Changement climatique :
« Les solutions de l'industrie de la construction »

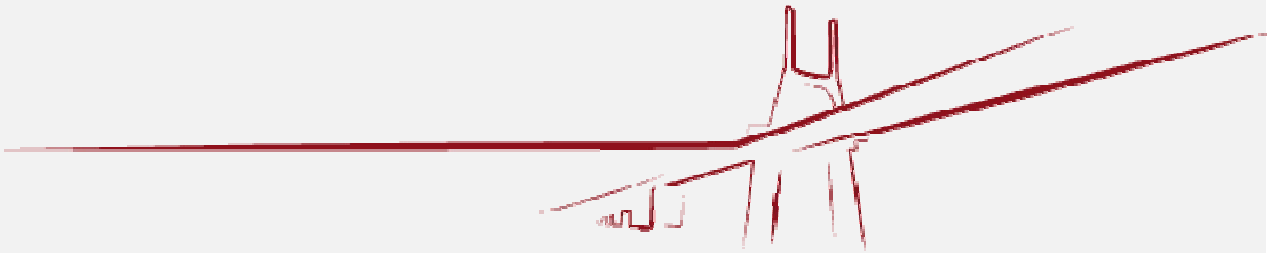
Climate change :
« Solutions from the construction industry »

Paris, 4 décembre 2015

Avec le soutien de :

04/12/2015
Maison des Travaux Publics,
Paris

CEMENTS FOR A LOW CARBON EUROPE



Meeting on 4 December 2015

By Claude Loréa – CEMBUREAU Deputy Chief Executive

START YOUR JOURNEY WITH A VIDEO

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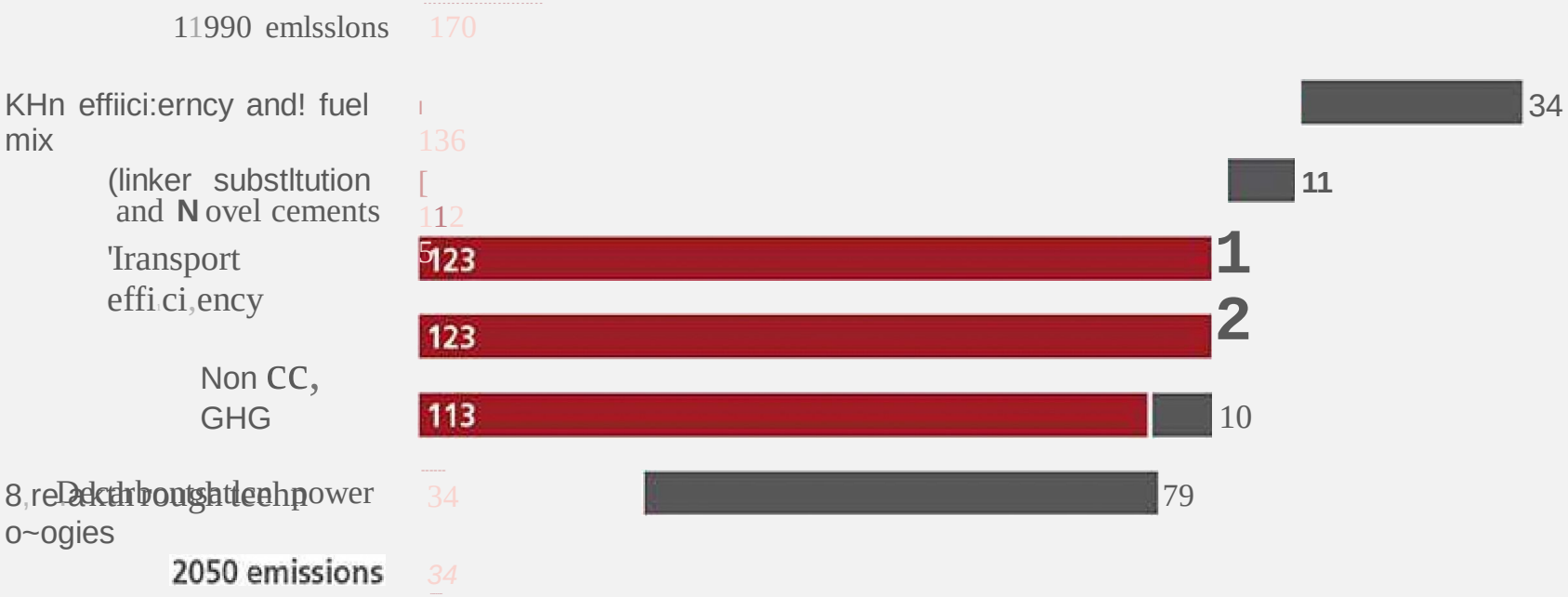
OUR CONTRIBUTION TO THE LOW CARBON ECONOMY

