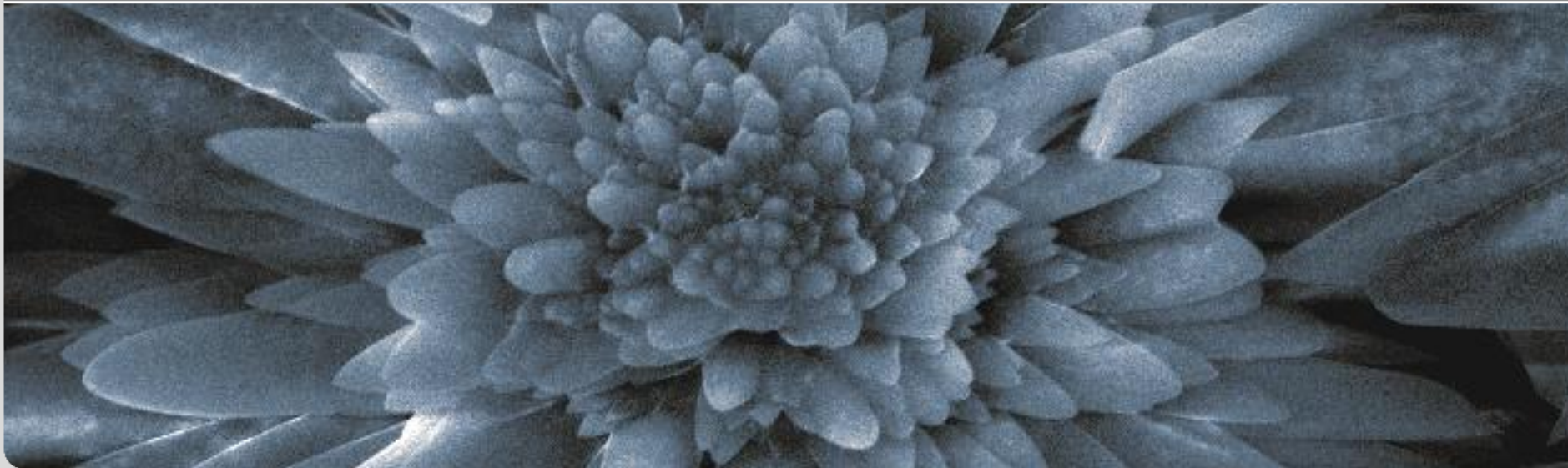


# Celitement - Reducing the CO<sub>2</sub> Footprint of Cement

Peter Stemmermann

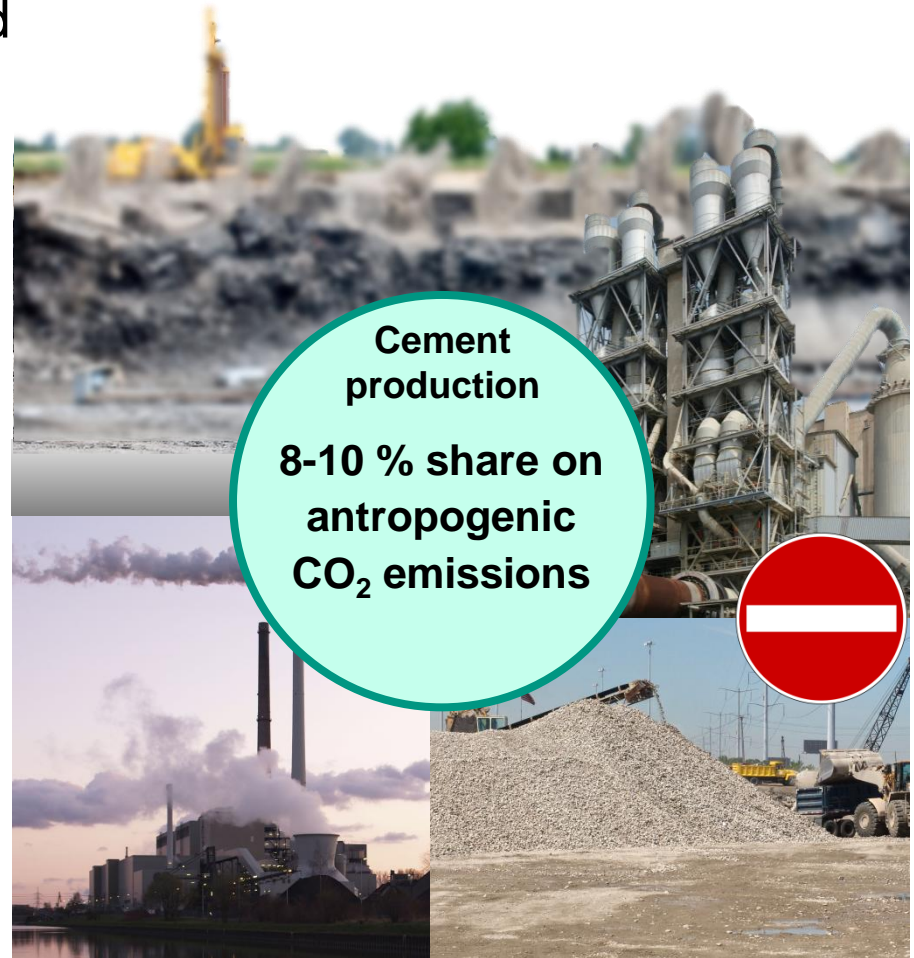
Policy Design for a Climate Friendly Materials Sector, COP23, 7.11.2017

