

The Cement Sustainability Initiative





USA



Italy



Mexico



France



Spain



Spain



Brazil



Portugal



Portugal



India



Ireland



The Siam Cement Group

Thailand



India



TAIHEYO CEMENT

Japan



Germany



Greece



Switzerland



Votorantim


Brazil

Cement – At the foundation of sustainable development

Cement, the glue that holds concrete together, is a key ingredient of economic development. Concrete becomes our offices, factories, homes, schools, hospitals and roads, as well as our underground water and drainage pipes, bricks and blocks, and the mortar that bonds them together.

The cement industry plays a major role in meeting society’s needs for housing and infrastructure. However, its production is also energy-intensive: it accounts for around 5% of global man-made carbon dioxide (CO₂) emissions, and affects a wide range of sustainability issues, including climate change, emissions to air and water, natural resource depletion and worker health and safety.

In simple terms, cement production begins by crushing and blending limestone and other materials containing the right proportions of calcium, silicon, aluminum and iron oxides. The blended substance is then heated to about 1,500° C in a kiln, where the components react and partially fuse. This reaction produces an intermediate product called clinker, which is then cooled and ground with a small proportion of gypsum and other additives to produce cement. Mixing cement with sand, gravel, and water produces concrete.



A global effort
by 18 major cement
producers who
have integrated
sustainable
development into
the heart of their
business strategies

The Cement Sustainability Initiative (CSI) is a global effort by 18 major cement producers who believe there is a strong business case for the pursuit of sustainable development. Collectively these companies account for more than 40% of the world's cement production, although they range in size from very large multinationals to smaller local producers.

The purpose of the Initiative is to:

- Explore what sustainable development means for the cement industry;
- Identify actions and facilitate steps cement companies can take, individually and as a group, to accelerate progress toward sustainable development;
- Provide a framework for other cement companies to become involved;
- Create the content and context for further stakeholder engagement.



CSI
activities
and
achievements

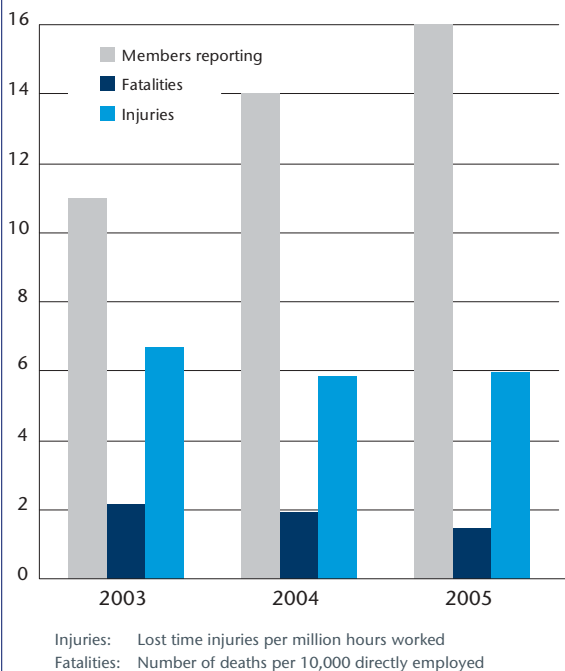
The 2002 *Agenda for Action* set out implementation steps for the first five-year segment of a 20-year program. Key individual and joint actions include:

- **CO₂ management** – Companies produce consistent performance data using the CSI CO₂ protocol for monitoring and reporting CO₂ emissions (developed by the WBCSD and the World Resources Institute). Individual companies have set their own targets for reducing CO₂ emissions.

As a next step, the CSI is building the first database of CO₂ emissions from more than 1,000 cement kilns to help policy-makers worldwide better assess the influence of kiln technology, fuel selection, plant location and other variables on plant performance and emissions management. Participating companies agreed to provide the appropriate data to an independent third-party service provider, who will collate the data and develop and maintain the database.

- **Responsible use of fuels and raw materials** – In consultation with stakeholders, the CSI developed a set of guidelines for the responsible use of fuels and raw materials in the cement industry. These guidelines deal with the necessary conditions and practices recommended for the safe use of a variety of fuels and raw materials.
- **Health and safety** – Through a task force set up in 2001, the CSI agreed on an industry-wide set of safety metrics enabling consistent and accurate reporting. Since 2003, aggregated fatality rates for CSI companies have fallen 30%. Aggregated injury rates have dropped 10%. Nevertheless, further progress is possible and necessary.
- **Emissions reduction** – The CSI has developed a protocol for measurement, monitoring and reporting of emissions such as SO_x, NO_x, dust, and a range of micro-pollutants. The CSI has also sponsored a comprehensive review of persistent

Safety progress



Source: CSI annual safety survey, 2006.

organic pollutant emissions from cement plants and worked with the Stockholm Convention Secretariat to help develop reliable control measures as required under the Convention.

