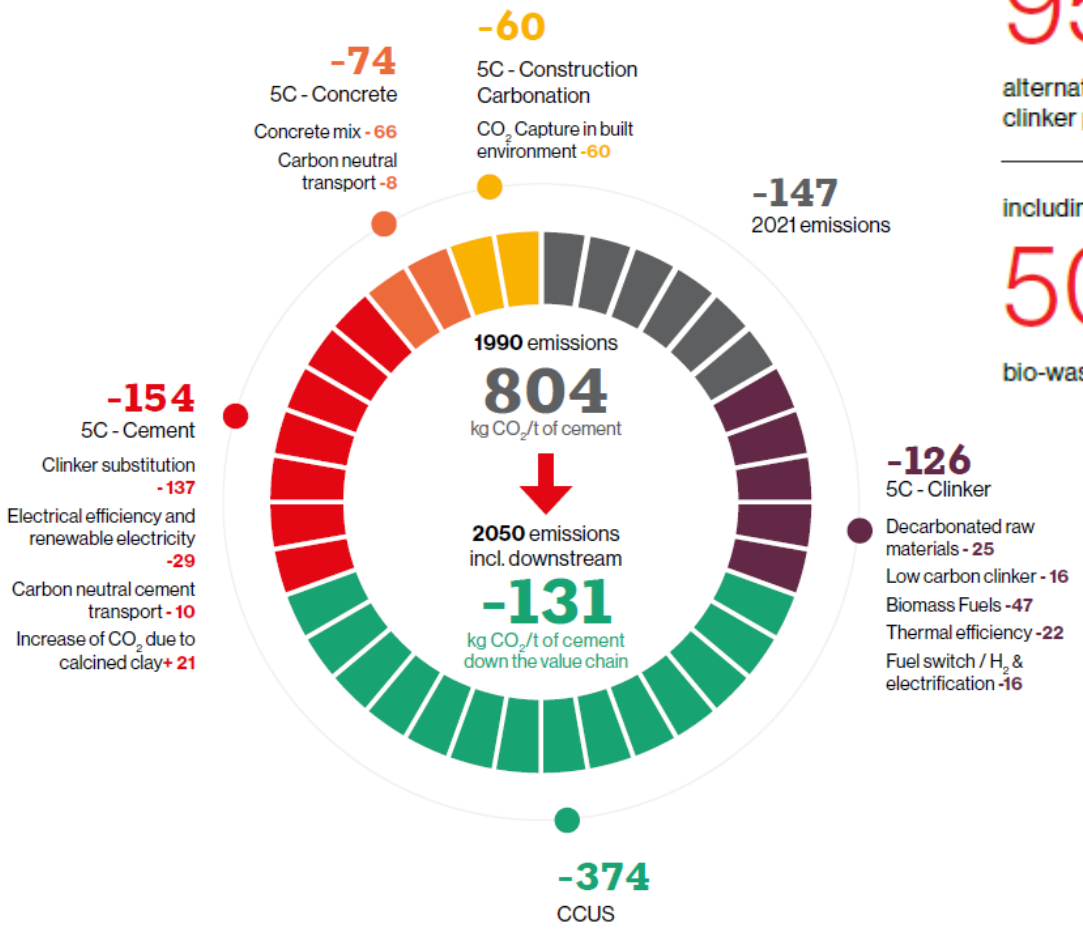
Full Members = national cement industry associations and cement companies of the European Union (with the exception of Malta) plus Norway, Switzerland, and the UK

Croatia, Serbia and Slovakia are Associate Members of CEMBUREAU

Cooperation agreement with Vassiliko Cement (Cyprus) and with the Cement Association of Ukraine

CEMBUREAU 2050 updated roadmap

CO_2 reduction along the cement value chain (5Cs: clinker, cement, concrete, construction, re-carbonation)



