

LCA₄Waste

Improving the transparency in waste management

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Holcim

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Sustainable Development, Alternative Resources

For more than 20 years, Holcim has been offering waste management services through co-processing - globally.

Co-Processing refers to the use of waste materials in industrial processes, such as cement, lime, or steel production and power stations instead of traditional fuels and raw materials. It is a recovery of energy and/or material from waste. The cement industry is the only industry which does both at the same time.

Characteristics	Temperature and time
Temperature at main burner	>1450°C: material >1800°C: flame temperature.
Residence time at main burner	>12-15 sec and >1200°C >5-6 sec and >1800°C
Temperature at precalciner	>850°C: material >1000°C: flame temperature
Residence time at precalciner	>2 - 6 sec and >800°C

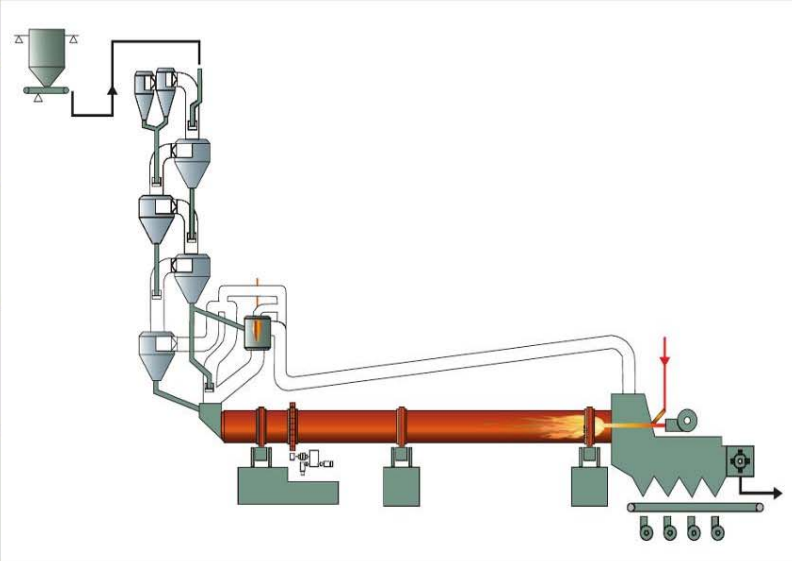
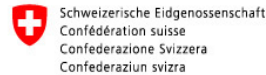


Table 2: Temperature and residence time during cement production

Acknowledging the importance of LCA, Holcim fosters the collaboration on LCA in an interdisciplinary manner



- Project mission
 - ▶ Promote LCA for strategic decision making in waste and resource management
 - ▶ Provide adequate and comprehensive assessment tools
 - ▶ Implement the research results in industry
- A set of tools allows the comparison of ecological impacts of various waste management options



