



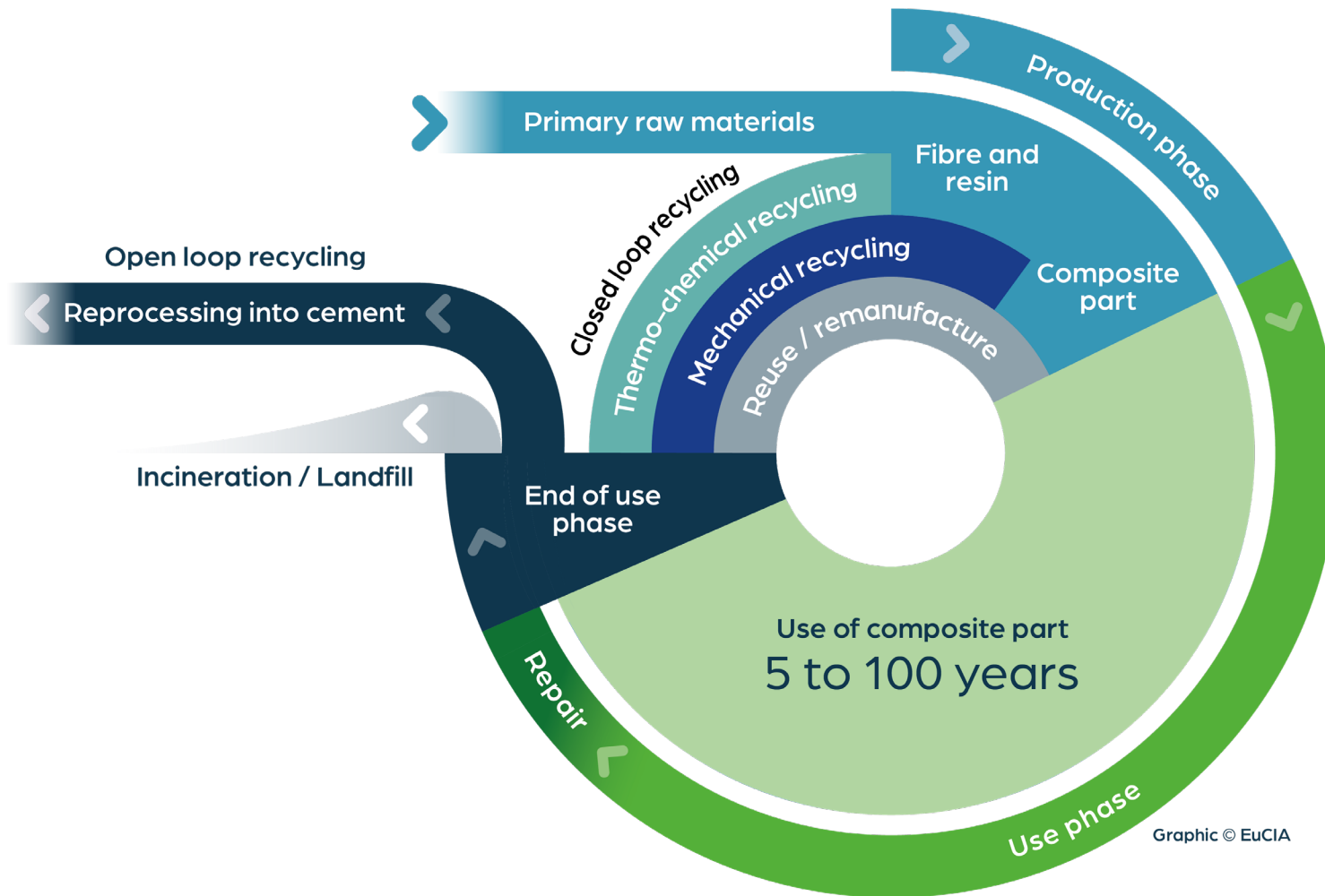
# Enabling the Recycling of End-of-Life Composites through Cement Co-Processing

## LCA Study Details and Conclusions

October 8<sup>th</sup>, 2024



# Composites are Circular



Cement co-processing is both commercially and technically proven for treating end-of-life glass reinforced composite materials and can immediately be deployed at large scale

Cement co-processing could pave the way for other composites recycling technologies at various Technology Readiness Levels (TRL)