By 2050,

95%

alternative fuel used in clinker production

including

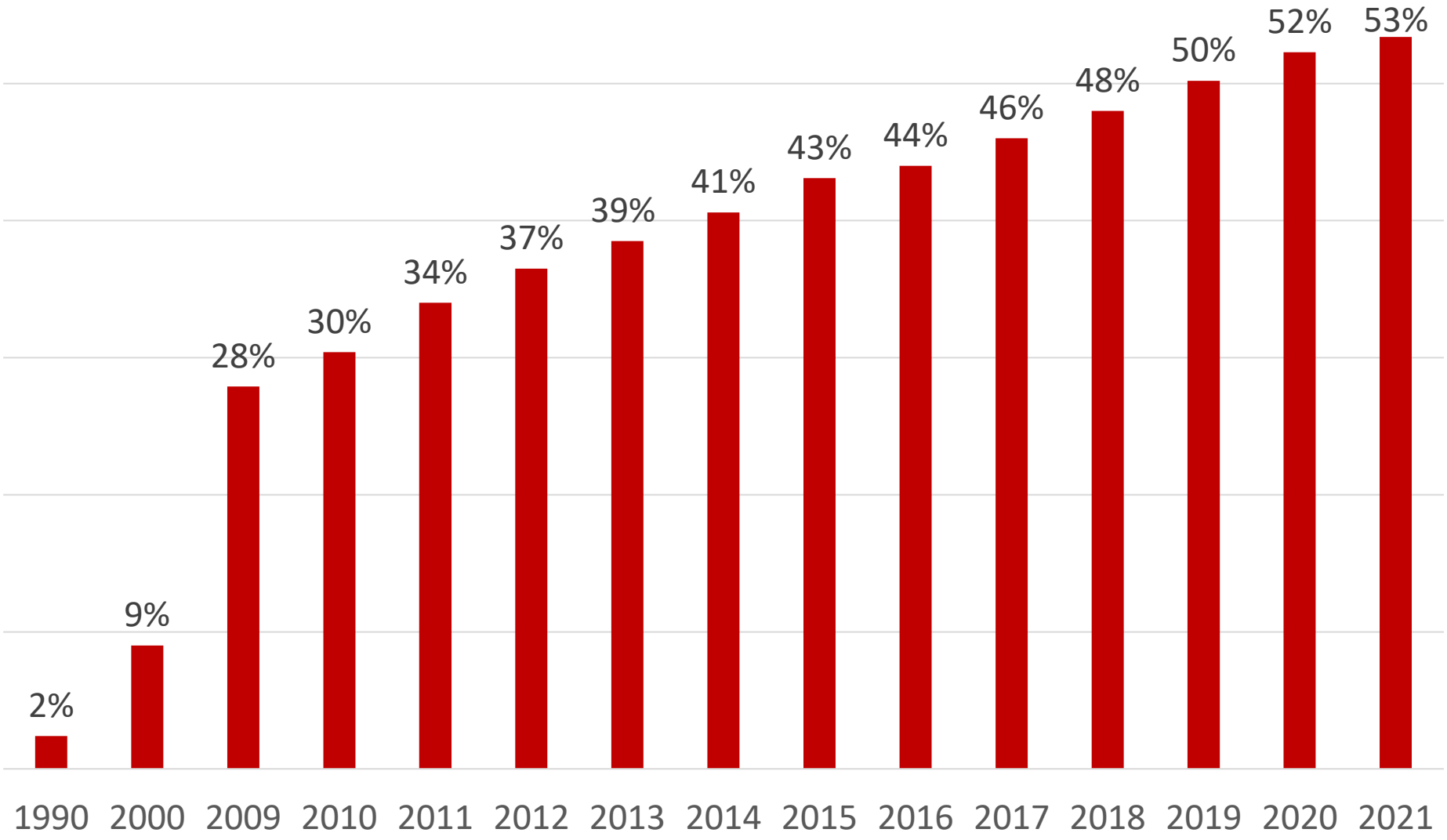
50%

bio-waste use

The role of policy

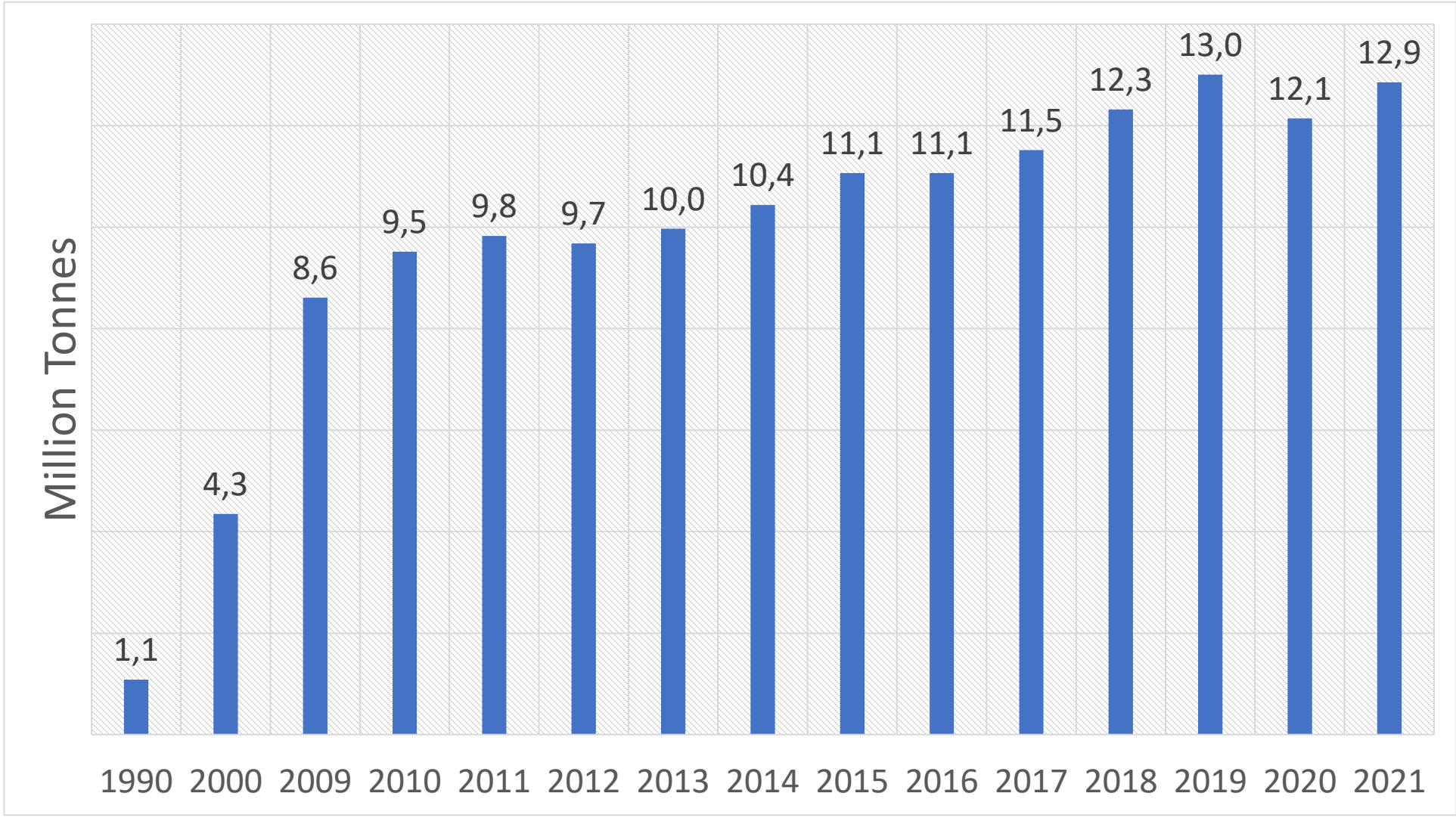
- Ensure **sufficient and long-term access** to zero-rated sustainable biowaste.
- Acknowledge the **dual benefits** of material recycling and energy recovery achieved through coprocessing in the cement sector.
- Count the portion of materials effectively recycled through coprocessing towards **Member States recycling targets** under the Waste Framework Directive.

