

Realizing new markets, lessons learned in the cement industry Experience of the European Cement Industry

November 17th, 2016 Jan Theulen, Director Alternative Resources, HeidelbergCement







- 1. Actual role of cement industry in Circular Economy
- 2. Lessons learned
 - Poland
 - Romania
 - Italy
- 3. Outlook



How does cement industry fit into the circular economy?



Quantity of WtE versus WtC in European countries





Waste to Energy in Europe (kg/cap)

Waste to Cement in Europe

Waste to Energy and Waste to Cement co-exist in Europe

Municipal Waste options – ecological comparison



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Municipal Waste options - continued



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Co-processing of RDF/SRF in cement kiln environmental friendly

- Long residence time at high temperature
- Combustion rich in oxygen and active lime
- High clinker mass stream
- Ashes of fuel in clinker replacing raw material





Heavy metals stable embedded

Neutralisation of acid gases,

SOx and hydrogen chloride



Zero waste solution

Characteristics	Temperature and time	Te
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	





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Best practice example: Poland





- Cement Industry in Poland already in 2004 replaced 10% of coal by SRF/RDF
- Landfill diversion only 2% and very low landfilling costs
- Imports from Germany were the driving force for the early development

Cross border flows SRF[@] are essential for market development !

Best practice example: Poland – Future





Figure 3 Municipal waste landfilled, EU 27, 1995-2002-2009 (1,000 tonnes)



- Poland 2012: 8 mio ton to landfill
- Capacity: cement plants 1,5 mio tons + 6 incinerators 2015: 1,2 mio tons
- 2016 ban on landfill of MSW > 6 GJ/t

Classification SRF important for export out of Poland!

Best practice Romania, EU-country with low landfill tax



Figure 20 Total typical landfill charge and percentage of MSW landfilled, 2009

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Opportunity Romania: low costs MBT

- Unlike Czech, Poland or Hungary, import of RDF into Romania very difficult
- Primary fuel prices Romania are high
- Tipping fee for landfill of MSW only around 5 €/t
- Low cost biodrying technology applied
- AF-rate 2013 Lafarge Romania 44%





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Low cost biodrying plant for MSW treatment







Best practice Italy, EU-country with high landfill tax



Figure 20 Total typical landfill charge and percentage of MSW landfilled, 2009

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Italy: not a single country is so suspicious to use waste

- Waste is traditionally a sector in Italy where government is not in full control
- Permits are to be established locally to all stakeholders are important for success
- Example of resistance to RDF:



Convegno su Css a Senise - Shortcut.Ink

Extensive education of officials and public required

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Final remarks

- To achieve full potention of SRF in cement industry we need to act case by case:
 - Eliminate public and (local) regulator resistance against MBT and SRF co-processing
 - Bring landfill tax upward for some countries
 - Work on low cost technologies, adapted to GDPlevel of a country to accelarate SRF development
- We do need to keep exchanging our problems and success stories
- Even with low coal prices use of SRF by cement industry is feasible, as investment in burning and gascleaning already exist

Waste is a resource....



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