Multiple pathsto emissions reduction



http://lowcarboneconomy.cembureau.eu/

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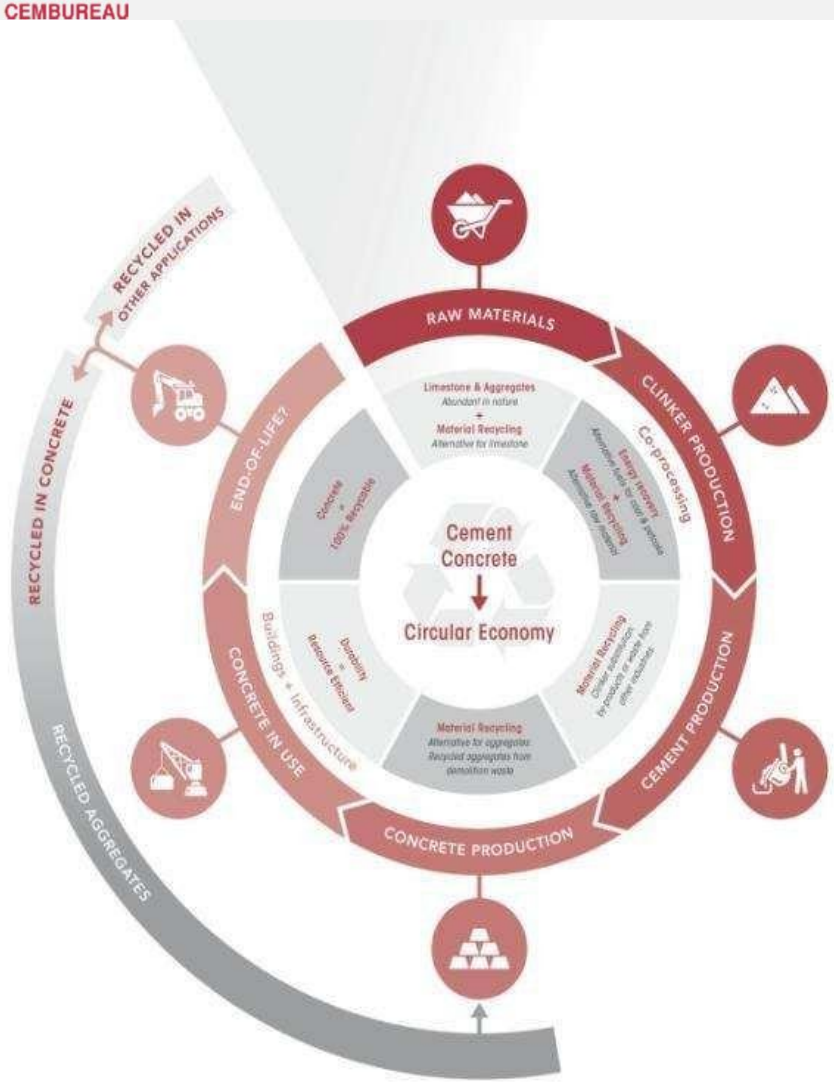
FIVE PARALLEL ROUTES TOWARDS 2050