Average % of Thermal energy from Alternative Fuels in the Cement sector in the EU



Source: Global Cement & Concrete Association (GCCA)

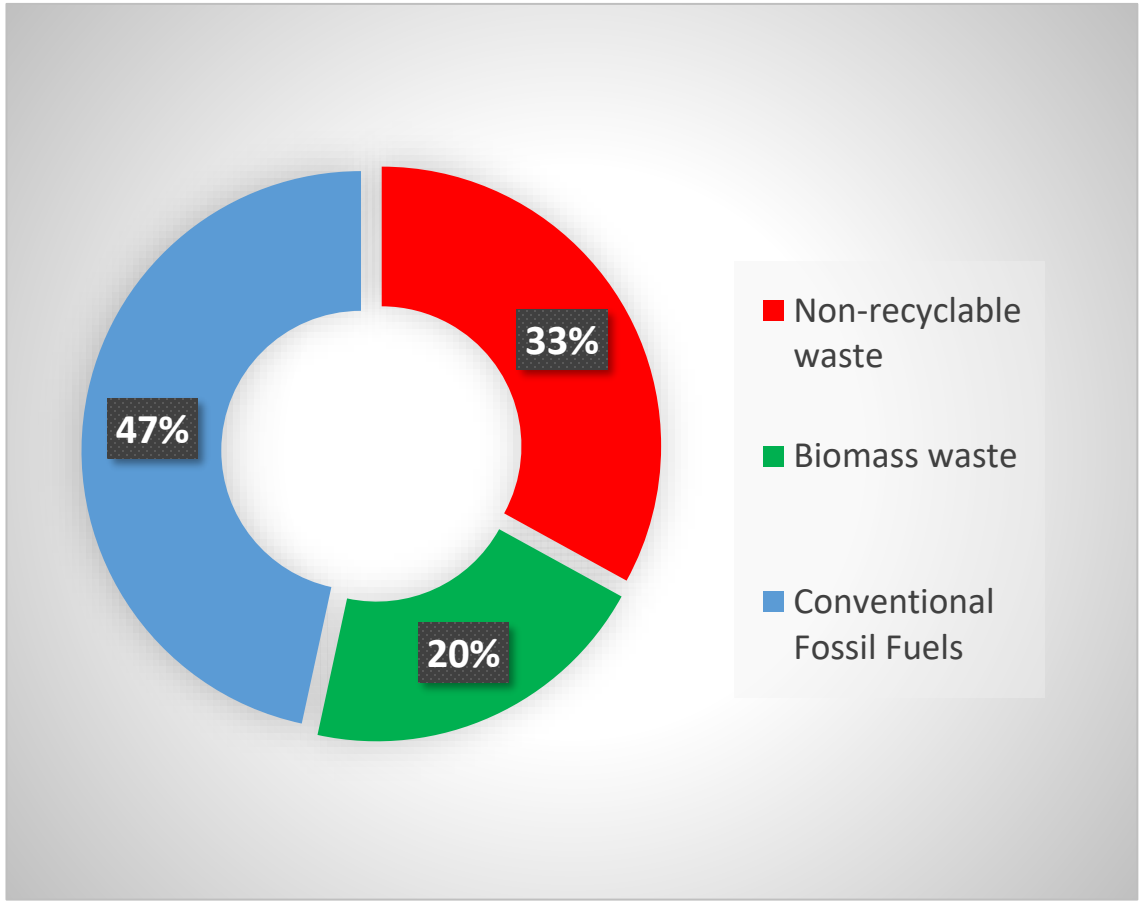
Alternative fuels used in the cement sector in the EU



