

■ HeidelbergCement Analyst Day

Sustainability @ HeidelbergCement

Daniel Gauthier

Member of the Managing Board



HEIDELBERGCEMENT

Introduction: Ir. Daniel Gauthier

Responsibilities

- Northern and Western Europe, Mediterranean, Africa
- HC Trading, Global Environmental Sustainability

Personal Data

- Born in 1957, Belgian, married, three children

Education

- Daniel Gauthier studied Master of Science in Mining at the University of Mons (1981), second Master of Science at the University of Liège (1985) and Master Degree in Management at the University of Louvain (1982)

Career

- Daniel Gauthier joined CBR in 1982 and took on various operational positions. He was appointed Technical Director in 1990 and Director of Strategy and Development of CBR Group in 1994. He became Senior General Manager at Heidelberg, in charge of GSD and in 1998 Chief Operating Officer for Central Europe East.
- In July 2000, he was appointed to the Managing Board, first in charge of the Central European region and since 2005 for the T.E.A.M. Area.
- He participated in the development of the Group in CEE, China, India, Indonesia, Turkey, Africa and Scandinavia.
- He is President of ECRA (European Cement Research Academy), Board Member of Cembureau (Sponsor for Climate Change), Board Member of Carmeuse Group (Belgian Lime Group) and member of the Science Academy of Belgium for Application of Science.



■ Sustainability @ HeidelbergCement

- HeidelbergCement sustainability performance
- Understanding the production processes
and their main environmental impacts
- HeidelbergCement sustainability strategy and achievements

HeidelbergCement Sustainability Performance

A responsible global player with clear ambitions

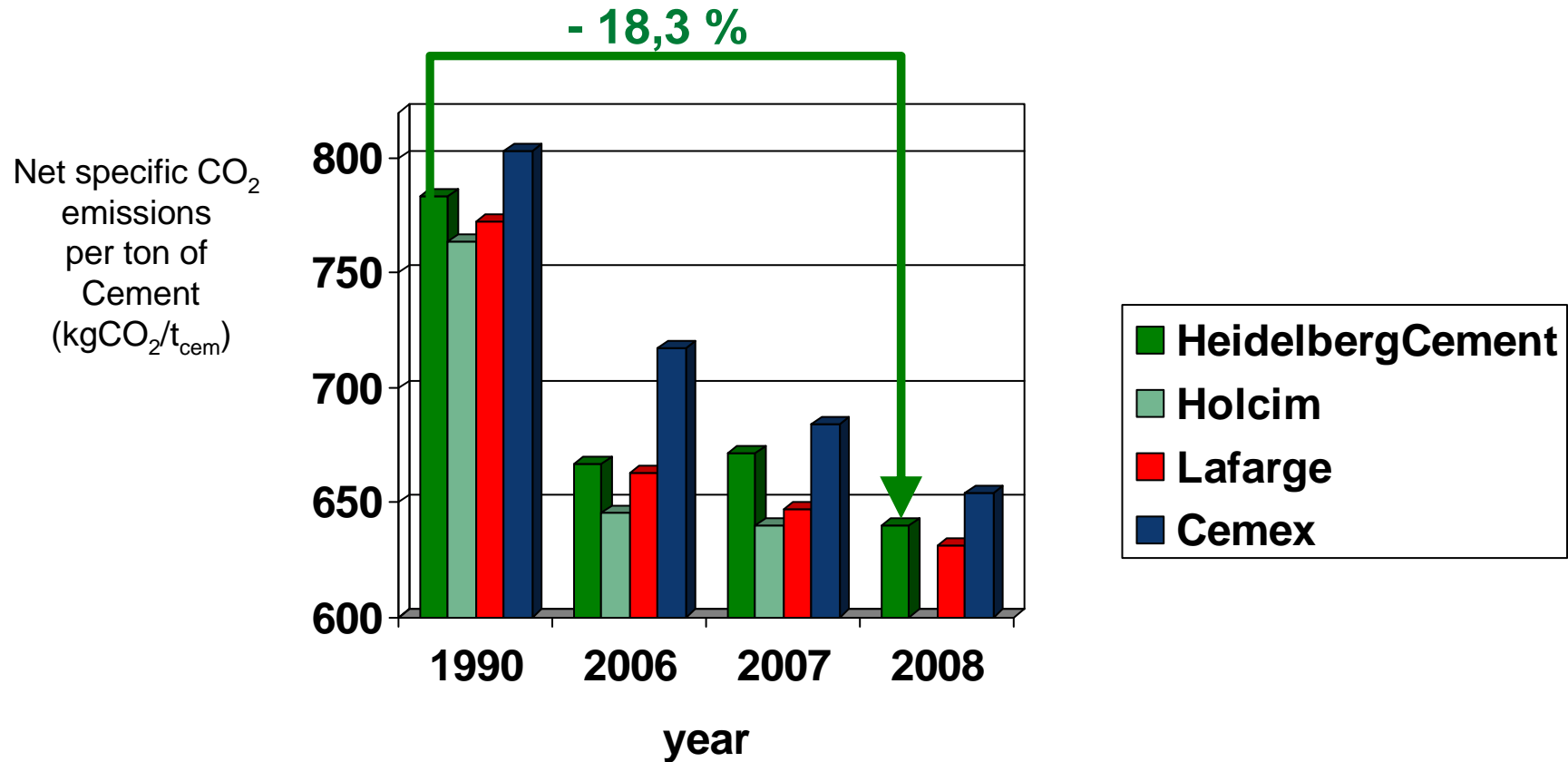
The Pillars of the Heidelberg Cement Sustainability Ambitions 2020



