Decarbonising the global cement & concrete sector

BIBM Congress 2023
Amsterdam, Sept 29th 2023

Thomas Guillot
CEO GCCA

Global Cement and Concrete Association
OUR MEMBER COMPANIES AND AFFILIATES OPERATE IN ALMOST EVERY COUNTRY OF THE WORLD

Our Members
• Adani Cement
• Asia Cement Corporation
• Breedon Group
• Buzzi Unicem
• Cimenterie Nationale
• Cementir Holding
• Cementos Argos
• Cementos Moctezuma
• Cementos Molins
• Cementos Pacasmayo
• Cementos Progreso
• CEMEX
• Çimsa Cement
• CNBM
• CRH
• Dalmia Cement
• Dangote
• Fletcher Building
• GCC
• Heidelberg Materials
• Holcim
• Huaxin Cement

• JK Cement
• JK Lakshmi Cement
• JSW Cement
• Medcem
• Misr Cement Group
• Nesher Israel Cement Enterprises
• Norm Cement
• Orient Cement
• PT Solusi Bangun Indonesia
• SCHWENK Zement
• Secil
• Siam Cement Group
• Siam City Cement
• Taiheiyo Cement
• Taiwan Cement Corporation
• TITAN Cement Group
• UltraTech Cement
• UNACEM
• Vassilikos Cement
• Votorantim Cimentos
• YTL Cement

Our Affiliates – partner national and regional industry associations
• Asociación de Fabricantes de Cemento Portland – Argentina
• Asociación de Productores de Cemento – Peru
• Associação Brasileira de Cimento Portland – Brazil
• Association of German Cement Manufacturers (VDZ) – Germany
• Association Professionnelle des Cimentiers – Morocco
• Betonhuis – Netherlands
• BIBM – Europe
• CANACEM – Mexico
• Canadian Precast Prestressed Concrete Institute
• Cement Association of Canada
• Cement Concrete & Aggregates Australia
• Cement Industry Federation – Australia
• Cement Manufacturers Association – India
• Cement Manufacturers Ireland
• Concrete NZ – New Zealand
• European Cement Association (CEMBUREAU)
• European Federation Concrete Admixtures
• European Ready Mixed Concrete Organisation
• Federación Iberoamericana del Hormigón Premezclado – LatAm
• Federación Interamericana del Cemento (FICEM) – LatAm
• Japan Cement Association
• Korea Cement Association
• Mineral Products Association
• National Ready Mixed Concrete Association – USA
• National Ready Mixed Concrete Association – USA
• Portland Cement Association – USA
• Thai Cement Manufacturers Association
• The Spanish Cement Association (Oficemen)
• Turkish Cement Manufacturers Association (TürkÇimento)
**KEY PROGRESS: CO₂ REDUCTION – GNR**

- **CO₂ emissions***
  - 23%
  - Reduction in Net CO₂ emissions per tonne cementitious (1990 baseline)

- **Fossil Fuel**
  - 18%
  - Reduction in fossil fuel consumption (1990 baseline)

- **Energy Efficiency**
  - 19%
  - Energy efficiency improvement (1990 baseline)

* Note 23% is a rounded figure – actual figure, accurate to 1 decimal places, is 22.7%
GCCA members actions are driving decisive progress on our industry mission to fully decarbonise. In the last year a myriad of actions, projects, investments are underway.

Breedon Group – CEM II/A-L rollout

Cementos Moctezuma – Replacing Clinker

CANACEM – Mexico-FiCEM 2030 Roadmap

Cementos Argos – Technical and Financial Roadmap

Cementos Pacasmayo – EcoSaco – Sustainable Packaging
GCCA members actions are driving decisive progress on our industry mission to fully decarbonise. In the last year a myriad of actions, projects, investments are underway.

- CEMEX – Solar Clinker
- CNBM – New WHR Power Generation technology
- CPCI – 2030/2050 Net-zero Roadmap Initiative
- Cimsa Cement – Optimising clinker and fuels
- CRH – ZIN Project in Brussels
GCCA members actions are driving decisive progress on our industry mission to fully decarbonise. In the last year a myriad of actions, projects, investments are underway.

Heidelberg Materials – CCUS driving deep decarbonisation

Holcim – Calcinated Clays

JK Cement – Steps Towards Net Zero

JSW – Decarbonisation efforts towards net zero

MPA – State of the Art Net Zero Fuel Mix
GCCA members actions are driving decisive progress on our industry mission to fully decarbonise. In the last year a myriad of actions, projects, investments are underway.

Orient Cement – Renewable and Alternative Fuels

SCG – 3D Printed Coral Reef

Taiheiyo Cement – Carbon Circulation Technology

YTL Cement – Net Zero Initiatives

SECIL – The Clean Cement Line
GCCA members actions are driving decisive progress on our industry mission to fully decarbonise. In the last year a myriad of actions, projects, investments are underway.