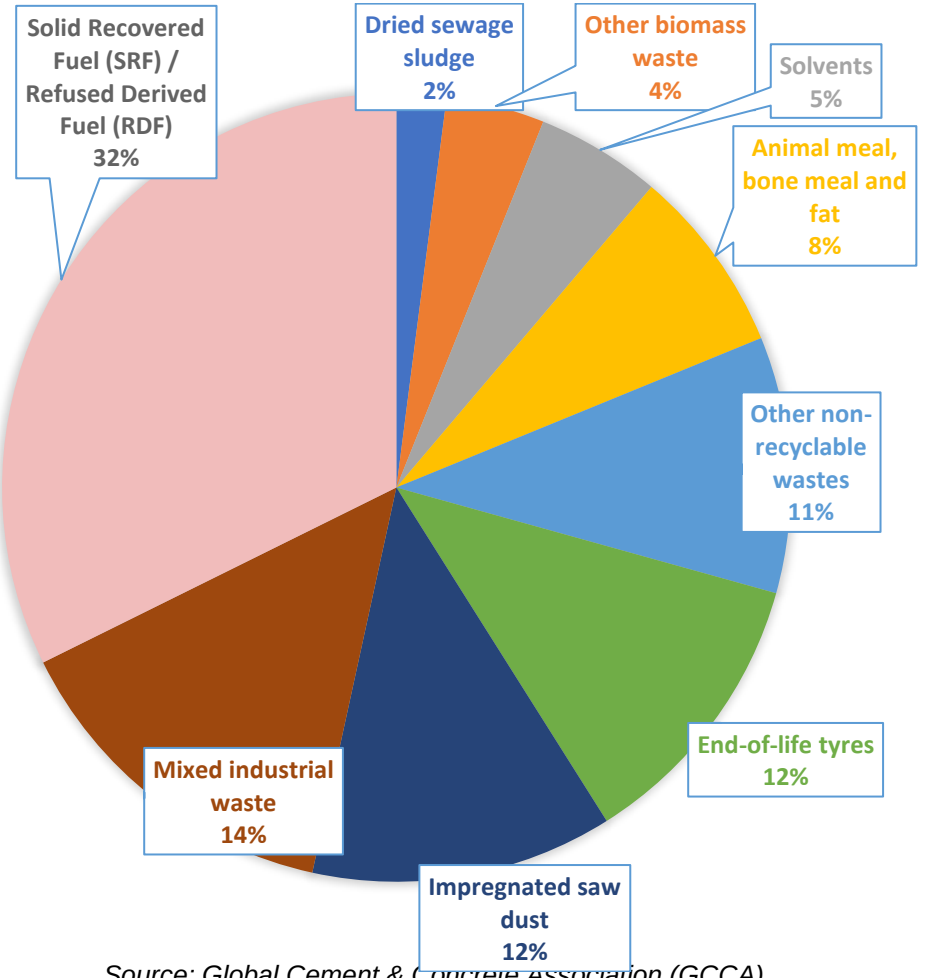
Source: Global Cement & Concrete Association (GCCA)