HeidelbergCement Sustainability Performance

Climate protection

- Continuous decrease of specific CO₂ emissions



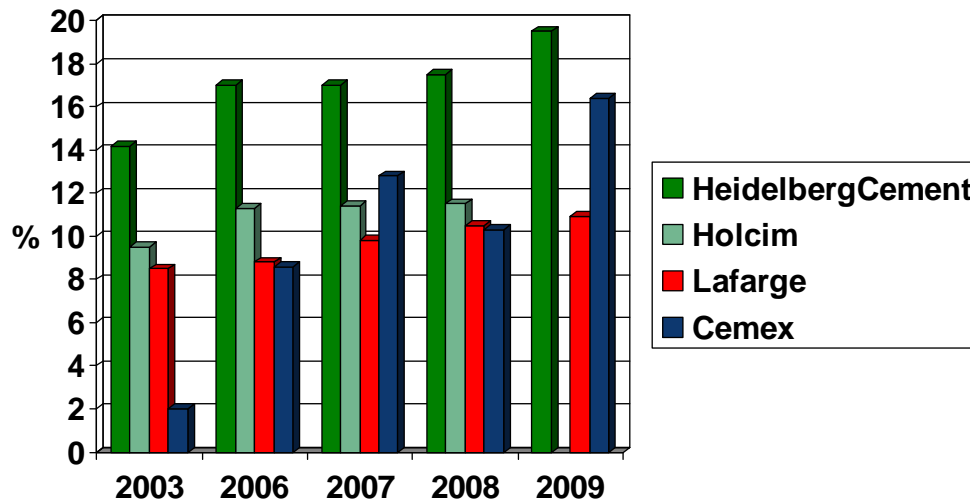
Improvement in energy efficiency, alternative fuel use and clinker substitution reduce compliance cost in Emission Trading Schemes

HeidelbergCement Sustainability Performance

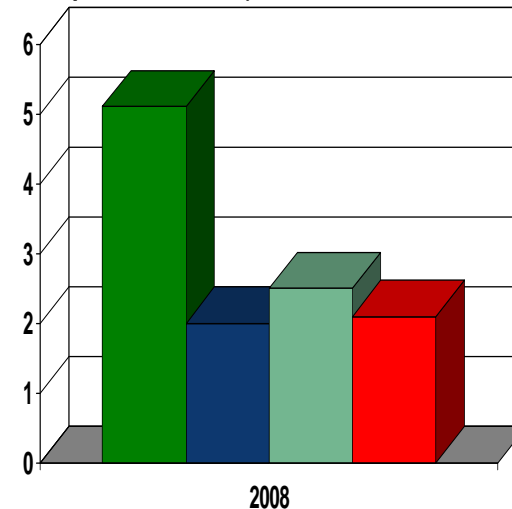
Industrial ecology

- Continuous **leadership** in the use of waste as fuels and **high biomass use**

