

The Cement Sustainability Initiative (CSI)

Fostering sustainability in the cement industry

The sustainability of the cement industry has become an extremely popular discussion topic in recent years. Associations such as the World Business Council for Sustainable Development (WBCSD), which includes over 200 member companies and the Cement Sustainability Initiative (CSI), which comprises 24 leading cement producers, advocate debate and influence policy as the voice of the sector throughout the world. As a result, matters of sustainability and environmental concerns have never been more prominent and many cement companies now possess sustainability schemes of their own. Here the CSI reports its views regarding industry sustainability in the future and the actions that cement producers are taking to improve matters further.

Building a more sustainable future is a collective challenge that requires a collective solution. This was the message that delegates at the World Business Council for Sustainable Development's (WBCSD) Cement Sustainability Initiative (CSI) took away from the CSI annual forum in Vancouver, Canada in October 2013. Stakeholders from around the world were told that the industry should shift its opinion of itself from 'doing less harm' to 'doing more good.'

The climate debate, which has focused heavily on CO₂ emissions from cement manufacturing, is now well known to most observers outside the industry. Those within the sector should all be aware of the actions undertaken by CSI members to reduce emissions. These include the development of the CO₂ protocol, the global database of CO₂ and energy performance information 'Getting the Numbers

Right (GNR)'. Much work has also been done on the use of traditional levers including energy efficiency, alternative fuels and clinker substitution, to reduce emissions. There is more work currently being undertaken on potential breakthrough technologies like alternative binders aimed at reducing traditional clinker use.

As the CO₂ debate matures, emerging challenges and opportunities have moved up the CSI agenda. These have acted as the trigger for much of its recent extensive work on biodiversity and quarry rehabilitation and the release of a water footprint management tool. Looking ahead, the future seems likely to deliver more on transparency on product environmental impacts and performance, life cycle analysis and responsible sourcing. The emphasis for 2014 and beyond will be as much on the part that concrete (and

Right: The production of cement and aggregates requires extraction of raw materials, which can have significant local impacts on the landscape, ecosystems and communities around quarries. Effective management and well-planned rehabilitation strategies help to restore or even create value in these quarries.





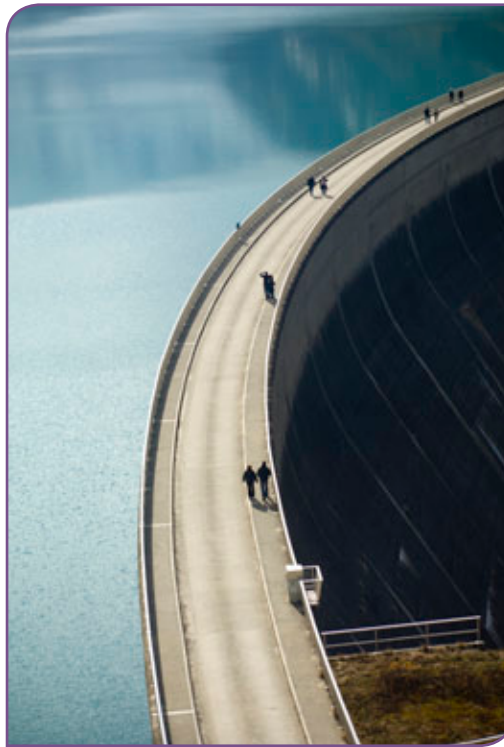
therefore cement) has to play in delivering energy efficient buildings and resilience and durability in infrastructure for future generations, as it will be on continuing to reduce CO₂ emissions.

Less harm, more good

The CSI has significantly increased its global membership and influence over the past few years and now represents cement producers with operations in over 100 countries that account for one-third of global cement production. As the CSI has gained momentum, so too has the realisation that concrete plays a big part in the delivery of a sustainable urban environment. With this realisation comes the confidence to do more good.

“The future plans for the CSI represent an expansion of the programme rather than a shift in thinking,” said Philippe Fonta, managing director, business applications of the WBCSD. “Much of the CSI’s contribution so far has been to provide important tools, such as the CO₂ protocol and the GNR database, that help companies to reduce their CO₂ emissions. However, the future of the cement industry is not driven purely by CO₂. The increased demand for green buildings, continued global urbanisation and the role that adaptation to climate change will play in the buildings and infrastructure of the future are all drivers for our industry.”