Update 2021 data: Alternative Fuels use in the EU

THERMAL ENERGY CONSUMPTION BY FUEL TYPE for the year 2021

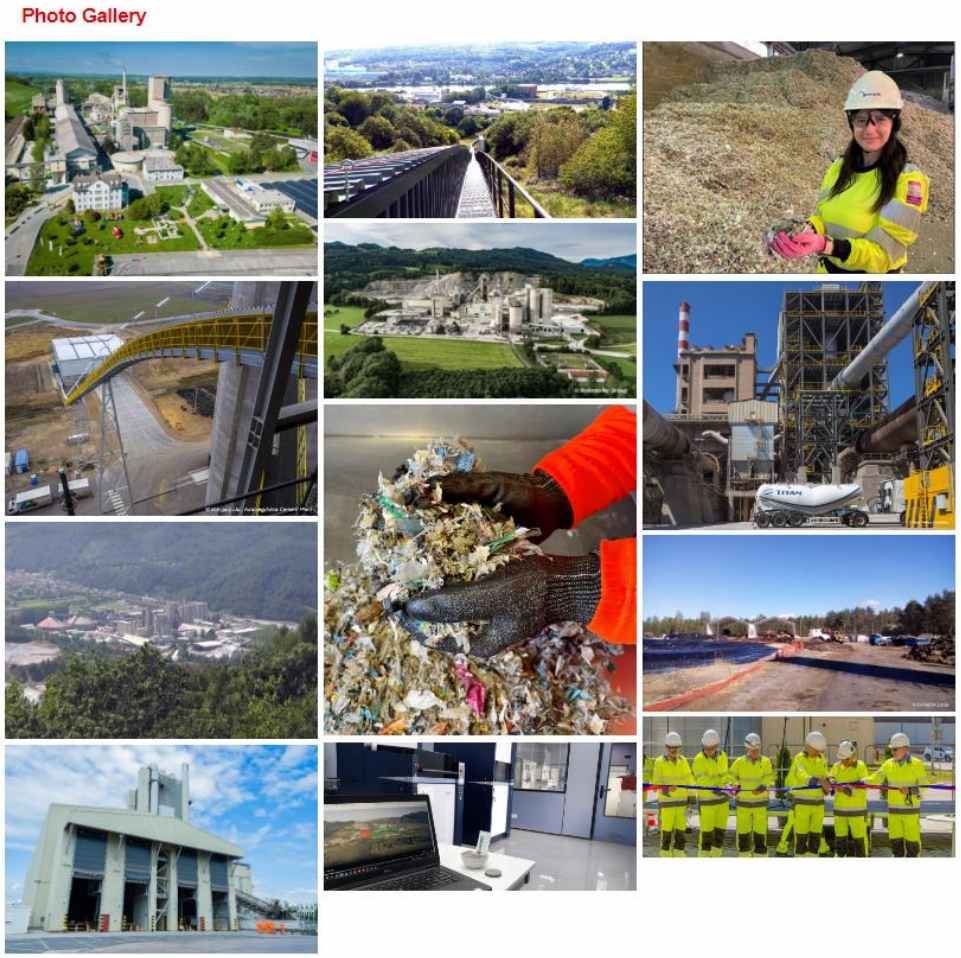


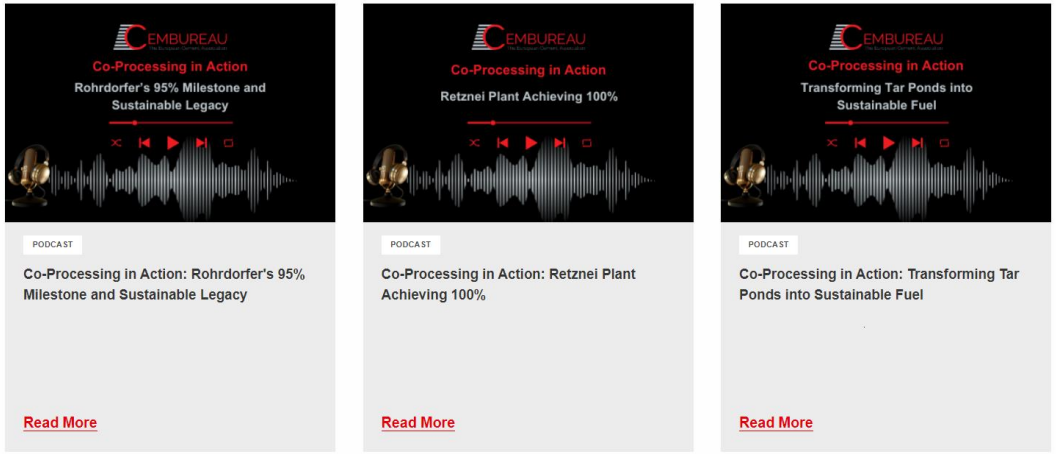
BREAKDOWN OF ALTERNATIVE FUELS 2021



Source: Global Cement & Concrete Association (GCCA)

Co-processing examples





Podcasts: Interviews with the cement operators

Social media posts:
LinkedIn
X (former twitter)
Spotify

CEMBUREAU's web site: case studies of how co-processing can replace even **up to 100%** of fossil fuels in the cement industry.

Recycling composites by cement co-processing

Cement co-processing is commercially and technically proven for treating end-of-life glass reinforced composite materials

Benefits of material recycling:

- **Benefit of re-using materials :**Reducing the use of natural raw materials in cement manufacturing
- **Energy recovery** :Mitigating climate change contributions through replacement of fossil energy sources (pet coke, coal, lignite)

Ultimately reducing required energy and CO_2 emissions in cement manufacturing process

70%

recycling raw material (glass fibre and mineral filler)

30%

energy recovery resins

Recycling composites by cement co-processing

Position paper

June 2023

Cement co-processing is a sustainable solution for recycling end-of-life composite materials.