Substitution rate of primary fuels by waste-derived fuels



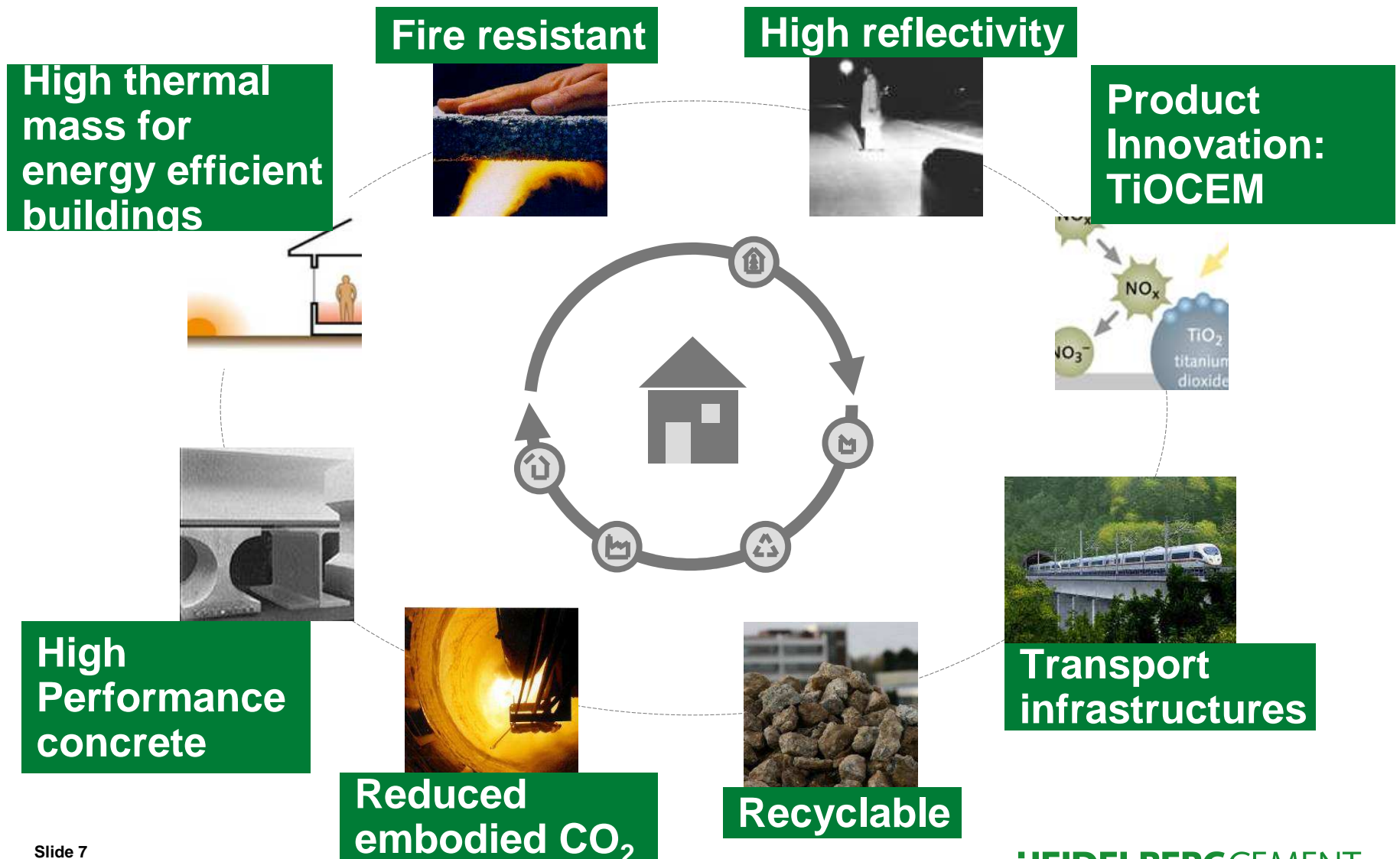
Use of biomass fuels (% of total energy consumption clinker production)



Waste co-processing improves sustainability profile while reducing total fuel cost
Biomass-based fuels mitigate CO₂ emissions (climate neutral fuels)

HeidelbergCement Sustainability Performance

Concrete: sustainable construction material



■ HeidelbergCement Sustainability Performance

Active public affairs management

- **Active member** of national/international associations (CEMBUREAU, PCA)
- **Strong involvement** in the **Cement Sustainability Initiative**
 - 23 member companies, operating in 100 countries



World Business Council for
Sustainable Development

DEDICATED TO MAKING A DIFFERENCE

**Advocacy towards international authorities and stakeholders
based on a common LT vision**



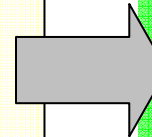
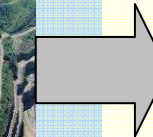
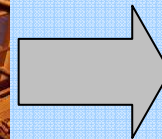
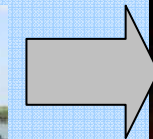
Understanding our business