1	2	3	4	5
Resource effidency	Ene-rgy efficiency	Carbon sequestration and reuse	Product effidency	Downstream
• Alternative fuels • Raw material substitution • Clinker substitution • Novel cements • Transport efficiency	• Electrical effidency • Thermal energy efficiency	• Carbon sequestration and reuse • Biological carbon rapture	• Low carbon concrete	• Smart & infrastructure development • Recycling concrete • Recarbonation • Sustainable construction

THE CEMENT AND CONCRETE INDUSTRY IS THE BACKBONE OF CONSTRUCTION IN EUROPE



Employs 545,000 people

Adds EUR 56 bn to the European economy

Accounts for 10% of GDP

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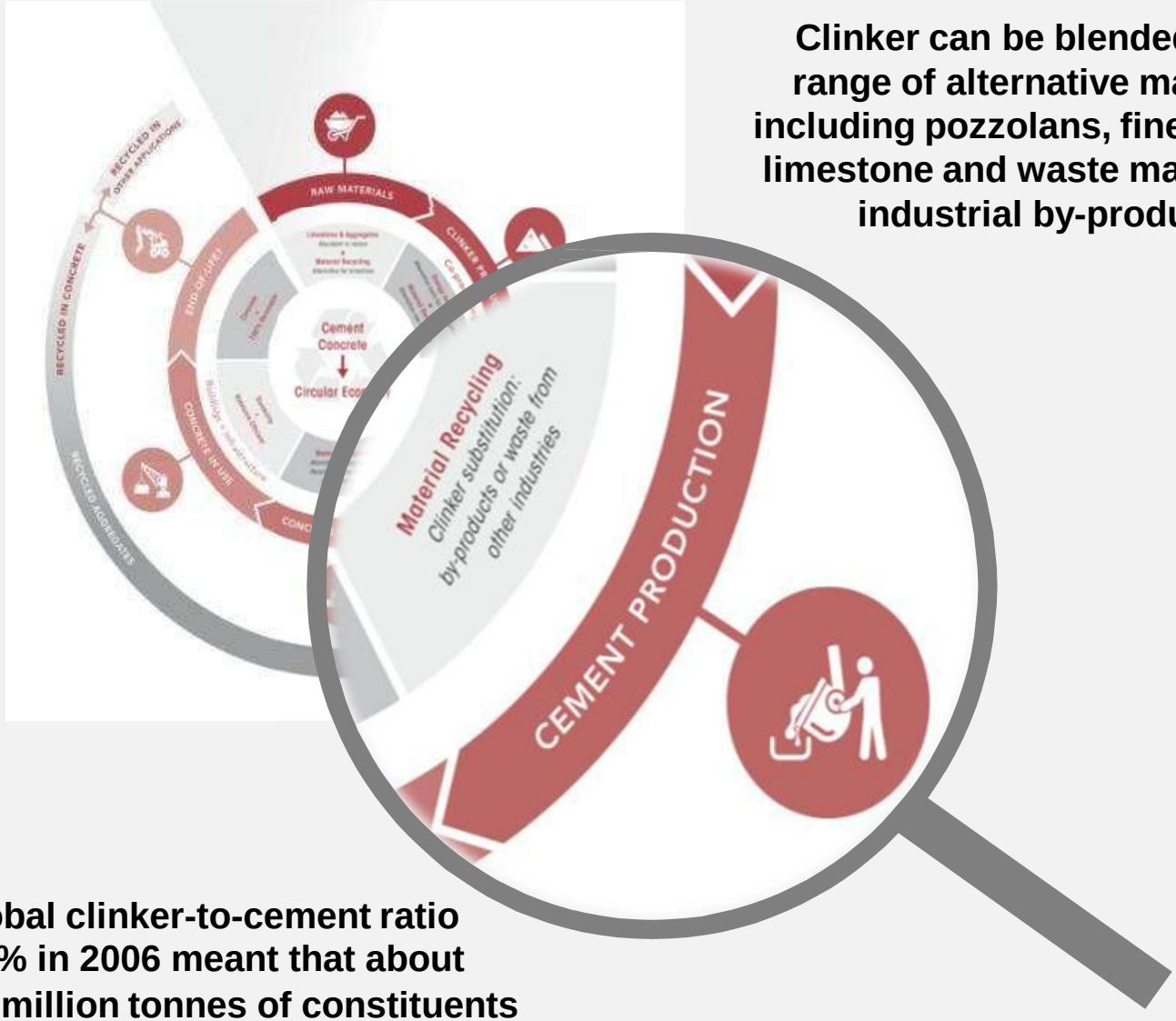


