



EU ETS BREAKFAST EVENT: UNSTICKING THE CEMENT SECTOR'S LOW-CARBON POTENTIAL



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WOULD YOU CONFUSE FLOUR, OTHER INGREDIENTS, DOUGH AND BREAD?





CLINKER, CLINKER SUBSTITUTES AND CONCRETE ARE SOMEHOW THE SAME...



Portland clinker



Clinker substitutes & concrete additions – slag, fly ashes, ggbs, ...



New mixes, new admixtures



**Buildings
New designs**



Innovative clinkers



CLINKER SUBSTITUTES

- **New clinkers**
- **Natural materials:** limestone, pouzzolane,
- **By-products from steel and coal based power**
 - GGBS
 - Fly ashes



CLINKER SUBSTITUTES

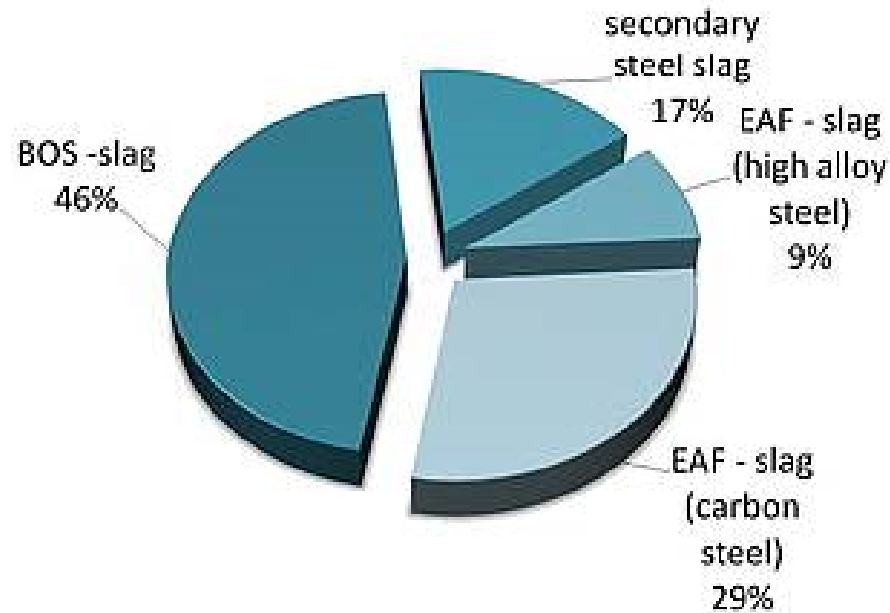
- New clinkers
- Natural materials
- ...

Availability of by-products in the low carbon economy?



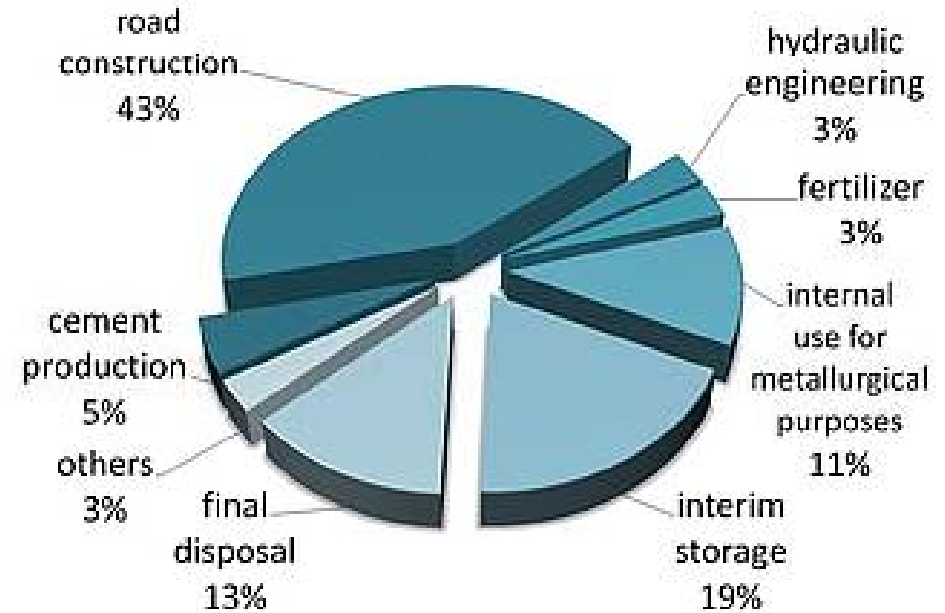
SOURCE - EUROSLAG

Production of blast furnace slag in 2012: 23 million tonnes
(Data from A, B, FIN, F, D, I, L, PL, RO, E, SK, S, NL, UK)



