

# EUROPEAN ENERGY FORUM

## CO-PROCESSING OF ALTERNATIVE FUELS IN THE CEMENT INDUSTRY: SUSTAINABLE ENERGY WITH A FUTURE

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# AN ENERGY AND MATERIALS INTENSIVE INDUSTRY

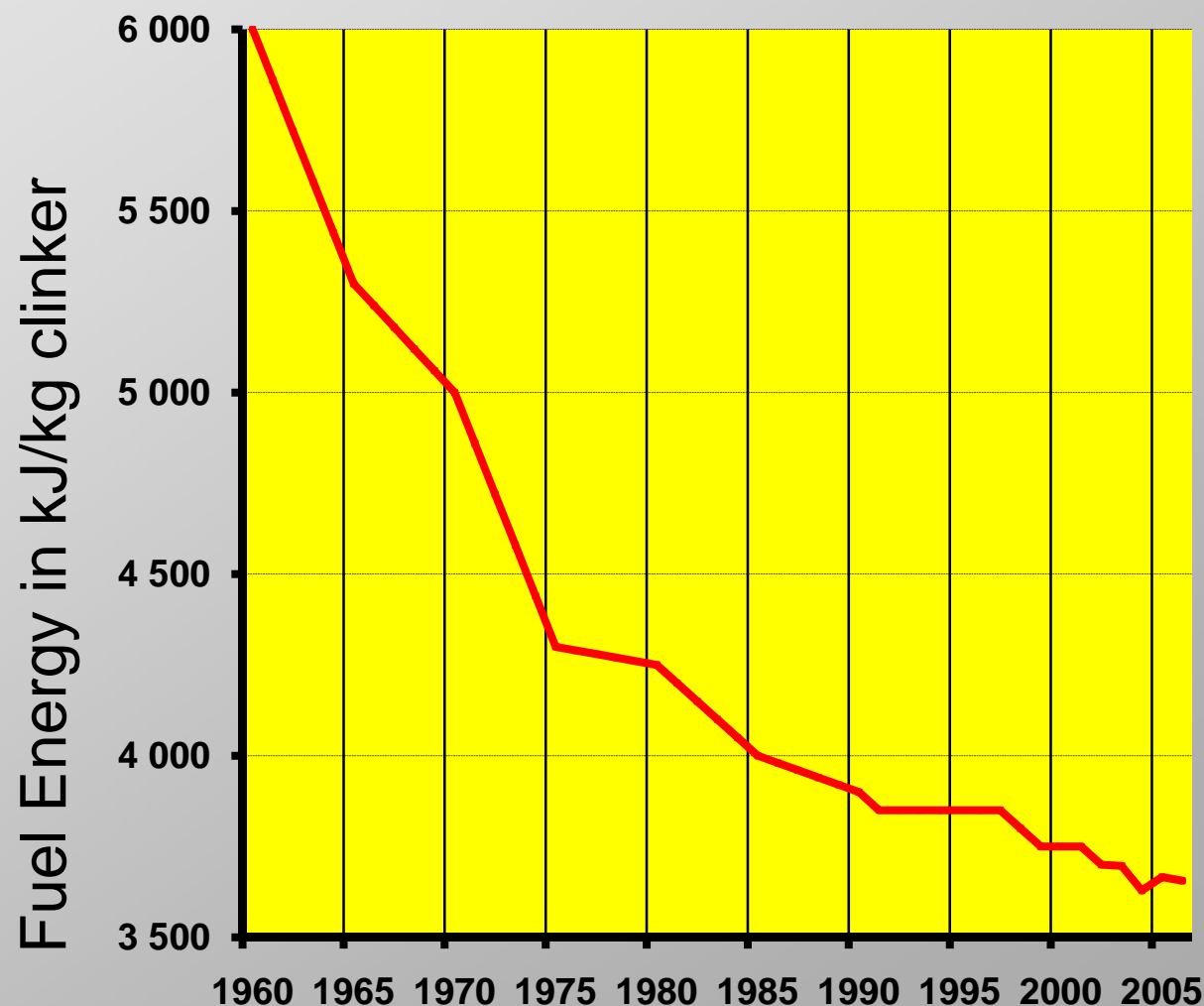
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One metric tonne of cement

- 60 - 130 Kg of fuel oil (or equivalent fuelling amount)
- The world has only limited amount of fossil based fuels
- Sustainable development: “To meet the needs of the present without compromising the ability of the future generation to meet their own needs”
- Take measures in order to save “some” resources for future generations