INSTITUTE FOR TECHNICAL CHEMISTRY



# Cement Production – a Challenge

- For each ton of Ordinary Portland Cement (OPC) ~ 0,9 ton of CO<sub>2</sub> is emitted
- 2/3 of the CO<sub>2</sub>-emissions derive from the calcination of natural **limestone**, 1/3 from fuels and electric power
- Cement production causes 8-10% of global CO<sub>2</sub>-emissions
- Supplementary materials which are used to substitute OPC are derived from fossil power plants and steel industry
- A reuse of concrete for cement production in order to save CO<sub>2</sub> is not possible in today's plants

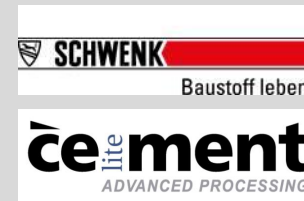


## Production: 2 step process

- Autoclaving at 190 degree C
- Milling
- Properties and use as OPC
- Compared to OPC the demand for calcined limestone is reduced by 2/3.
- 50% less energy
- 50% less CO<sub>2</sub>
- Flexible feedstock: recycled concrete, calcined limestone....
- 2014 Pilot-Plant in full operation
- 2020 Commissioning of first industrial plant (50.000 t/a)



## Partner



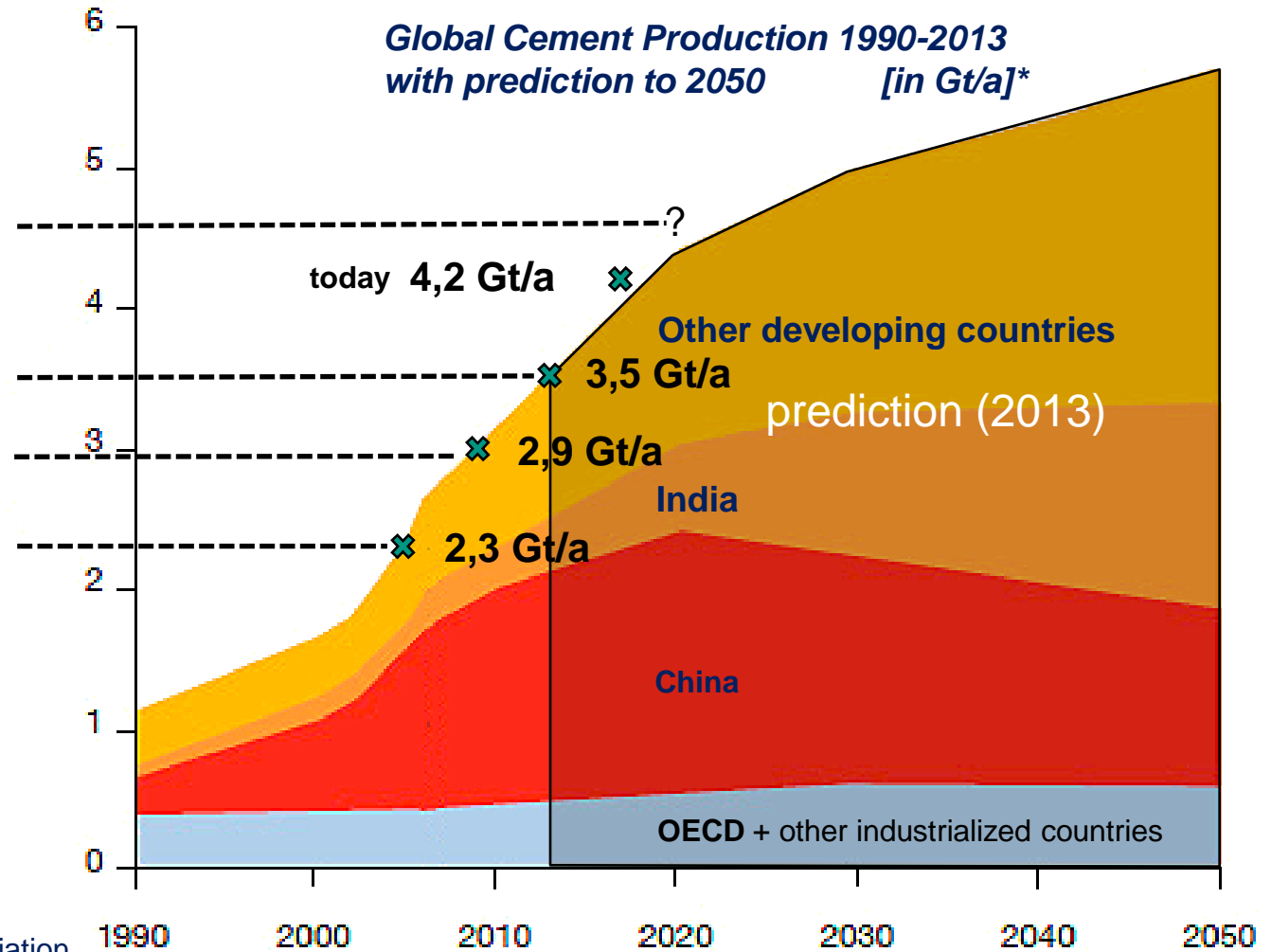
# The development of Celitement takes place during a global cement revolution

2020 Commissioning first industrial plant  
50.000 t/a = 0,00005 Gt/a

2014 Pilot plant in operation 25 t/a

2009 Foundation Celitement GmbH

2005 Celitement Proof of principle Laboratory, KIT



\* 2013 CEMBUREAU, the European Cement association  
Cement & Concrete: key facts and figures