Clinker can be blended with a range of alternative materials, including pozzolans, finely ground limestone and waste materials or industrial by-products

A global clinker-to-cement ratio of 78% in 2006 meant that about 550-600 million tonnes of constituents other than clinker were used

ECRA'S CCS PROJECT COMBINED WITH CEMCAP

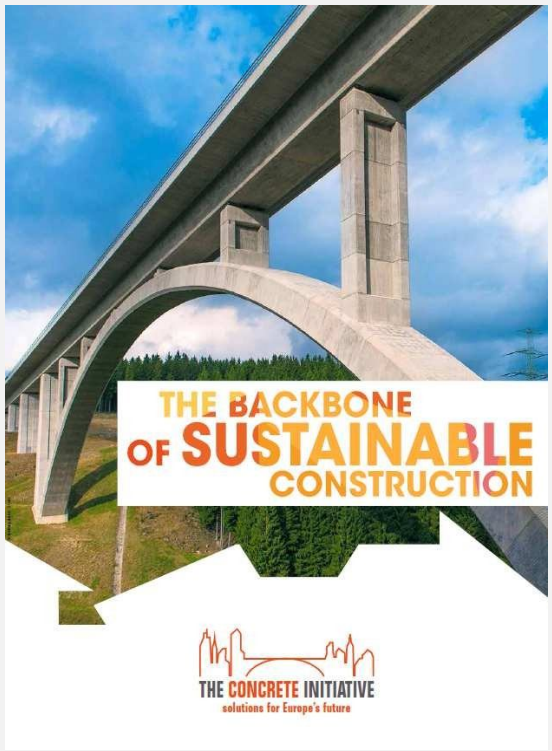
Financed by participating ECRA members

- **Phase I** → Literature study (January - June 2007)
- **Phase II** → Study about technical and financial aspects of CCS projects, concentrating on oxyfuel and post-combustion technology (summer 2007 – summer 2009)
- **Phase III** → Laboratory-scale I small-scale research activities (autumn 2009 – autumn 2011)
- **Phase IV** → Prepare pilot plant (time-frame: 2 - 3 years)

EU funding → **CEMCAP:** Prototype testing (3 years)

- **Phase V** → Build and operate industrial scale plant (time-frame: 3-5 years)
- **Phase VI** → Demonstration plant (time-frame: 3-5 years)

FULL SUPPLY CHAIN APPROACH
CONCRETE, A UNIQUE PRODUCT



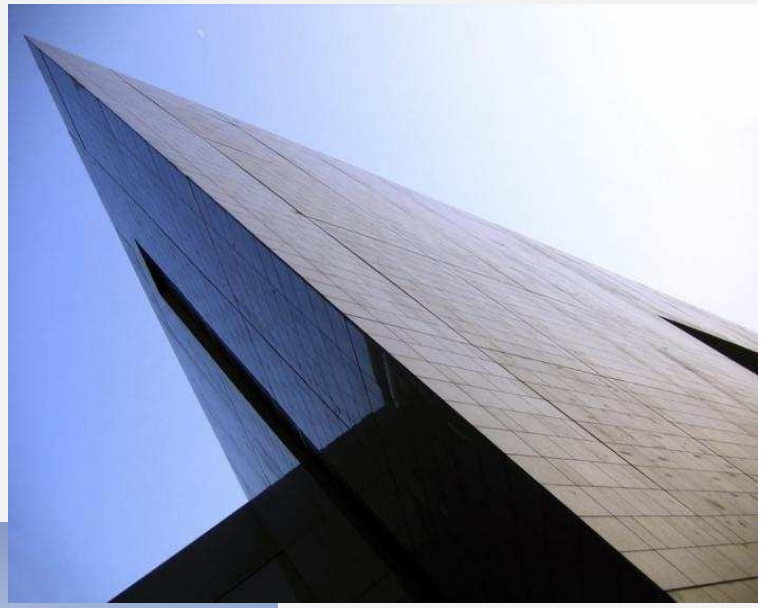
Joint advocacy by the concrete sector (cement, precast and ready-mix concrete)