Our processes and their main environmental impacts

Understanding HeidelbergCement business

Our production processes

cement



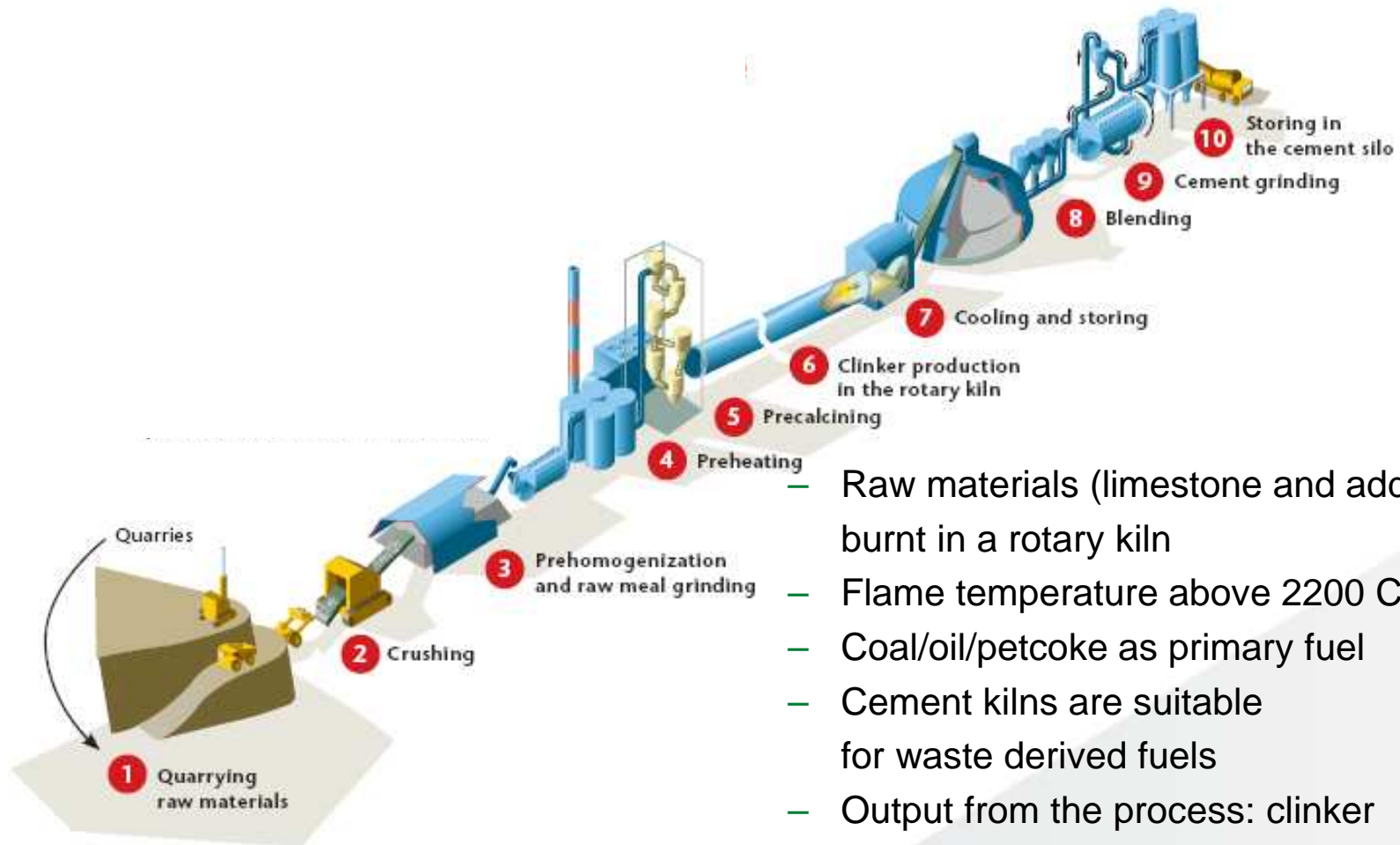
aggregates

Ready-mix concrete

Understanding HeidelbergCement business

Our production processes - Cement

How cement is made



- Raw materials (limestone and additives) burnt in a rotary kiln
- Flame temperature above 2200 C°
- Coal/oil/petcoke as primary fuel
- Cement kilns are suitable for waste derived fuels
- Output from the process: clinker
- Clinker ground to various cement types

HEIDELBERGCEMENT

Understanding HeidelbergCement business

Cement production – main environmental impacts

Energy Intensive Process

- Depletion of non renewable fuel resources
- High CO₂ emissions:
about 5% of manmade emissions
- Other atmospheric emissions: SO_x, NO_x, dust, ...

Extraction of mineral resources from quarries

- Depletion of natural mineral resources
- Local impacts: noise, dust, transport
- Impact on biological habitats



Understanding HeidelbergCement business

Our production processes - Aggregates

- **How aggregates are produced**
 - Mining from quarries and pits
 - Crushing and screening processes
 - Transport to customers by train, ship, truck



Understanding HeidelbergCement business

Aggregates production – main environmental impacts

Extraction and processing of mineral resources from quarries

- Depletion of natural mineral resources
- Impact on biological habitats
- Local impacts: explosions, noise, dust

Transport of heavy Materials - logistics

- Fuel consumption and related air emissions



Understanding HeidelbergCement business

Our production processes – Ready Mixed Concrete

■ How RMC is produced

- Supply and storage of cement, sand, aggregates, additives in silos
- Mixing process
- Just-in-time delivery to building sites



Supply of raw materials
and mixing process

- Local impacts: noise, dust emissions
- Low energy consumption

Transport and logistics

- Fuel consumption and related air emissions



Implementing our sustainability strategy

Our ambitions and achievements

■ HeidelbergCement Sustainability Ambitions Biodiversity

- **Leadership in biodiversity management in mining sites**
 - Recognized counterparty for EU and International authorities
 - First company of the sector to have a guideline for the promotion of Biodiversity in quarries
 - More than 100 biodiversity management plans achieved in Europe
 - Public Private Partnerships in Georgia and Tanzania with GTZ
 - « Trees for people » project in Tanzania

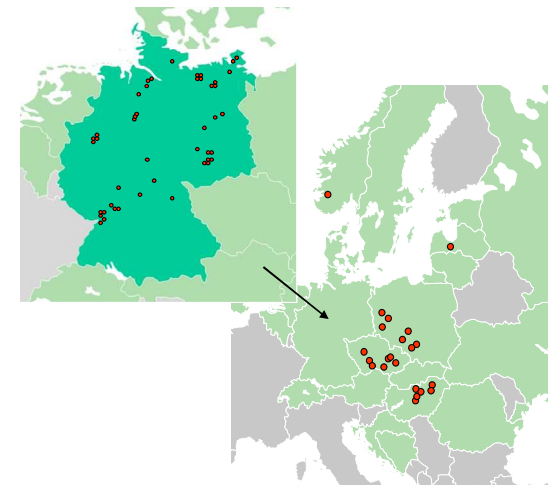
**Improves societal recognition
and facilitates permitting**