Production of Steel slag in 2012: 21.4 million tonnes (Data from: A, B, FIN, F, D, GR, I, L, PL, RO, E, SK, SLO, S, NL, UK)

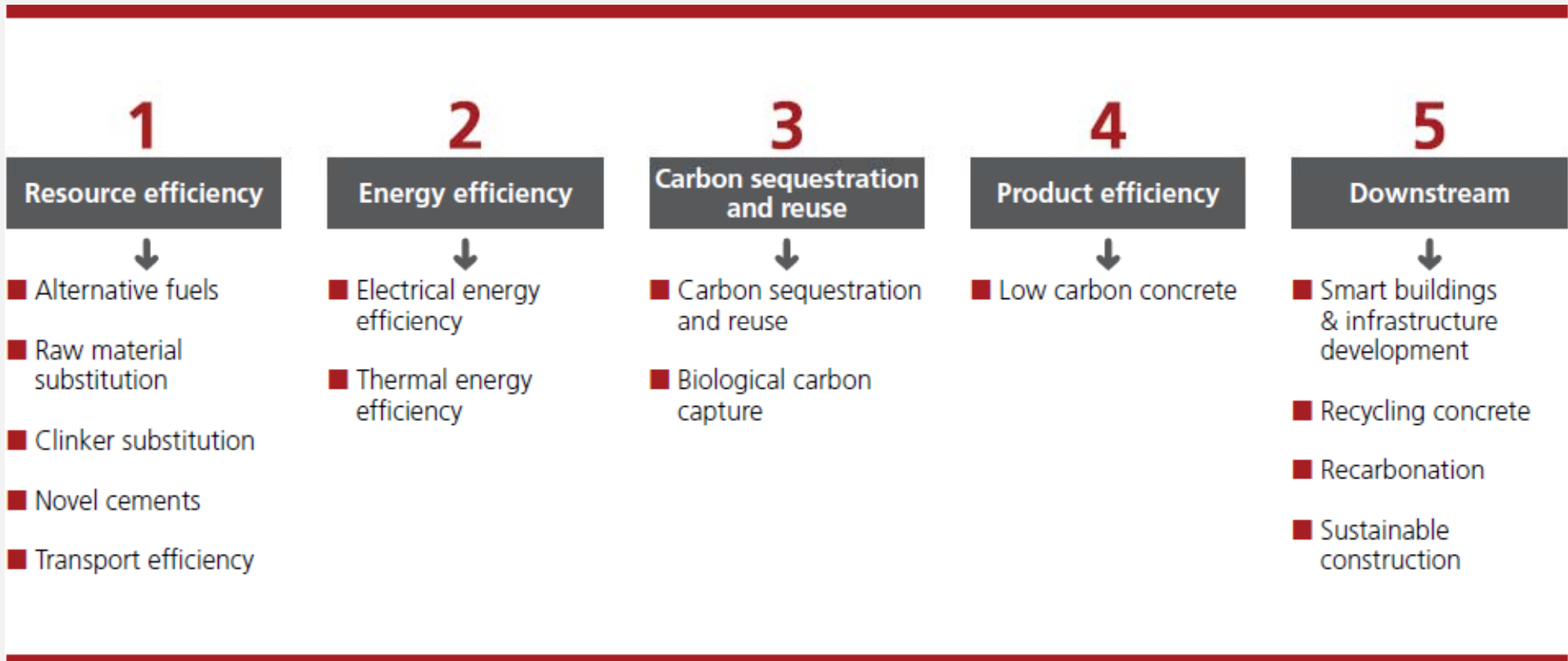
Use of blast furnace slag in 2012: 27,6 million tonnes (Data from: A, B, FIN, F, D, I, L, PL, RO, E, SK, S, NL, UK)



Use of Steel slag in 2012: 24.7 million tonnes (Data from: A, B, FIN, F, D, GR, I, L, PL, RO, E, SK, SLO, S, NL, UK)



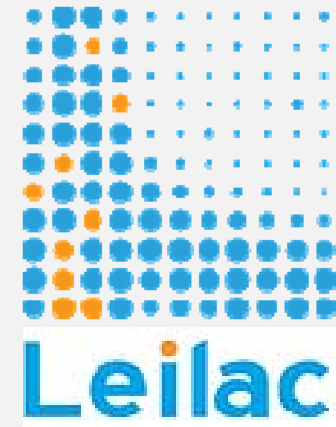
FIVE PARALLEL ROUTES TOWARDS 2050



CCU/S IS ESSENTIAL TO ACHIEVE SUBSTANTIAL CO₂ REDUCTIONS

➤ Carbon capture

- **Post-combustion**: Norcem Brevik project (pilot testing); CEMCAP prototypes
- **Oxyfuel**: ECRA, LafargeHolcim/Air Liquide/FLSmidth, CEMCAP prototypes
- Move to **industrial scale oxyfuel** / EUR 90 MM funding required
- **Calix**'s Direct Separation technology to cement and lime plants: LEILAC
- ... *



* Non exhaustive illustrative list



AND LOW CARBON BINDERS ARE CRUCIAL TOO...