# REDUCTION OF SPECIFIC ENERGY

Development of the specific fuel energy consumption in CEMBUREAU countries since 1960



Source: CEMBUREAU EL December 07

# REDUCTION OF SPECIFIC ENERGY

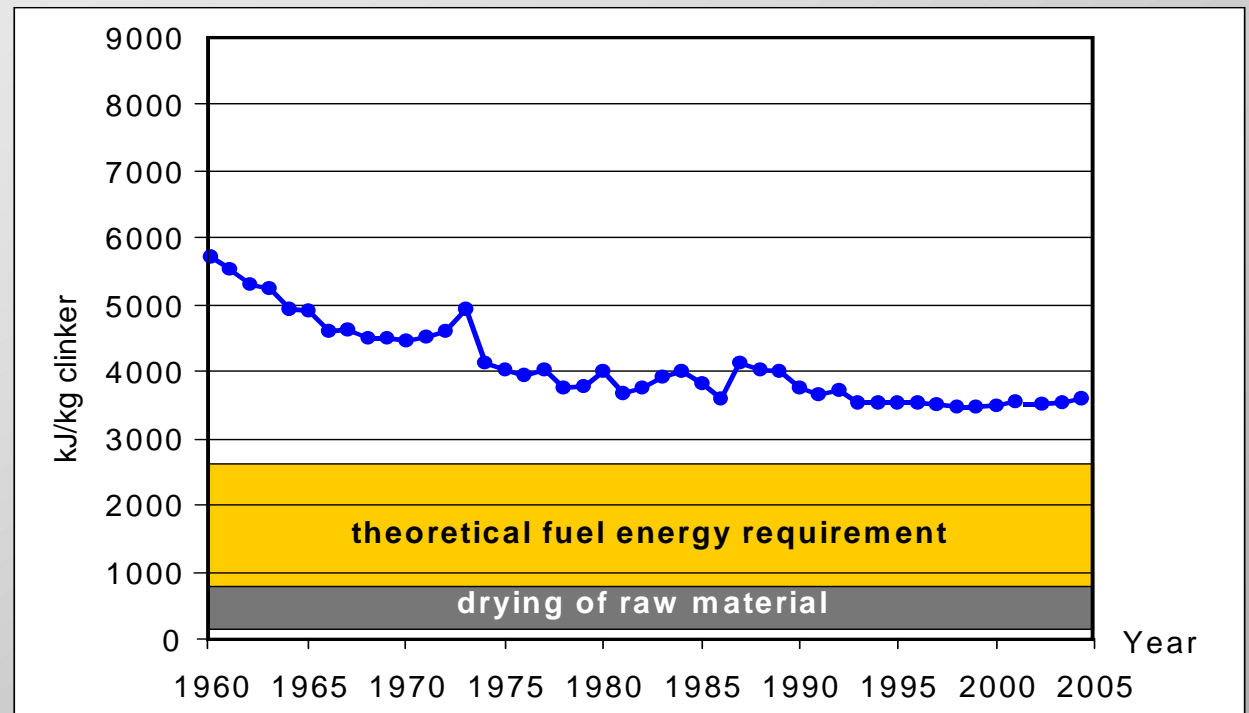
Remaining potential for  
specific energy  
consumption reduction  
through technological  
innovation and process  
improvement



LESS THAN 2%!

⇒ Alternative fuels! ⇐

## Sintering process: improvement of energy efficiency



Technological Innovation-JMC

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# COULD WASTE BE THE SOLUTION?

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Homogeneous waste can be effectively recovered energetically and/or materially by co-processing in the cement - making process

- as alternative fuels (co-processing of waste)
- as alternative raw materials
- as mineral components