- **Taiwan Cement Corp.** – Ultra-High Performance Concrete
- **TCMA** – Working with Stakeholders
- **UltraTech Cement** – Harnessing Green Energy
- **3D Printed Concrete**
- **Votorantim Cimentos** – Renewable Energy
NET ZERO DELIVERY
GCCA 2050 ROADMAP -

No silver bullet, all value chain contributes to decarbonisation agenda. CCUS ramp up required.
NET ZERO DELIVERY

Roadmap Accelerator
Updated 25.05.23

KEY DELIVERABLES

- **Roadmap Levers and CO₂ impact**
  Per lever, quantification of potential CO₂ reduction 2030 & 2050

- **Policy**
  Per lever, identification of enabling policies

- **Lighthouse Projects**
  Per lever, identification of lighthouse projects

Percentage of world cement production covered
(excluding China)

- 22%
- 21%
- 8%
- 27%
- 8%
GCCA Net Zero Accelerator Result in development of Technology “Battle Plan”

Concrete Actions needed to progress on respective technologies

<table>
<thead>
<tr>
<th>Technologies</th>
<th>Roadmap enablers</th>
<th>Policy asks</th>
<th>Knowledge dissemination</th>
<th>Projects</th>
<th>Financing</th>
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<tbody>
<tr>
<td>Building efficiencies</td>
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<td>Low carbon products</td>
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NET ZERO DELIVERY: CALL FOR ACTION

Next steps are to:

• actively reach out, encourage and equip all stakeholders in targeted countries to progress to the point of agreement to commence their country roadmaps

• enable completion of roadmap activity in countries where roadmaps have already begun

• support implementation once roadmaps have launched

We count on your support to ensure your local companies demonstrate leadership in these endeavours.

• Our target is to cover 75% of world – plus China
LAUNCHING NET ZERO VALUE CHAIN PARTNER MEMBER CATEGORY

"Only by working together with stakeholders across the value chain can we achieve net zero."

- To share common Net Zero endeavour
- To socialise/disseminate new technologies and Knowhow
- To facilitate contact and discussion across the industry

In particular we are seeking partnership with:
- Energy Solution Provider or Carbon Management and Storage
- Equipment Manufacturers
- Admixture Producers
- Consultancy Services
- Concrete and Aggregate Producers
CONCRETE PROMOTION
"Moving sentiment in the right direction"

2023 Focus Area

**Essential role of Cement & Concrete**
Cement and concrete are essential to the modern world – key enablers for a future resilient and sustainable planet.

**Net Zero Mission & Action**
It’s essential to (continue to) reduce and then eliminate CO₂ emissions – our members fully committed and driving decarbonisation action today.

**Innovation – renewed focus**
Innovation is key to unlocking our net zero future – and securing the long-term viability of our sector.

**Attractive successful industry**
Our industry is essential and will flourish in executing the opportunities from a net zero, circular economy.
Advertising value equivalency (AVE) of the media coverage for our Concrete in Life Competition was £3.7 million.

+49%

In the first quarter of 2023, GCCA secured 1.53k mentions in the media – that was up 49%, compared to the previous 3 months.
INNOVATION & CCUS
Driving Innovation:
Innovandi is the GCCA innovation arm, which runs two world class innovation platforms to accelerate and foster innovation to help the industry decarbonise and produce carbon neutral concrete by 2050.

**INNOVANDI Global Research Network**
Through Working Group 5 GCCA is involved into very important Work Program to help mature and deploy the CCUS technologies

Advocacy
- GCCA CCUS policy paper
- CEM CCUS collaboration
- Other collaboration: GCCSI, OGCI, IEA GHG, UNIDO

Innovation
- Innovandi
- Further collaboration on high TRL under the same model as the open challenge

Knowledge building
GCCA CCUS Guide/Handbook:
- Good practices sharing
- Members capacity building
- Collaboration with CCS Knowledge Centre

Support for national initiatives
- e.g., World Bank Nigeria
In cement & Concrete sector investment in CCUS project will enable rapid advancement of technology maturity – 2022 TRL level

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Membranes
PSA
Mineral. carbonisation
Cyrogenic process
Oxyfuel
Ca-Looping, int.
Optimised solvents
Indirect calcination
TSA
Ca-Looping, Tail-end
MEA

Source: ECRA technology papers - https://ecra-online.org/research/technology-papers/
In cement & Concrete sector investment in CCUS project will enable rapid advancement of technology maturity – Expected 2027 TRL level

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          - Ca-Looping, Tail-end
            - MEA
  - Cyrogenic process
    - Oxyfuel

Source: ECRA technology papers - https://ecra-online.org/research/technology-papers/
Launch of Cement CCUS industry tracker with Lead IT

New industry tracker will increase transparency and visibility of industry efforts in developing carbon capture projects

Europe, USA & Canada are investing significantly in carbon capture technology
- EU innovation fond: 9 Cement CCUS projects (+2 on Lime CCUS)
- In USA IRA is enabling a strong acceleration of project development (project call still in process)
- In other geography project execution will face financing challenges due to lack of legislation

https://www.industrytransition.org/green-cement-technology-tracker/
SUSTAINABILITY

2 main functional roles

- Definitions, Monitoring & Reporting
- CO₂ Protocol, role of cement treating waste
- Good Practice Sharing, Tools inc. EPD
- Nature

3 major tasks

- Health & Safety
- Priorities
CONCRETE FUTURE

We are fully committed to working together, and with partners, to achieving our net zero destination.

www.gccassociation.org/concretefuture