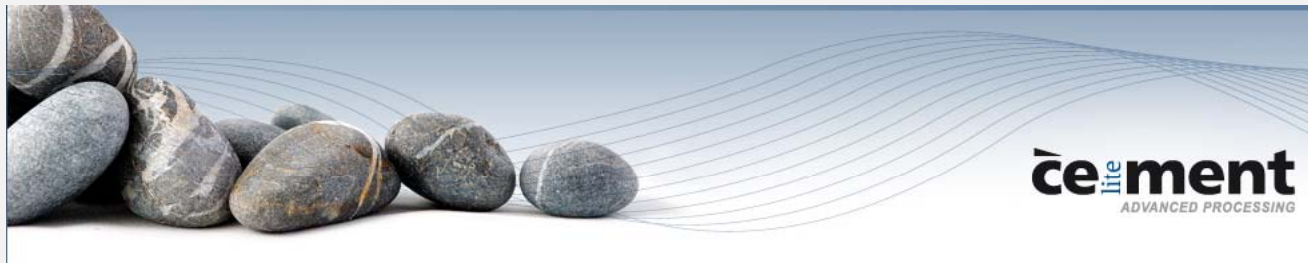
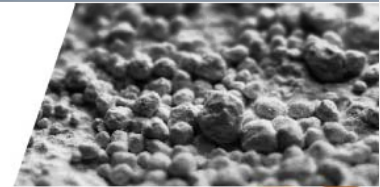
➤ New binders – alternative clinkers

- CSA cements
- Celitement
- Carbonation hardening cement
- Magnesium based cements
- ...*



Aether™

LOWER CARBON CEMENTS

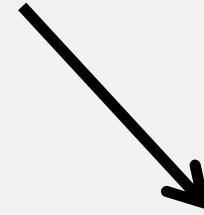
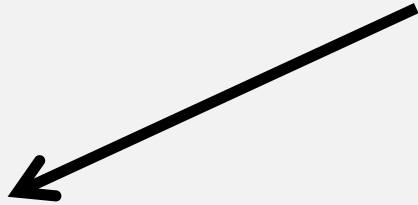


* Non exhaustive illustrative list

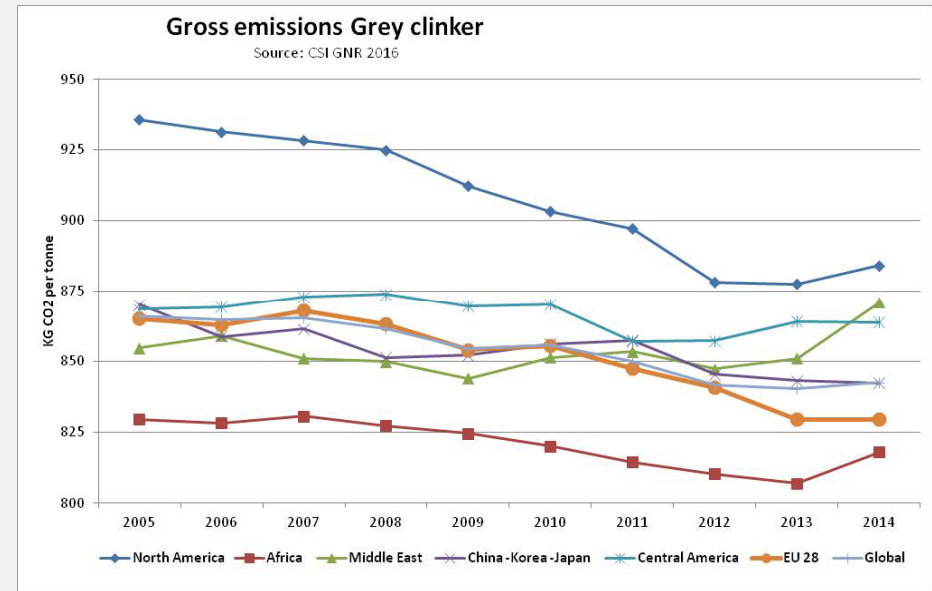
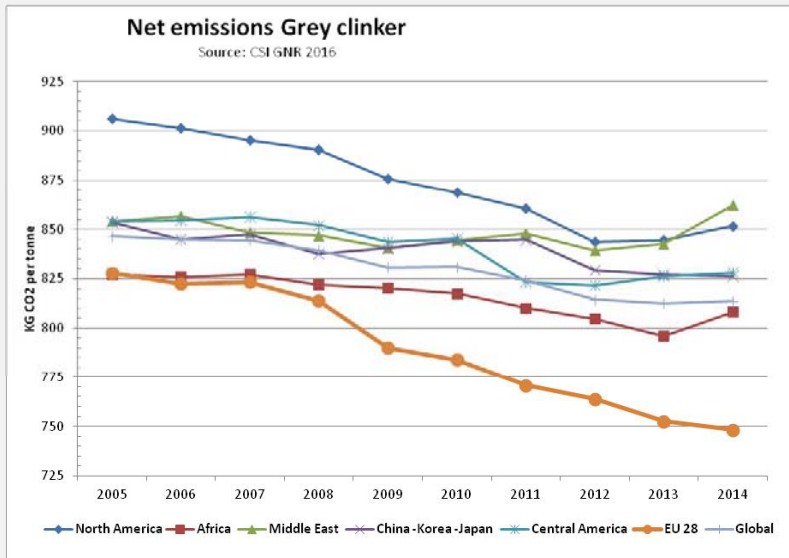


