

Energy Efficiency in the Cement Sector

The EU policy on Circular economy aims at optimising the use of resources overall, including energy. At the heart of the EU Clean energy package, energy efficiency is one of the most efficient ways to achieve such an objective and the cement industry is very much committed to it.

The cement industry plays an important role in the circular economy, primarily through the simultaneous energy recovery and material recycling of alternative fuels in the process of waste to energy, known as co-processing.

The cement industry can help to reduce emissions by substituting fossil fuels with waste or biomass.

Used tires, wood, unrecyclable plastics, chemicals and other types of waste are co-combusted in cement kilns in plants across Europe, where

average substitution rates span from 7% to 65%.

The European cement industry has steadily increased its use of alternative fuels from

1 million ton in 1990



to over 11 million tons in 2015.



In the cement industry, **over 40% of thermal energy used** to supply the clinker making process **comes from waste and biomass.**

Co-processing leads to four important outcomes:



Reducing the CO₂ intensity of cement manufacturing.



Reducing our dependence on virgin fossil fuels.



Decreasing the amount of waste which is landfilled.



Minimising public investment cost in new dedicated facilities.

It's a **more efficient waste management solution** than landfilling or incineration and means the cement industry is actually a net consumer of waste and **at the heart of the circular economy.**

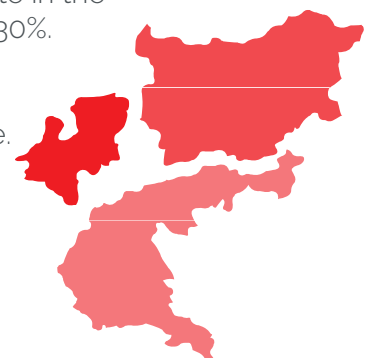


Co-processing has great potential. While the average co-processing rate in the EU-28 was 41% in 2014, there were 6 countries that performed less than 30%.

There is no technological limitation for the cement sector to reach 60% co-processing rate in 2030 and it could process 15.7 million tons of waste.

This is equal to the amount of waste generated by households in The Netherlands, Greece and Bulgaria in 2014.

The main drivers for co-processing are: incentives for separate waste collection, applying landfilling ban in all EU Member States and low bureaucracy for usage of waste for kilns.



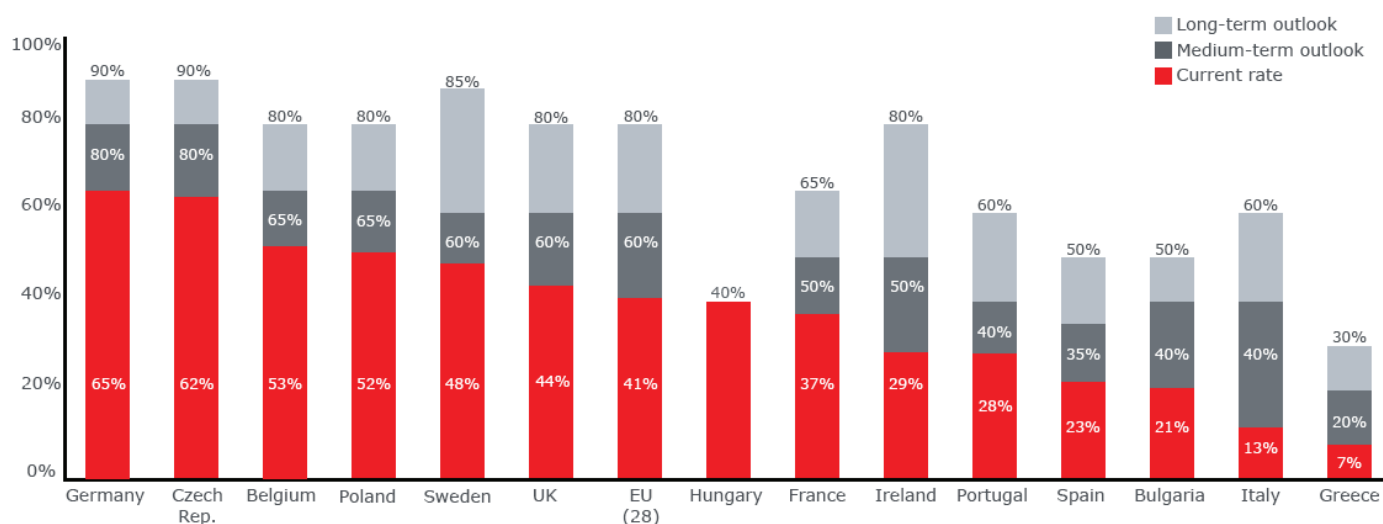
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Energy efficiency in cement kilns varies between 70% to 80% depending on raw materials moisture content.

The clinker process is highly energy efficient. For example, an extensive share of waste heat is recovered by drying the raw materials and fuels in the integrated grinding mills. The high energy efficiency, the use of alternative fuels and using renewable energy sources has made the cement industry a success in reducing both costs and carbon footprint.

Material efficiency of cement production is close to 100%.

The cement industry is committed to repurposing and recovering materials until all output is 100% recycled. As well as being energy efficient, **clinker in general is a process that is almost waste free**, as the ashes can be directly converted into the product. A very small percentage cannot be utilized in the process chain for cement production, but in this case, the remaining material is used for other products than cement. In fact, concrete as a material is 100% recyclable.



Ecofys: Status and prospects of coprocessing of waste in EU cement plants – April 2017.