Executive summary

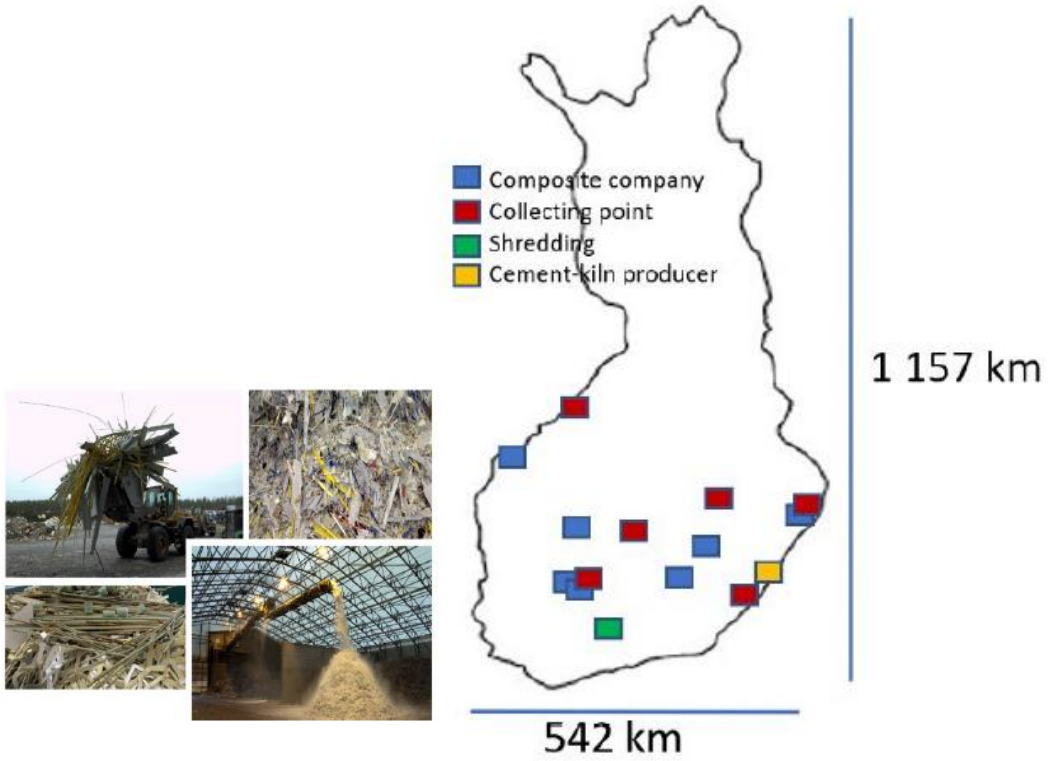
This paper summarises the position developed by WindEurope, EuCIA, CEMBUREAU, EBI, Cefic UP/VE, Cefic Epoxy Europe, and Glass Fibre Europe on the benefits of cement co-processing for end-of-life composite materials used in construction, wind, marine, infrastructure and industrial markets and how the EU regulatory framework can help to scale it up. Co-processing offers a sustainable and circular solution for recycling the end-of-life glass fibre reinforced composite materials. As partners, these organisations want to promote sustainable recycling approaches and encourage composite use sectors beyond the wind and boating industry to sustainable recycle their end-of-life composite materials.

Cement co-processing: A sustainable and circular solution for end-of-life composites

The associations representing the composites value chain including constituent material manufacturers, composites fabricators, composites users (wind and boating) as well as the cement manufacturers agree that cement co-processing offers a sustainable recycling solution, using 100% of end-of-life composite materials that can immediately be deployed at large scale, which is different from other promising composite recycling technologies that have not reached yet technical and/or economical readiness. The cement co-processing of end-of-life composite materials allows material recycling by reducing the use of natural raw materials in cement manufacturing, while mitigating climate change contributions through replacement of fossil energy sources. As the cement in concrete can be fully recycled and used to make new concrete, cement co-processing is also a circular solution for the end-of-life composite materials.

This is a win-win solution that:

1) Allows for a sustainable recycling solution for end-of-life composite materials from decommissioned assets, vessels, and composites manufacturing processes.
2) Supports the sustainable development and decarbonisation of the European construction market.
3) Increases the overall circularity of end-of-life composite materials.



Joint position paper: Cement co-processing is a **sustainable solution** for recycling end-of-life composite materials.

KiMuRa project, Finland: more than 1000 tons of composite waste has been processed. Cross-industry solution. Important the logistics optimization; collecting not only end-of-life boats but all composite materials.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