■ Species protection program on European level

Sand Martin

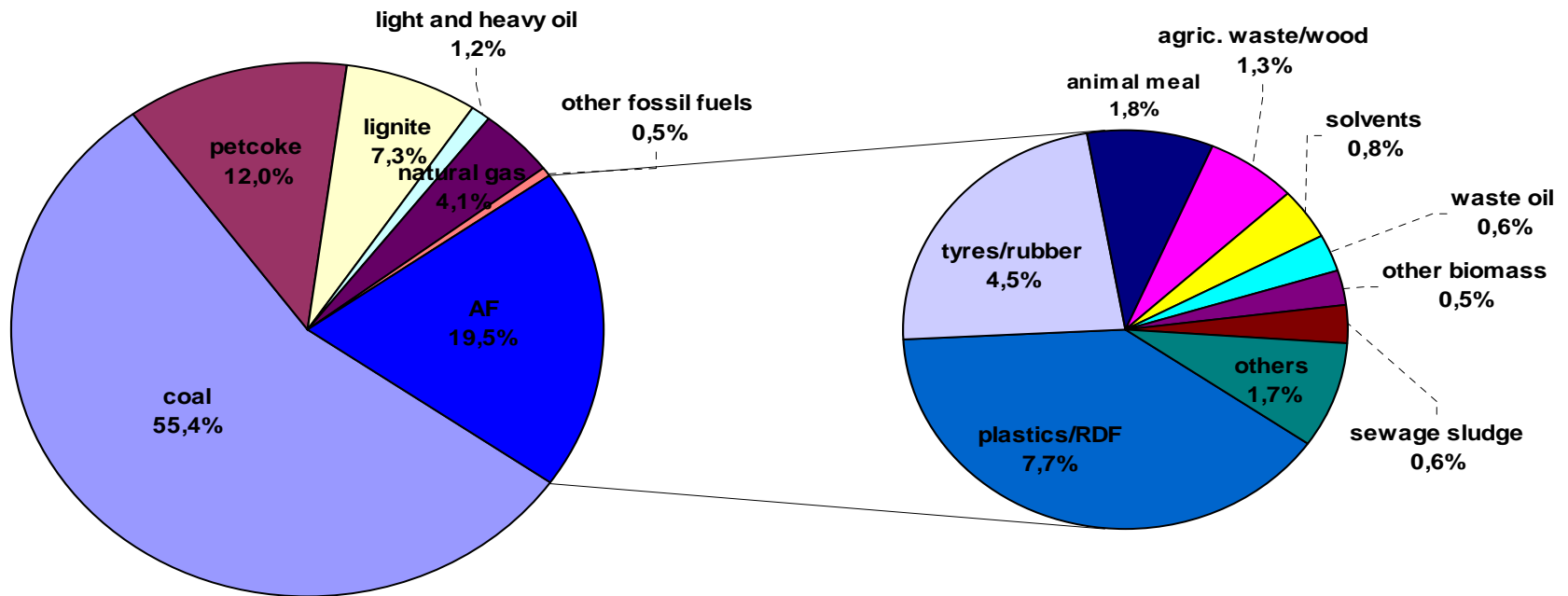
- Initiated in 2009
- Network effect: Germany, Hungary, Czech Republic, Poland, Norway, Latvia
- Monitoring and mapping of breeding holes
- More than 11.000 breeding pairs counted in our mining sites
- Simple habitat management measures (creation of new breeding walls, improvement old walls, cooperation with NGO's on local level)
- Better coordination of mining activities during the breeding season



HeidelbergCement Sustainability Ambitions

Using waste as a resource

Fuel mix 2009



Diversified fuel mix reducing total fuel cost and ensuring sustainability of waste supply
More than 2,2 mio tons alternative fuels

■ Prerequisites for the development of waste co-processing in cement kilns

- **Appropriate waste regulations**
 - Efficient waste collection and sorting systems
- **Appropriate waste treatment permits for cement facilities**
 - Waste composition criteria
 - Air emission measurements and appropriate limits
- **Appropriate storage and feeding equipment**