Clinker production



Incineration



Land-filling

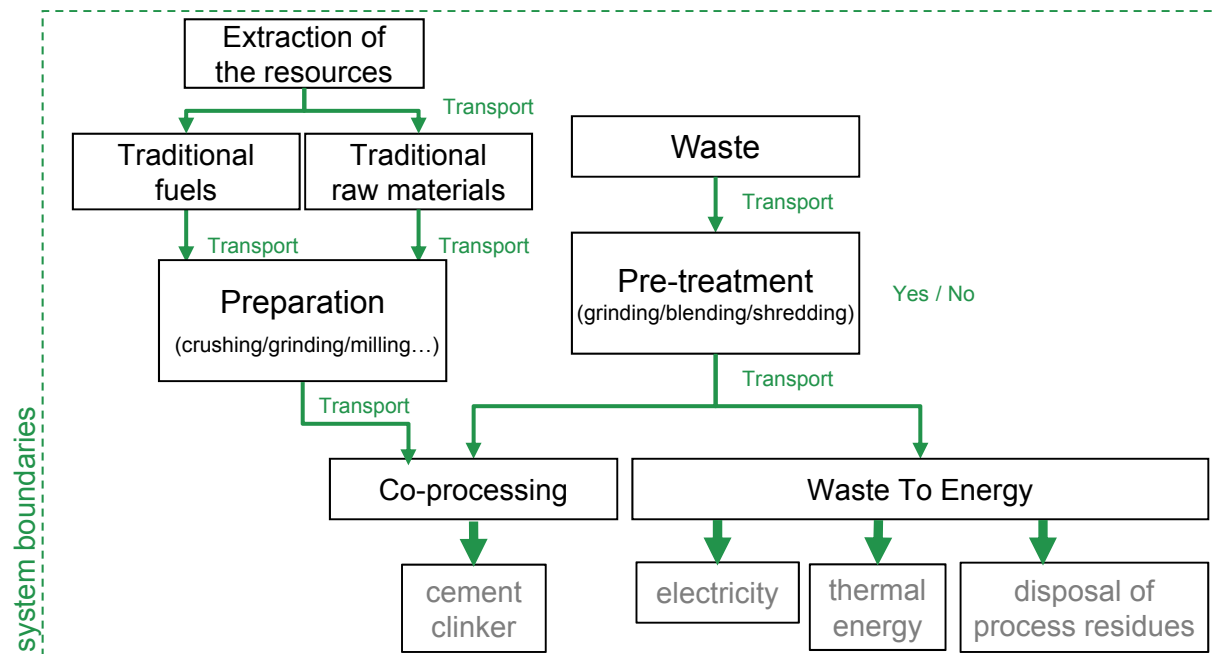


Blast furnace



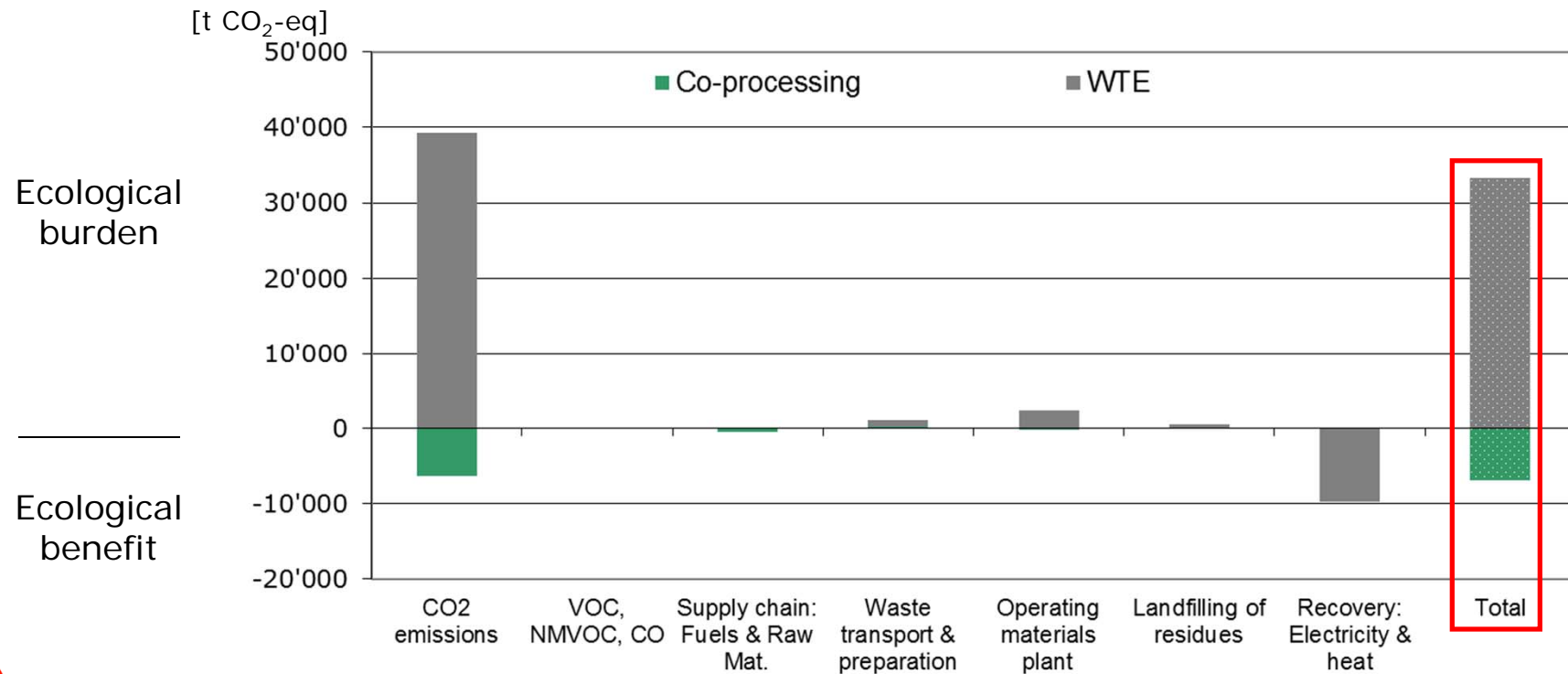
Case study: Co-processing of disused wind rotor blades vs. treatment in a waste to energy incinerator in Germany.

- Goal of the study
 - Compare disused wind rotor blades co-processing to waste treatment in a waste to energy (WTE) incinerator.
- Functional Unit
 - Treatment of 30'000 tons of wind mill rotor blade material.
- Assumptions
 - Clinker production: Disused wind rotor blades substitutes brown coal
 - WTE: Grate furnace with electricity ($\eta=6\%$) and heat ($\eta=14\%$) recovery*



The result* for this specific case study shows that co-processing is favorable compared to waste incineration.

- The incineration of disused wind rotor blades generates an ecological burden
- The difference between co-processing and WTE for the treatment of 30'000t of wind rotor blades equates around 40'000 t CO₂-eq.



LCA₄Waste is a strategic tool to support systematic decision making in waste management

- It helps Holcim and its stakeholders to better understand and evaluate the effects of co-processing
- It quantifies the effects of different waste treatment options
- It is flexible and user friendly
 - ▶ Different LCIA methodologies
 - ▶ Customization of technologies, wastes, industries
 - ▶ Pre-defined but modifiable values
 - ▶ Modular concept, further modules can be developed
- Within the LCIA considered, the case study presented here revealed that co-processing of disused wind rotor blades is favorable compared to treatment in a waste to energy incinerator. The study is currently reviewed externally.

Thank You!



Because tomorrow matters



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