The work of the CSI is split into a number of work-streams, managed by ten task forces/working groups. Traditionally, these have focused on issues ranging from climate protection to water, biodiversity and land stewardship to health and safety. Recently however, the programme has expanded to include more emphasis on cement in use. This has seen the formation of new task forces with remits of sustainable supply chain and sustainability with concrete. A special working group has also been established to develop a common methodology and tool for companies to issue Environmental Product Declarations (EPD) for concrete. As the scope of the CSI expands, the work of the various task forces is coming together



Left: The rapidly increasing demand for sustainable buildings increases the scrutiny placed on the materials used in the construction and refurbishment of buildings and infrastructure. Life cycle assessments need to be conducted as early as possible, at the design phase, with accurate, objective and consistent information on the environmental impact of different materials. As such, the sustainability of a building material will increasingly become a consideration for designers, contractors, procurers and clients.

to help the industry communicate more about its whole value chain.

Philippe Fonta believes that the CSI’s future work will be along two parallel tracks. One will focus on how the cement industry can continue to reduce the footprint of its own operations, while the other will provide cement users with the ability to apply more sustainable solutions to their own construction projects. Innovative products, such as photo-catalytic concrete and pervious concrete are already becoming more widely available. These will add to the ‘more good’ aspect of the industry’s efforts.

The desire for architects, planners, construction companies and building owners to understand more about a structure’s embodied CO₂ is accelerating the requirement for more reliable data on building materials. The big steps taken over the past two decades by the buildings with better thermal insulation, driven primarily by market demands, has delivered significant reductions in operational CO₂. Figures vary depending on the source, but historically the energy consumed during occupancy would have accounted for around 80% of a building’s carbon footprint, with the physical build phase (including demolition and disposal) accounting for just 20%.

“The scope of work is now much broader,” said Amy Wedel of HeidelbergCement, co-chair of the CSI’s task force on Sustainability with Concrete. “Energy efficiency in buildings has improved dramatically; it has had to. Now, embodied carbon has more attention. This has big implications for the construction industry as a whole. It also represents a real opportunity for the cement and concrete sectors to expand the available data beyond CO₂, through the development of tools that will enable architects

Left: With temperatures of up to 1600°C and long burning times, cement kilns make an efficient tool for the use of minerals and energy from waste.





Right: 30 years ago, cement companies started to treat waste as a source of raw material and energy. Today the cement industry provides a significant contribution to the waste management practices of many countries. The responsible use of waste as an alternative fuel to heat cement kilns is lowering the industry's consumption of fossil fuels, which is helping to reduce the environmental footprint of global cement production.

and specifiers to understand more about a material's suitability for purpose and performance during the life cycle."

Product transparency gathers pace

Moving forward, one of the most important developments for the CSI and indeed the industry for 2014 will be the adoption of a more holistic life-time approach to the manufacture and use of cement. The CSI is leading an effort to build a recognised Responsible Sourcing Scheme (RSS) for concrete together with concrete industry associations. Research undertaken by the CSI with a variety of stakeholders in the value chain confirmed that more transparency on product environmental impacts and performance is required on suppliers' social and environmental impacts. While EPDs provide a snapshot of a product's environmental impacts, it tells you little about the company behind the product or actions taken to improve overall performance. Together, EPDs and RSSs provide a complete look at the material and the company, fulfilling requests for reliable and transparent information.

- **EPD:** Provide quantitative information about the environmental impact of concrete and are used in performing life-cycle-analysis of buildings or projects;
- **RSS:** Provides qualitative information that identifies and promotes responsible practices throughout the concrete supply chain, addressing economic, social and environmental dimensions of the business.


The first steps in the development of EPDs for concrete was the publication of the Product Category Rules (PCR) for unreinforced concrete in early 2013. Compliant with ISO14025 and EN15804, these were produced by the CSI in consultation with



various concrete industry trade bodies. The PCR provided the first step towards the production of EPDs, giving a common methodology for concrete producers wanting to issue EPDs for their products. The next step is to produce a tool that uses the PCR rules and enables cement suppliers to input their own information.

The CSI EPD tool is scheduled to be released in early 2014. The EPD tool will reduce the time and energy that it currently takes to produce an EPD, while increasing the accuracy of required background data.

With the availability of EPDs, CSI members will have moved the cement and concrete industries further along the road to robust Life Cycle Analysis (LCA). Indeed, the view held by Amy Wedel and her fellow task force co-chair, Alexander Röder of Cemex, is that EPDs really only have value if they are used in the wider context of LCAs. "In our view, a meaningful LCA must cover the full life cycle of a building," explained Wedel. "The use phase needs to be included along with construction and demolition or deconstruction."

Access to EPDs for concrete will contribute to good LCAs on buildings and infrastructure. The expectation of the CSI is that the next logical step will be a RSS that gives designers and builders a more comprehensive look at a concrete and its many applications. 

Right: The world expects businesses not only to manage their own sustainability issues but to help society tackle wider problems. CSI member companies are known for applying sustainable practices in the different focus areas throughout their global operations.