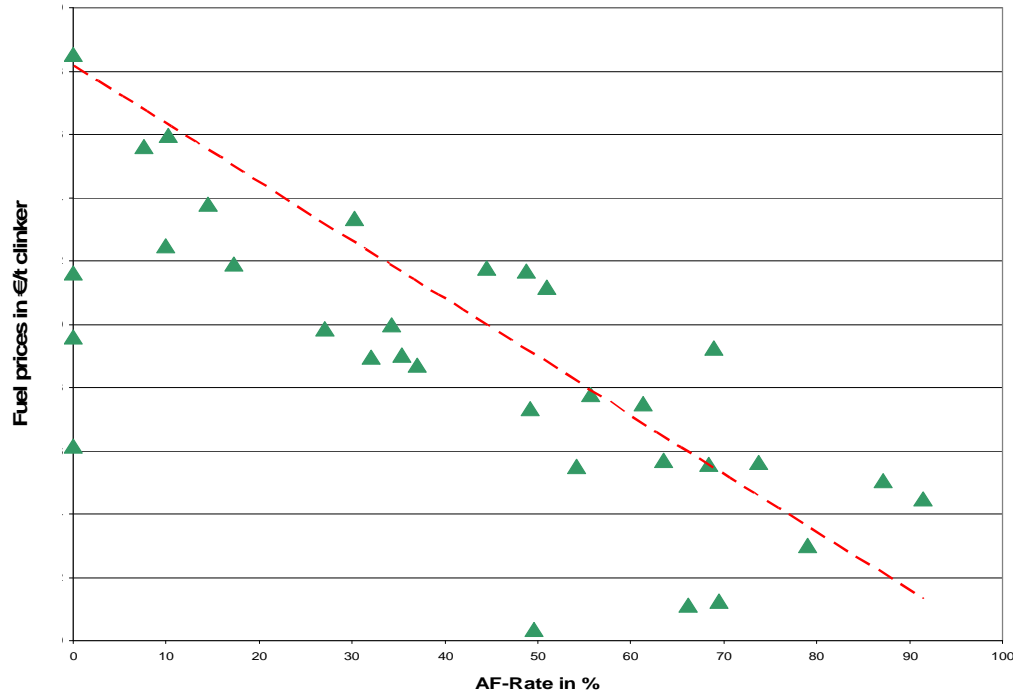


Leadership strategy in waste co-processing

	2008	2009	2012	2020
Alternative fuels rate (thermal)	17.5%	19.5%	22%	30%
Biomass fuel rate/thermal	5.1%	7.4%	6%	9%
Sectoral ambitions from the “Cement Technology Roadmap” of the Cement Sustainability Initiative				
Alternative fuels rate			12%	23 %

**High achievements and ambitious targets,
ahead of the industry ambitions**

Continuous benchmarking of plant performance



Pasuki 04/10



Best performing plants in co-processing (2009)

- Maastricht (NL) 92%
- Paderborn (D) 87%
- Lengfurth (D) 79%
- Ennigerloh (D) 74%
- Lixhe (B) 70%
- Mokra (CZ) 69%
- Ribblesdale (UK) 68%
- Antoing (B) 66%
- Schelklingen (D) 63%
- Burglengenfeld (D) 61%
- Mason City (USA) 58%

■ Growth strategy based on 3 globally available waste flows

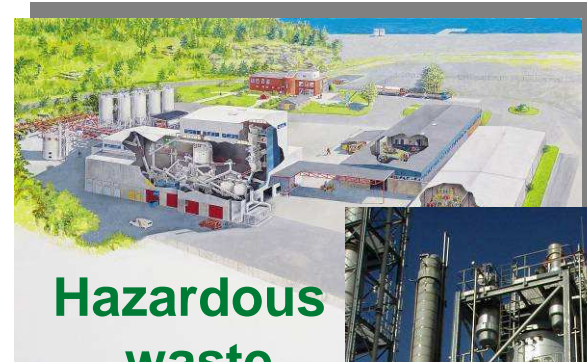
- Sewage sludge, RDF from household waste (plastics) and hazardous waste
 - + local opportunities
- Strong operational focus, supported by a Group organization



Hot mix in Indocement



Sewage sludge
GCPN, China



Hazardous
waste

Renor,
Norway
SRM, UK



HEID

Waste co-processing combines environmental and financial sustainability

Plant	Investment for use of AF (storage + feeding)	Related increase of alternative fuels rate (2009)	Primary fuels costs 2009 (mioEUR)	AF costs 2009 (mioEUR)	Total cost avoidance compared to 100% coal (mio EUR)
Plant A	4 Mio €	+ 18 % (to 63,5%)	2.8	- 1.0	5.1
Plant B	6 Mio €	+ 19 % (to 49.2%)	11.8	2.2	11.4
Plant C	1,5 Mio €	+ 23 % (to44,5%)	4.3	0.6	3.5

■ CO₂ emission savings through alternative fuels in the European Union

If the Cement industry would stop recovering waste and biomass...

- 65 new waste incinerators needed in Europe for 6,5 mio tons waste
- European CO₂ emissions would increase by 11 mio tons