CONCRETE

- **responds to societal challenges through its durability and resilience, affordability and proven fire resistant properties**
- **an engine for growth / local products for a local market / multiplier effect / widely available and affordable**
- **optimal "whole-life performance" thanks to durability, thermal mass / abundantly available / fully recyclable**

www.theconcreteinitiative.eu

CONCRETE IN USE



www.cembureau.eu

RESOURCE EFFICIENCY

- Alternative fuels
  - Replacing a large part of traditional fuel sources with biomass or waste
- Raw material substitution
  - Replacing raw natural resources with waste and by-products from other processes
- Clinker substitution
  - Replacing clinker with alternative materials in cement grinding (reducing clinker to cement ratio)
- Novel cements
  - Potential of new or novel cement types currently under development

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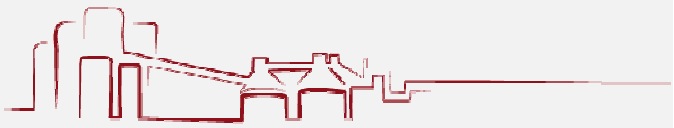

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‘CO-PROCESSING’ = ENERGY RECOVERY + MATERIAL RECYCLING

Alternative fuels = 36% of ceme

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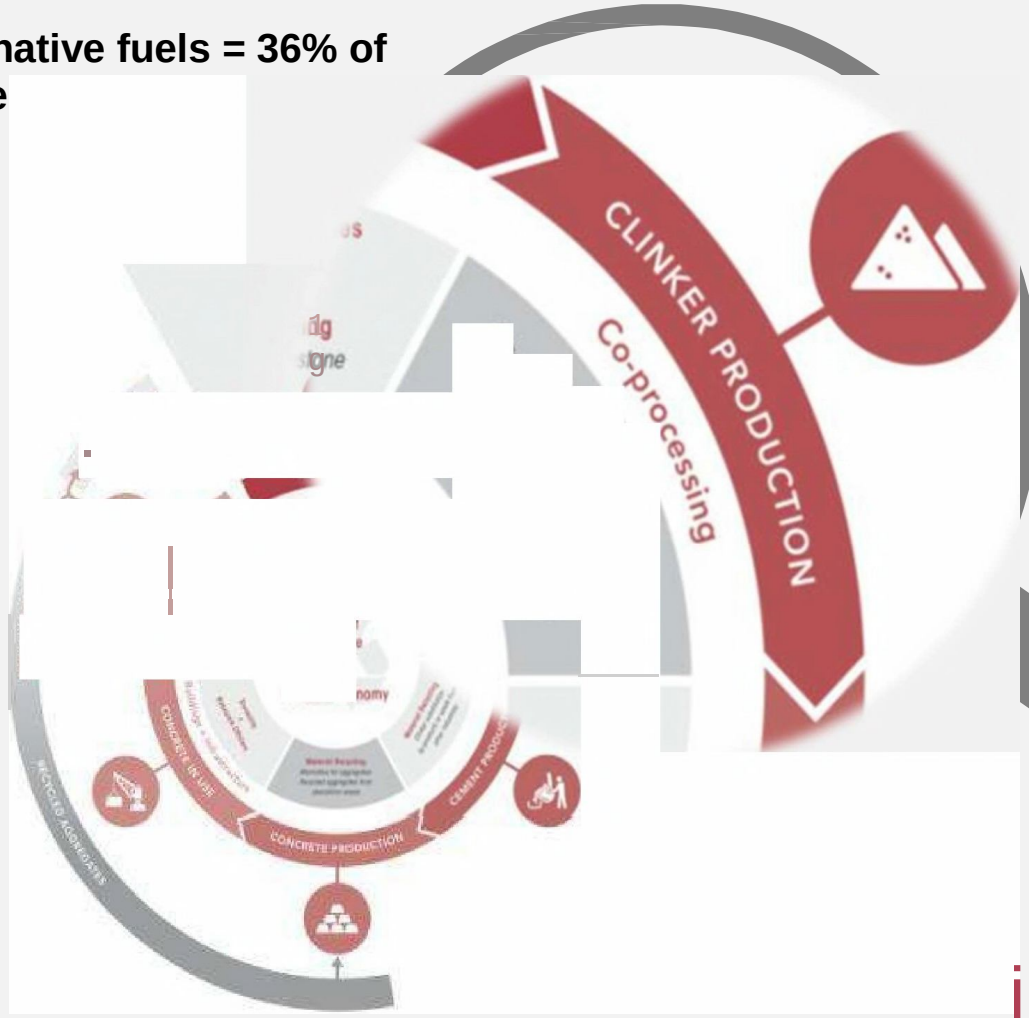