- **Impacts on land and local communities** – The CSI has developed a common environmental and social impact assessment process for use by companies in evaluating major projects.
- **Indicators** – The CSI has developed a robust set of key performance indicators linking business-critical values to sustainable development for the cement industry.
- **Sustainability of concrete in construction** – Initial scoping work on this topic identified end-of-life recycling of concrete, and building design practices to extend building life as two issues for further development.

CSI Formation: Ten of the world's biggest cement producers join forces under the auspices of the WBCSD to pave the way for a more sustainable cement industry.

1999

Evaluation: On behalf of the group, US-based not-for-profit consulting firm Battelle Memorial Institute does an independent review of the cement industry and suggests ways to meet its sustainability challenges.

2000 – 2002

The Cement Sustainability Initiative



CSI focus for the future

- **Defining and testing** a possible sector approach for CO₂ emissions management.
- **CO₂ & climate change** – building closer links to other climate change initiatives, such as the Asia Pacific Partnership (AP6), CSI continues to work toward potential improvements to the Clean Development Mechanism (CDM) process.
- **Employee health & safety** – continuing to drive down accidents and injuries.
- **Recycling concrete** – identifying good practices.
- **Emissions reduction** – individual companies will report progress against their own emissions reduction targets.
- **Reporting & communications**
Verification of important key performance indicators beginning with CO₂ emissions reported in 2007. Full 5-year progress report and revised action agenda in 2007.

The CSI is set to release a detailed assessment of its first five-year work segment since setting the *Agenda for Action*. As well as describing the group’s achievements to date, the *CSI Progress Report 2007* will lay out a roadmap to the future, detailing priorities, workstreams and new commitments.

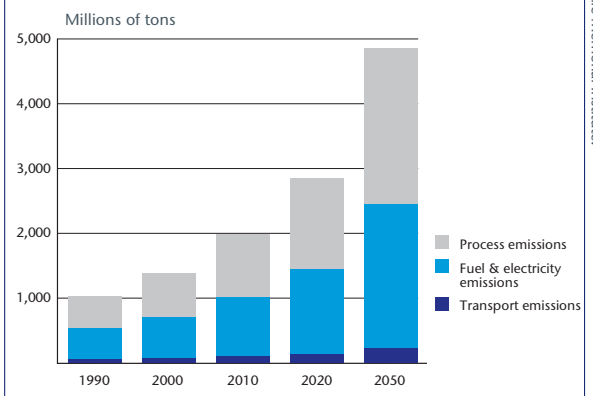
Facts and figures

- Cement is a low-cost product, however, the expense of land transport usually limits cement sales to within 300 km of a plant site. Very little cement is traded and transported internationally.
- The CSI represents over half of the world’s cement production outside China; it is one of the largest global sustainability programs ever undertaken by an industry sector.

“The CSI represents a serious effort by an important industry sector to tackle complex sustainability issues in a practical, results-oriented way. Using a common set of key performance indicators, which address both business and stakeholder concerns while requiring public reporting of individual company achievements, is a major step forward in providing an important level of accountability for a voluntary program.”

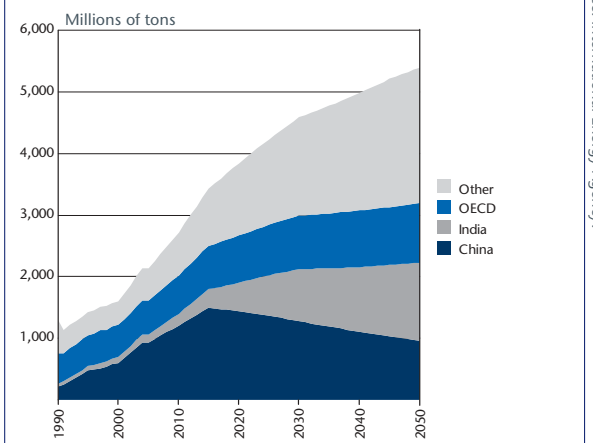
Dr. Mostafa Tolba, President of the International Center for Environment and Development (ICED) and former Executive Director of the United Nations Environment Programme (UNEP).

Projected CO₂ emissions from the global cement industry through 2050 (assuming no change in current practices)



Source: Battelle Memorial Institute.

Global cement production 1990-2050



Source: International Energy Agency.

Results March: In its final report, *Toward a Sustainable Cement Industry*, Battelle lists the major SD issues facing the industry over the next 20 years and offers recommendations.



Results July: Under the formal appellation of CSI, the group signs the *CSI Charter* and releases its *Agenda for Action*.



The Cement Sustainability Initiative

CSI stakeholder engagement

In 1999, 10 leading cement companies – representing one-third of the world's cement production – voluntarily embarked on what became the Cement Sustainability Initiative (CSI), a member-led program of the World Business Council for Sustainable Development (WBCSD). The purpose was – and still is – to find new ways for the industry to reduce its ecological footprint, understand its social contribution potential and increase stakeholder engagement.