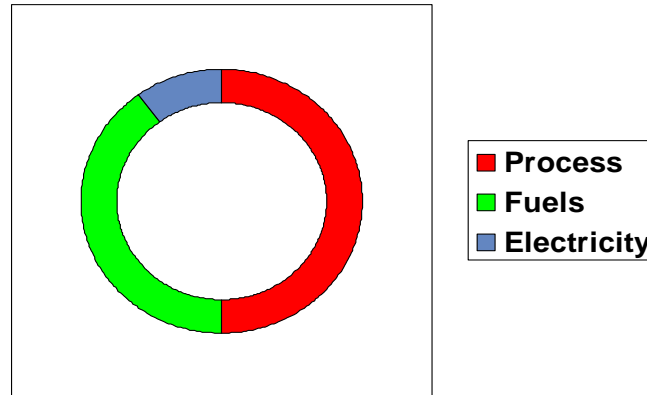


HeidelbergCement Sustainability Ambitions

Protecting the climate

Mitigation of CO₂ emissions is a strategic priority

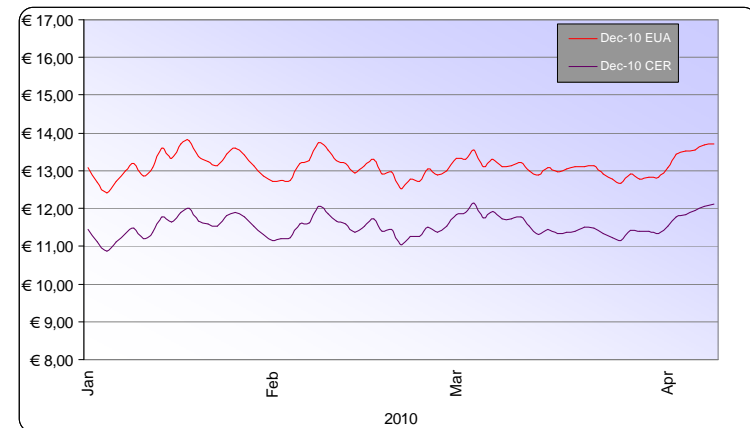
- Incompressible process emissions represent about 50% of total CO₂ emissions¹



- **Key levers to reduce CO₂ emissions in the cement sector**
 - Energy efficiency (best available techniques)
 - Alternative fuels, especially biomass fuels
 - Clinker substitution by slag, fly-ash, limestone... in cement

■ HeidelbergCement position in the Emission Trading Scheme (European Union)

- Efficient monthly monitoring of actual CO₂ emissions in the EU/ETS
- Permanent follow-up of Carbon Markets to maximize revenues from sales of emission rights and minimize costs of compliance
- Total allocation: 23 mio EUA/y, 48 plants in 11 EU countries
- Long position in phase II
 - Mitigation efforts
 - Economic crisis
- Regulations under development for phase III
 - 20% or 30% reduction target
 - Distribution of the effort between sectors
 - Benchmarking methodolog

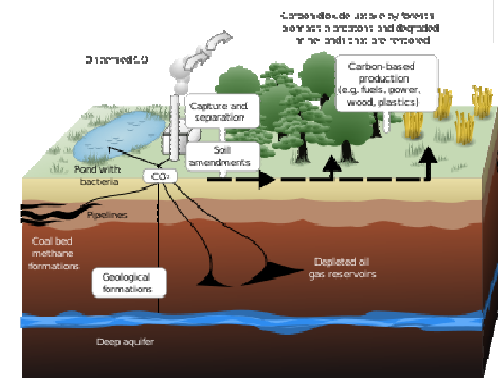
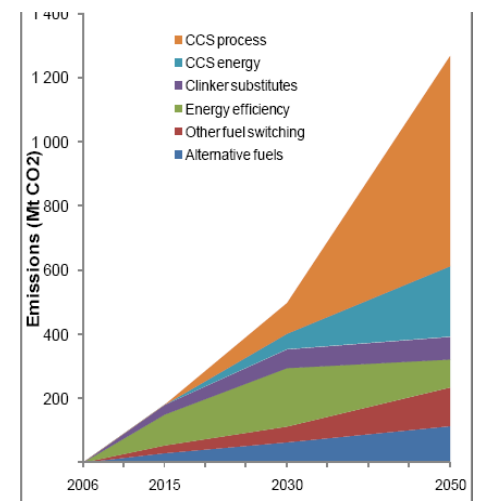


Climate protection: long term vision

« Cement Technology Roadmap » (2009) International Energy Agency / CSI Key findings

- **Cement = key material and no replacement apparent**
- **Today's options: 500-600 Mt CO₂/y savings by 2050**
- **Need additional 900Mt CO₂/y**
- **Carbon Capture and Storage essential**
 - HeidelbergCement plays an active role in related R&D activities:
 - Phase III ECRA studies
 - NORCEM Brevik project
- **Long term CO₂ reduction targets and supporting policies needed**

CO₂ Reduction Potentials



■ HeidelbergCement CO₂ strategic plan is going ahead industry ambitions by 2020

- Increase alternative fuels use: 30% CSI/IEA: 23 %
- Decrease clinker to cement ratio: 70% CSI/IEA: 74 %
- Translated into action plans on plant level