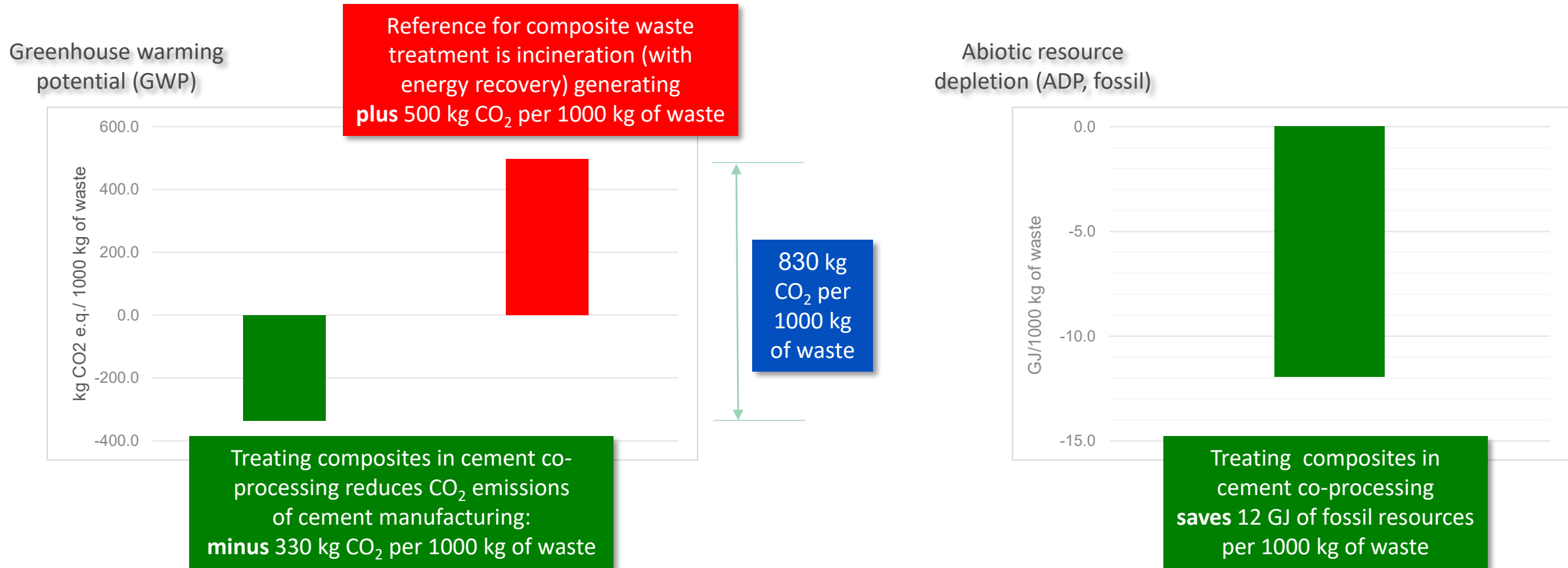
# Glass Fibers Used as Raw Materials for Cement Clinker



- **Recycling materials**
  - Reducing use of conventional raw materials (i.e. limestone, bauxite, silicium oxide) in cement manufacturing
  - Up to **70 %** of composite weight (glass fiber and mineral filler) is used to replace virgin raw materials
- **Energy recovery**
  - Mitigating climate change contributions, replacing fossil energy sources (e.g. coal)
  - **30 %** of composite weight (resin matrix) is used as energy recovery

# Cement Co-processing Makes Sense for Treating End-of-life Composites

Each ton of composite waste treated by co-processing in cement saves ~830 kg CO<sub>2</sub> vs. incineration\*



\* Comparing composite waste vs. traditional cement raw materials and fuels (in this calculation: coal)

# Industry Associations Supporting this LCA Study

	<p><b>Glass Fibre Europe:</b> Founded in 1987, is the voice of the European continuous filament glass fibre industry. The continuous filament glass fibre industry is the cornerstone of the glass-based composite materials and technical textiles value-chains. <a href="http://www.glassfibreeurope.eu">www.glassfibreeurope.eu</a></p>		<p><b>EuCia</b>, the European Composites Industry Association is composed by European national composites associations and industry-sector groups. 10,000 companies and 150,000 employees. <a href="http://www.eucia.eu">www.eucia.eu</a></p>
	<p><b>EBI</b>, the European Boat Industry represents the recreational boating and nautical tourism industry in Europe. It encompasses all related sectors, such as manufacturing, services, infrastructure and tourism. <a href="http://www.europeanboatingindustry.eu">www.europeanboatingindustry.eu</a></p>		<p><b>European Alliance for SMC BMC</b> is an industry association of European companies promoting the benefits of SMC BMC composite solutions. <a href="https://smcbmc-europe.org/">https://smcbmc-europe.org/</a></p>
	<p><b>WindEurope</b> is the voice of the wind industry representing over 500 organizations from across the whole value chain of wind energy. <a href="http://www.windeurope.org">www.windeurope.org</a></p>		<p><b>UP/VE</b> The UPR/VE Resin Association, a Cefic Sector group, represents unsaturated polyester (UPR) and Vinyl Ester (VE) resins producers of Europe. <a href="http://www.upresins.org">www.upresins.org</a></p>
	<p><b>TECH-FAB Europe</b> is an association made up of the main European Technical Textile producers. Our products are high-performing engineered textiles that bring lightweight, strength and many other benefits to our everyday lives. <a href="http://www.tech-fab-europe.eu">www.tech-fab-europe.eu</a></p>		<p><b>EPOXY EUROPE</b>, a Cefic sector group, represents the interests of the major European epoxy resins manufacturers since the early 1980s. <a href="http://www.epoxy-europe.eu">www.epoxy-europe.eu</a></p>
	<p><b>CEMBUREAU</b>, the European Cement Association is the representative organization of the cement industry in Europe. Currently, its Full Members are 23 national cement industry associations and cement companies of the European Union plus Norway, Switzerland and the UK. <a href="http://www.cembureau.eu">www.cembureau.eu</a></p>		<p><b>Cefic</b>, the European Chemical Industry Council, was founded in 1972, and is the voice of large, medium and small chemical companies across Europe, which provide 1.2 million jobs and account for 16% of world chemicals production. <a href="http://www.cefic.org">www.cefic.org</a></p>