ENERGY EFFICIENCY

- Electrical energy efficiency
  - Continuous improvement of the production process to lower the amount of electricity used
  - ! Deploying CCS would increase electricity consumption by 50 to 120%
- Thermal energy efficiency
  - Continuous improvements to production facilities have halved energy consumption since the 1960s
  - Waste heat recovery systems being investigated

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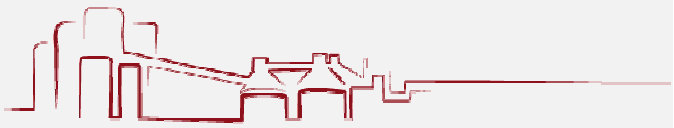

CARBON SEQUESTRATION & REUSE

- Initial results show currently available technologies (oxyfuelI post combustion) could capture 90% of CO_2 emissions
- Captured carbon to be transported to a storage site, valorised, or used to grow algae,...
- Carbon capture would increase production costs by 25 to 50%, require substantial investments and require the use of additional electricity
- Carbon Capture and Storage (CCS) is only worthwhile if the CO_2 transport infrastructure and storage sites are suitable and approved for that purpose

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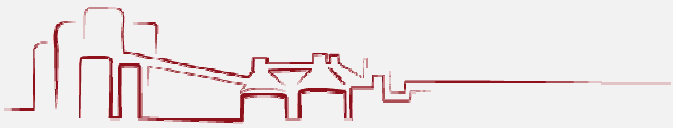

PRODUCT EFFICIENCY

- Low carbon concrete
  - Using high performance cements to optimise cement use per tonne of concrete
  - Locally sourcing of aggregates
  - Optimising admixtures and concrete composition at the concrete mixing stage

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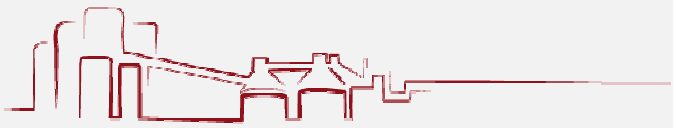

DOWNSTREAM

- Smart building and infrastructure development
  - New buildings can be built with deconstruction rather than demolition in mind
- Recycling concrete
  - Using crushed concrete in construction
- Recarbonation
  - At the end of its working life, concrete can be crushed (increasing the exposed surface area) thereby increasing the recarbonation rate
- Sustainable construction
  - Thermal mass of concrete
  - Concrete roads reduce fuels consumption of vehicles

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