HeidelbergCement Sustainability Ambitions

Sustainable construction: product innovation

High performance products



Ultra High performance Concrete

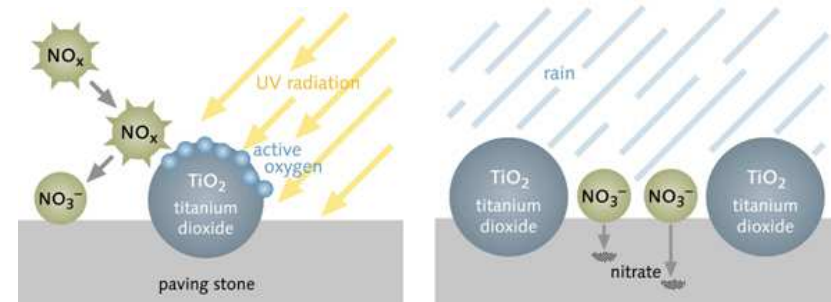
25% less CO₂



Air cleaning



TioCem® reduces NO_x in cities



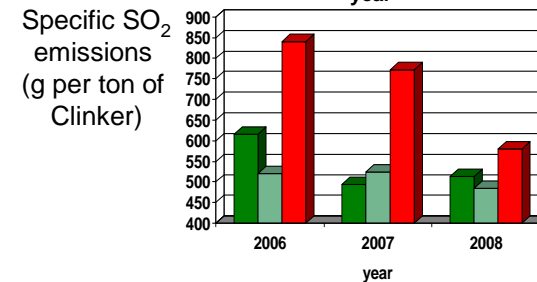
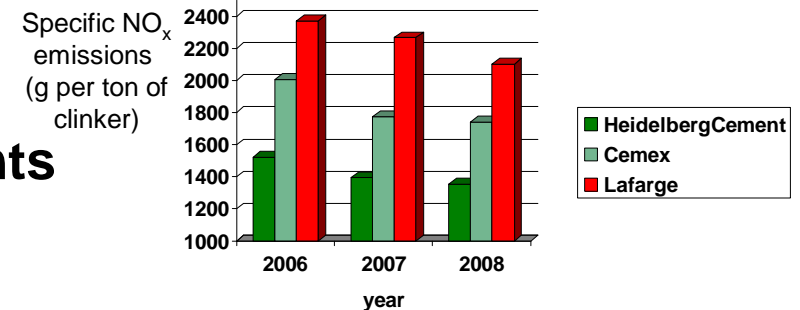
Strengthening of our Global R&D Department (HTC)

Product and process innovation

HeidelbergCement Sustainability Ambitions

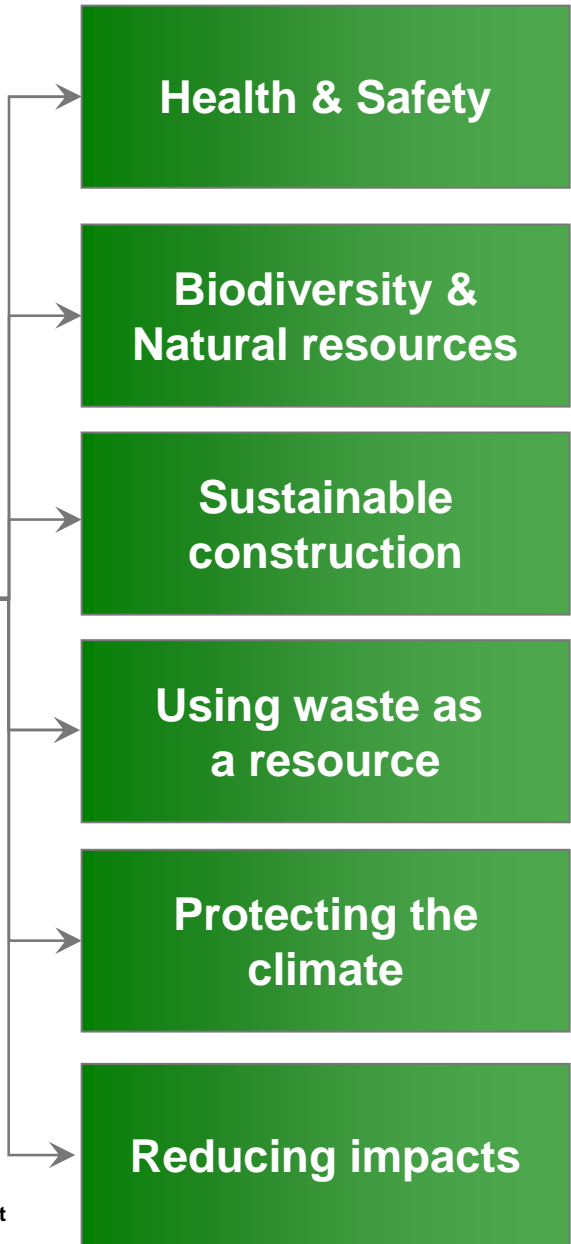
Managing and reducing all impacts

- Implementation of ISO 14001 certified management systems in all cement plants
- Expertise in emission reduction technologies (dust, SO₂, NO_x, Hg)
- Water efficiency actions, focusing on critical regions/countries
- Reduction of fuel consumption: lightweight RMC trucks



Pragmatic approach aiming at continuous improvement

HeidelbergCement, responsible global player - clear ambitions



- Zero accidents mentality
- Policies & training
- Reporting systems
- Legal compliance



- Resources conservation
- Quarry restoration
- Promote Biodiversity
- Stakeholder dialogue



- Concrete: a sustainable product
- Recyclable products
- Innovative products: e.g. TioCem®



- Natural resources preservation
- Sustainable solution for waste management



- Minimize CO₂ emissions
- Reduction energy consumption
- Blended cements policy



- Reduction air emissions
- Innovative technologies
- Operational excellence
- Management systems

