



Background

After water, concrete is the world's second most consumed material and it shapes the built environment of every country around the world. The key component in the production of concrete is cement. It is the essential "glue" in concrete, which is formed when cement mixes with aggregates (such as crushed stone or gravel), sand and water.

Cement production poses several sustainability issues. Approximately 5 percent of manmade carbon dioxide emissions originate in the cement industry, a result of the calcination process of limestone in the cement kiln and the fuel required to reach temperatures of 1,450°C, necessary to trigger the process. Further air emissions such as dust, organic pollutants and micro-pollutants, need to be managed. Many of these emissions are monitored continuously to ensure respective emission limits are met. The land used for quarries must be managed well and restored, in order to help preserve landscape and local biodiversity.

The business case

By addressing these key sustainability issues thoughtfully over an extended period, cement companies can:

- Manage their CO₂ emissions (and their corresponding climate impacts), which can have significant financial impacts in a carbon-constrained world;
- Make improvements in employee health and safety;
- Understand and manage the impacts of quarry projects throughout the life cycle, from a greenfield site through startup, operation and eventual closure;
- Help society better manage waste materials by cooperating with other industries to develop novel uses for by-product and waste materials in cement production.

The WBCSD response

The CSI is a three-phase program comprising (1) research and stakeholder consultation, (2) business planning, and (3) action and progress reporting. These are organized to:

- Identify key issues
- Assess the industry's performance
- Provide vision and recommendations for action
- Help manage an actionable business agenda for industry leaders to move forward

Phase 1: Research

The first phase included extensive research and stakeholder consultation. More than 14 separate research and consulting organizations contributed to this during 2000-2002. We solicited stakeholder views in a series of facilitated dialogues over a one-year period in Curitiba, Lisbon, Bangkok, Cairo, Brussels, Washington DC and Beijing.

Assurance, sponsors and communications partners

Throughout the research phase an external assurance group provided active oversight and advice. Dr. Mostafa Tolba, former Director General of the United Nations Environment Program (UNEP), chaired the group. This group served as a "referee" for the research, making sure the right topics were included and addressed in a balanced way. Members from more than 25 businesses, government and international institutions and foundations made intellectual and financial contributions to the program.

Phase 2: Planning

Ten of the Initiative's business leaders signed an industry Agenda for Action containing measurable targets, and setting out joint and individual company commitments. Released in 2002, measurable targets and performance timeframes are a critical part of the Agenda.

The work since 2002 has focused on six key challenges that were identified during the research and consultation phase, and a seventh and eighth identified in recent years.

1. CO₂ and climate protection
2. Responsible use of fuels and materials
3. Employee health and safety
4. Emissions monitoring and reporting
5. Local impacts on land and communities
6. Reporting and communications
7. Concrete recycling
8. Concrete sustainability

Phase 3: Action

In most areas the companies have developed guidelines for good practice. Individually, each member company is now implementing the guidelines in their operating facilities and reports publicly on progress.

Additional company members and third parties with specific expertise on each issue participate in this effort. An interim public progress report was released in 2005 and a full progress update and assessment of future needs was published in 2008. In 2011, a progress report will be developed to summarize action of the first ten years of successful collaboration in the CSI.

Key events and actions

- As promised in the Agenda for Action, the CSI members are publishing their own emission reduction targets and progress. Each company reports annually on CO₂ emissions and other air emissions such as NO_x, SO_x, and dust. Members continue to collect and analyze industry safety data, and also promote improved safety practices within company facilities.
- The CSI continues to run the global database on energy and CO₂ performance in the cement sector, "Getting the Numbers Right" (GNR). Some 50 cement producers worldwide now participate in this project and contribute data into the system. Global and regional reports containing data up to 2009 are available at www.wbcdcement.org/co2data.
- The CSI proposed a new sectoral Clean Development Mechanism (CDM) benchmarking methodology aimed at improving the environmental effectiveness and credibility of the CDM, while maintaining sound business incentives to participate. The methodology was submitted to the CDM Executive Board in 2009 and is currently being discussed by its Methodology Panel.
- At the end of 2009, the CSI and the International Energy Agency (IEA) launched the Cement Technology Roadmap. This roadmap outlines both existing and potential technologies in the cement sector that could contribute to greenhouse gas reduction. It is based on individual technology papers written for the CSI by the European Cement Research Academy (ECRA). The roadmap and the papers are available at www.wbcdcement.org/technology.
- The CSI companies have embarked upon a safety initiative focusing on drivers and contractors. This followed a root cause analysis of CSI fatality rates, and a review of other industries' fatality prevention programs. The initiative comprises recommended good practice on driving and contractor management, company-wide implementation and regular public reporting on progress by all companies.
- Work on concrete sustainability was introduced by the publication of a report on concrete recycling. It aims at raising awareness of recycling concrete, with the ultimate vision of "zero landfill" of concrete; it recommends improved data collection on construction and demolition waste and further incentives for recycling. The report is available at www.wbcdcement.org/recycling. Further work is currently in the scoping phase.

Further reading

Cement Technology Roadmap: Carbon emissions reductions up to 2050 (2009)
Recycling concrete (2009)
Cement Industry Energy and CO₂ Performance: "Getting the Numbers Right" (2009)
A Sectoral Approach: Greenhouse gas mitigation in the cement industry (2009)
The Cement Sustainability Initiative, Climate Actions (2008)
Full Online Progress Report (2008) <http://csiprogress2007.org>
The Cement Sustainability Initiative (2007)
Formation and Release of POPs in the Cement Industry (2006)
Strengthening the CDM: A Cement Industry Perspective (2005)
The Cement Sustainability Initiative, Progress Report (2005)
The Cement Sustainability Initiative, Our Agenda for Action (2002)
Toward a Sustainable Cement Industry (2002)

**Program structure
and resources****Co-chairs 2011**

Holcim, SCG Cement, Votorantim

Core Members

CEMEX, CIMPOR, CRH, HeidelbergCement, Holcim, Italcementi, Lafarge, SCG Cement, Taiheiyo, Titan, Votorantim

Participating Members

Argos, Camargo Corrêa, Cimentos Molins, Cimentos Liz, China National Building Material Corporation (CNBM), China Resources Cement (CRC), Secil, Shree Cement, Sinoma, Tianrui Group, Ultratech, Yatai

Communications Partners

ABCP – Associação Brasileira de Cimento Portland, Arab Union for Cement & Building Materials (AUCBM), CEMBUREAU, Cement Association of Canada (CAC), Cement Industry Federation (CIF, Australia), Cement Manufacturers Association (CMA, India), China Cement Association (CCA), Federación Interamericana del Cemento (FICEM-APCAC), Japan Cement Association (JCA), Mineral Products Association (MPA, UK), Portland Cement Association (PCA, US)

Other Partners

Asia-Pacific Partnership (APP), Centre for European Policy Studies (CEPS), European Cement Research Academy (ECRA), GTZ, International Energy Agency (IEA), International Finance Corporation (IFC), The Energy and Resources Institute (TERI), US Environmental Protection Agency (EPA), The Organization for Economic Co-operation and Development (OECD), Verein Deutscher Zementwerke (VDZ), World Resources Institute (WRI), World Wide Fund for Nature (WWF)

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