Consultation with stakeholders has been an important feature of the CSI's activities since 2002. Dialogues were conducted in the USA, Europe, Asia (including China) and South America, with representatives from government, residents groups, employees, consumer organizations, suppliers and non-governmental organizations. We have also worked closely with a number of organizations to address various aspects of the work program, such as The Natural Step International, GTZ (German Technical Cooperation), The International Energy Agency (IEA), the International Finance Corporation (IFC), UNEP and the US Environmental Protection Agency.

CSI external assurance

A feature of the WBCSD CSI is the independent nature of the work and the research it has commissioned. An independent assurance group was set up to review activities and to ensure that the Battelle research fairly represents the many viewpoints needed to promote sustainable development. The members of the assurance group for the first years were:

- Mostafa Tolba, former Executive Director of UNEP
- William Reilly, former Administrator of the US EPA
- Corinne Lepage, former Minister of the Environment in France
- Victor Urquidi, past President and Professor Emeritus of Collegio Mexico
- István Láng, past President of the Hungarian Academy of Sciences.

Although the formal assurance process is over, Dr. Tolba continues to chair an advisory panel that includes Dr. Claude Martin (former Director General of WWF International) and Jim MacNeill (Distinguished Fellow of the International Institute for Sustainable Development). Others are expected to join this panel in the coming years.

Facts and figures

- Concrete is the second most consumed product on the planet after water.
- The cement industry operates in more than 150 countries, yet almost half of the world's cement is produced in China.
- It typically requires the equivalent of 60 to 130 kilograms of fuel oil and 110 kWh of electricity to produce one ton of cement.
- Emerging economies have some of the cleanest cement plants, due to newly built facilities; the older, least efficient plants tend to be in North America.
- The industry is growing most rapidly in developing countries to meet rising demands for infrastructure and housing, especially in China, India and the Middle East.
- The cement industry is consolidating globally, but large, international firms still account for less than one-third of the worldwide market. Many smaller firms continue to be owned by their founding families. Some national industries are primarily state-owned, such as China's.

Progress: Three years into the process, the CSI releases a *Progress Report* documenting its first action steps. During the same period, good practice guidelines are completed. New members have joined the group, and as work is ongoing, more are welcomed to join by signing the *CSI Charter*.

2005



2007 report & future priorities

2007 and beyond



The Cement Sustainability Initiative

CSI membership

The CSI charter sets out the minimum requirements for membership in terms of contribution to sustainable development through a summary of the implementation steps

included in the *Agenda for Action*. This list is not exhaustive, and will be revised as necessary to address rising issues such as the need for independent, third-party assurance of a number of the key performance indicators that are publicly reported.

What does it cost and who pays for the CSI?

Since 1999, about \$US 6 million have been invested in the Initiative, an amount covered mainly by the CSI. An initial US\$ 3.5 million were for research and production of the *Toward a Sustainable Cement Industry* and the *Agenda for Action* reports (of which one-third was provided by external sponsors), and a further US\$ 2.7 million have so far been allotted for the implementation phase.

CSI publications

Key publications

The Cement Sustainability Initiative: Progress Report (2007) (forthcoming)

The Cement Sustainability Initiative: Progress Report (2005)

The Cement Sustainability Initiative: Our Agenda for Action (2002)

Toward a Sustainable Cement Industry (Battelle Memorial Institute, 2002)

Guideline publications

Formation and Release of POPs in the Cement Industry (Second edition) (2006)

Guidelines for the Selection and Use of Fuels and Raw Materials in the Cement Manufacturing Process (2005)

Safety in the Cement Industry: Guidelines for Measuring and Reporting (2005)

The Cement CO₂ Protocol: CO₂ Accounting and Reporting Standard for the Cement Industry (2005) (Second edition)

Environmental and Social Impact Assessment (ESIA) Guidelines (2005)

Guidelines for Emissions Monitoring and Reporting in the Cement Industry (2005)

Health & Safety in the Cement Industry: Examples of Good Practice (2004). Also available in Chinese, Spanish, Portuguese and Bahasa Indonesia.

CSI publications can be downloaded from www.wbcscement.org; they are also made widely available to other cement companies at no cost through a network of communications partners.

About WBCSD

The World Business Council for Sustainable Development (WBCSD) brings together some 190 international companies in a shared commitment to sustainable development through economic growth, ecological balance and social progress. Our members are drawn from more than 30 countries and 20 major industrial sectors. We also benefit from a global network of 50+ national and regional business councils and partner organizations.

Our **mission** is to provide business leadership as a catalyst for change toward sustainable development, and to support the business license to operate, innovate and grow in a world increasingly shaped by sustainable development issues.

Our **objectives** include:

Business Leadership – to be a leading business advocate on sustainable development;

Policy Development – to help develop policies that create framework conditions for the business contribution to sustainable development;

The Business Case – to develop and promote the business case for sustainable development;

Best Practice – to demonstrate the business contribution to sustainable development and share best practices among members;

Global Outreach – to contribute to a sustainable future for developing nations and nations in transition.

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