OVERALLOCATED...BUT WHY?

Allocation = Hist. Volumes x Performance



2015 some
37.3%
below 2007

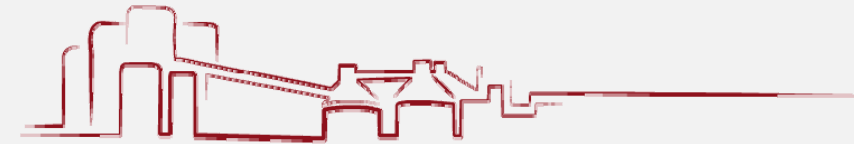
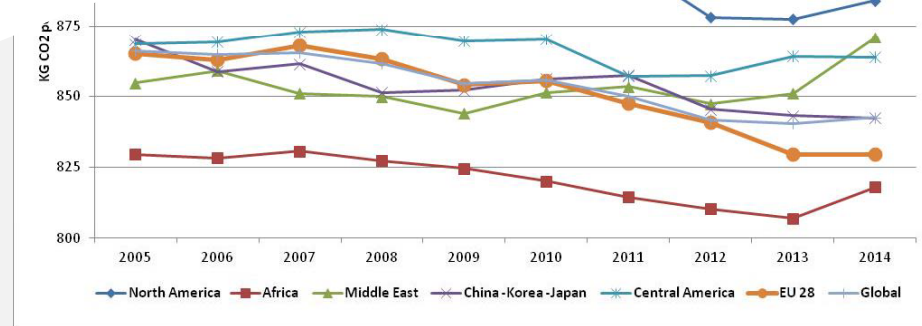
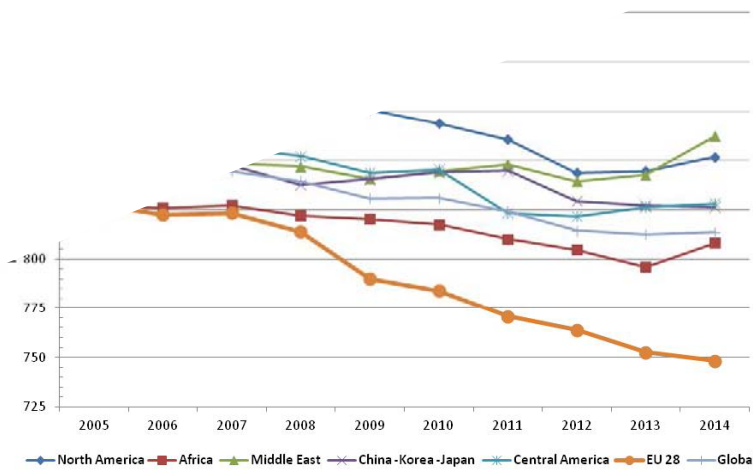


OVERALLOCATION...BUT WHY?

Allocation = Hist. Volume

Need dynamic allocation system

2015
3
be



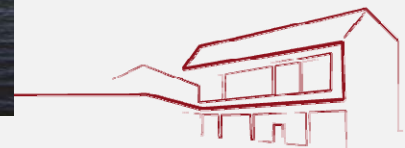


A COMMITTED EU INDUSTRY

- **Low Carbon Roadmap:** 32% CO₂ reduction by 2050 from 1990; 80% with carbon capture
- **Improved performance:** current trend real benchmark update around minus 0.5%/year
- **Cement key to circular economy**
 - 41% of primary fuels in kilns replaced by alternative fuels (energy recovery; saving 18 Mt CO₂ /year)
 - primary raw materials replaced by alternative (material recycling)
- **Concrete key to sustainable construction:** small investment in CO₂ for long term benefits in concrete



CONCRETE IN USE





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du Ciment
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Cement
Association**

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