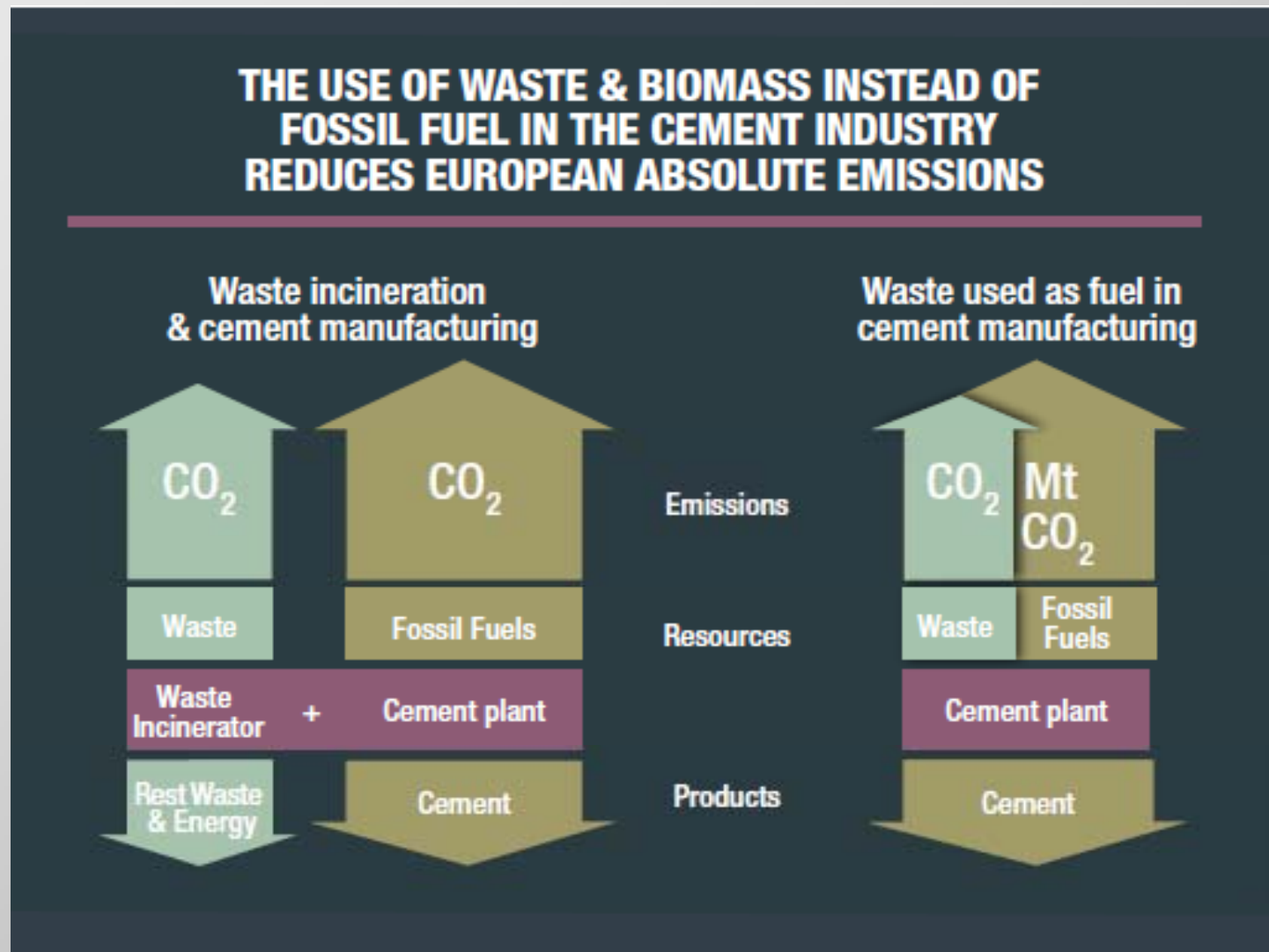
# SUBSTITUTION OF FOSSIL FUELS IN CLINKER MANUFACTURING



# FUEL SUBSTITUTION IN THE KILN FIRING PROCESS

Types of alternative fuels	Current Substitution Rate
<ul style="list-style-type: none"><li>• Animal meal / fat</li><li>• Rubber / tyres</li><li>• Waste oil</li><li>• Impregnated saw dust</li><li>• Solvents</li><li>• Sewage / industrial sludges</li><li>• Paper sludge</li><li>• .....</li></ul>	<b>18% or 5 Mtonnes in 2006</b>

# CO-PROCESSING AND REDUCTION OF GHG EMISSIONS





# NATIONAL SUBSTITUTION

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It should be borne in mind that the degree of co-processing in Europe varies from country to country as a result of:

- National regulation/waste management
- Experience (in the cement industry)
- Market and local conditions

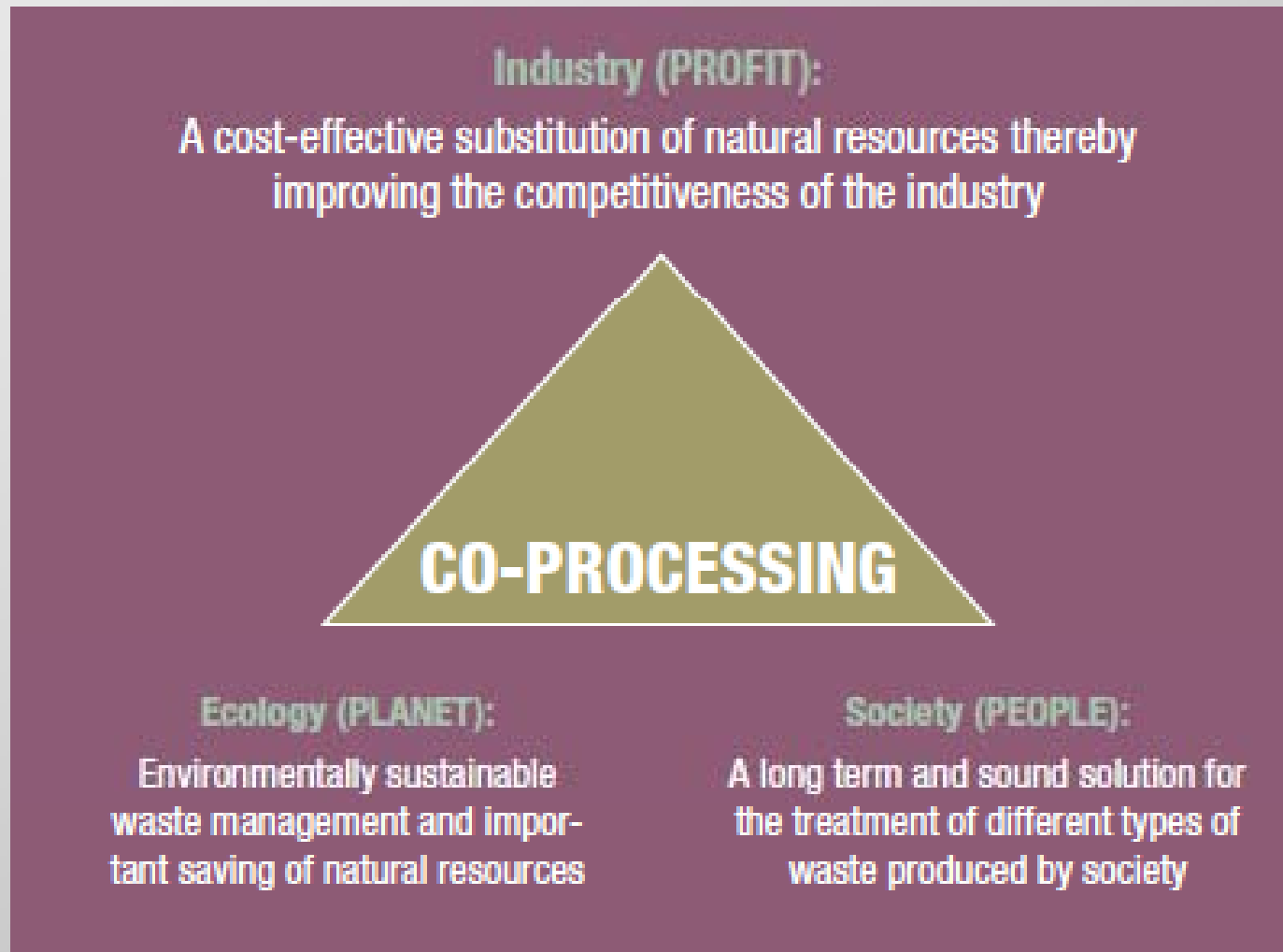
# STRICT REGULATION AT EU LEVEL

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- Integrated Pollution Prevention and Control Directive (2008/1/EC)
- Incineration of Waste Directive (2000/76/EC)  
of 4 December 2000... to be  
transposed into national laws by  
28 December 2002

**! BOTH DIRECTIVES CURRENTLY UNDER REVISION**

# A WIN/WIN/WIN SITUATION



# BENEFIT TO THE CEMENT INDUSTRY

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- Long term viability – in an era with fewer and fewer fossil natural resources
- From “Polluter image” to “Supplier of safe waste solution”

# BENEFIT TO THE ENVIRONMENT

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- 4 million tonnes of coal saved every year
- Lower global CO<sub>2</sub> emissions

# BENEFITS TO LOCAL COMMUNITIES

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- No capital cost
- Lower operating costs
- A safe -strictly regulated- solution

# **THE OBVIOUS CONCLUSION**

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**WASTE CO-PROCESSING IN  
CEMENT KILNS IS A SOUND AND  
SUSTAINABLE  
WASTE MANAGEMENT POLICY**



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