

# Measuring and Reporting on Sustainability Performance in the Cement Industry

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## *Abstract*

*Corporate Social Responsibility (CSR) performance assessment and reporting has drawn a considerable amount of attention. In this context, the Global Reporting Initiative (GRI) has been among the first organizations to develop a framework for sustainability performance reporting, which is synonymous with reporting on CSR actions and results. Now at its 3<sup>rd</sup> edition, GRI offers a very detailed set of indicators that describe CSR performance as envisioned by the framework. Yet, GRI itself warns that its set of performance indicators is not universally applicable to companies in all industries and, in addition, certain areas of industrial activities may need additional indicators for a reliable and realistic assessment of CSR performance.*

*The Cement Sustainability Initiative (CSI), a global project of a group of cement producers with worldwide presence, that are also members of the World Business Council for Sustainable Development (WBCSD), has been early to recognize the limits of GRI and develop an industry specific approach.*

*The paper analyzes the pathway the cement industry has pursued in order to improve its performance in mitigating social and environmental impacts, and report on the results. Based on direct experience with and firsthand knowledge of the cement industry, the set of alternative performance indicators developed by CSI is presented and a parallel is drawn between that set and the general-purpose indicators developed by GRI. The approach taken by CSI to assure compliance of the quantitative data with accepted reporting principles such as accuracy, reliability, and comparability is also detailed and commented on.*

**Keywords:** *cement, measuring, reporting, sustainability*

**JEL classification:** *M14, L61*

## **Introduction**

The voluntary initiatives undertaken by the cement industry, particularly in the last decade, resulted in a rich corporate social responsibility (CSR) agenda which keeps developing by the addition of new aspects such as: tackling greenhouse gas emissions, judiciously selecting energy and raw material sources, safety measuring and reporting, recycling the product at its end of service life.

As a result, a number of guidelines, procedures and best practices have been compiled and published by the Cement Sustainability Initiative (CSI), a project of the World Business Council for Sustainable Development (WBCSD, 2010a).

Since CSI is an ongoing effort, new documents continue to be released for the benefit of the project's members. The documents recommend ways of measuring results of and reporting on actions intended to mitigate environmental and social impacts of cement production. Representative achievements of this undertaking are: rules for carbon dioxide emissions reporting (WBCSD, 2005a), recommendations for selecting fuels and raw materials (WBCSD, 2005b), procedures for measuring and reporting safety in the industry (WBCSD, 2008), a guidebook for recycling of concrete (WBCSD, 2009a), etc.

The CSI project followed in the Global Reporting Initiative (GRI)'s footsteps. Started in 1997 and targeting universal applicability, the GRI framework published in 2006 its latest revision of what has become the most widely used standardized sustainability reporting guidelines (GRI, 2006). GRI is in the process of updating and connecting the reporting framework with the ten principles of the UN Global Compact (Leeson, 2010).

Why then did the cement industry have to develop another reporting framework? This paper analyzes why and how the worldwide cement industry has drafted specific guidelines and standards for monitoring, measuring, and reporting on the various actions, and the associated metrics developed. A comparative study of reporting practices by cement industry specifics and by the Global Reporting Initiative guidelines is conducted.

The analysis concludes that the various sustainability reporting frameworks converge of necessity as people come to terms with the idea that the road to sustainable development requires the simultaneous and balanced pursuit of economic, environmental and social concerns by all organizations.

## **1 The cement industry's sustainability initiatives**

The environmental aspects related to manufacturing cement are well known to any company that performs this activity, and have long since been a constant concern for the cement producers. Nevertheless, as a follow up to the forming of the World Business Council for Sustainable Development (WBCSD) in the first half of the 1990s, the cement manufacturers decided something more was needed in order to meet their specific needs. In 1999, the ten world leading cement manufacturers members of WBCSD at the time, joined forces under the auspices of this organization and formed the Cement Sustainability Initiative (CSI). The declared purpose of the newly formed body was "to pave the way for a more sustainable cement industry" (WBCSD, 2010b). To achieve this goal, in addition to the industry's accumulated expertise, a more comprehensive approach was required. Therefore, one of the first actions of CSI was to commission in 2000 a scoping study by an independent assessment body. The organization chosen for this purpose was the USA headquartered Battelle Memorial Institute, a leader in the

environmental and sustainable development fields, having a world-class reputation in technical research (BMI, 2010). The mission of the study was to assess the cement industry's sustainability performance by identifying critical issues, evaluating and cataloguing the current industry performance on those issues, generating recommendations for future improvement and providing a set of tools for cement manufacturers to use in improving their performance (BMI, 2010).

Two years after the study was delivered and following a period of scoping, research, and shareholder consultation, CSI published the Agenda for Action (WBCSD, 2002). The Agenda set out a five year work program focusing on six previously identified main sustainability areas: climate protection – CO<sub>2</sub> monitoring and reporting; fuels and raw materials; employee health and safety; emissions reduction; local impacts – environmental and social impacts assessment and, the sixth, internal business processes. It also launched an invitation to all nonmember cement companies and third party stakeholders to join CSI. While the individual companies were maintaining freedom in the reporting of progress, CSI, through the Agenda for Action, promised a progress report in 2005 and a final report in 2007 (WBCSD, 2002). With the area of work clearly identified and objectives in place, CSI started to issue industry specific guidelines regarding the six critical sustainability areas.

In 2003 it released the “CO<sub>2</sub> Accounting and Reporting Standard”, followed in 2004 by the “Health and Safety in the Cement Industry: Examples of Good Practice” and in 2005 by four new documents:

- “Guidelines for the Selection and Use of Fuels and Raw Materials”,
- “Environmental and Social Impact Assessment (ESIA) Guidelines”,
- “Guidelines for Emissions Monitoring and Reporting” and
- “Health and Safety in the Cement Industry: Guidelines for Measuring and Reporting”.

The standard and the guidelines are cement industry specific and provide a clear framework for progress on each issue to be voluntarily adopted by any cement manufacturer, be it member or not of CSI and WBCSD.

In 2005, CSI published the “Interim Progress Report”, as per the Agenda for Action. The report restated objectives, documented the initiatives taken so far, and delineated the metrics used in measuring further progress (WBCSD, 2005c). In the final progress report of 2007, CSI benchmarked results against the initial objectives, emphasized accomplishments, specified how they were measured, presented case studies and follow-up actions, and most importantly, pointed to the additional challenges the industry faces on its way to sustainability (WBCSD, 2010c).

CSI acknowledged the need for an accurate and detailed database concerning CO<sub>2</sub> emissions and energy consumption figures for the industry worldwide. The benefit brought by such a database is the ability to identify the factors and levers that impact on those aspects, which is useful to both cement companies and stakeholders. The derived knowledge is a major input to the development of strategies for improving energy efficiency and reducing CO<sub>2</sub> emissions (WBCSD, 2006).

In order to obtain data, CSI launched in 2006 the “Getting the Numbers Right” (GNR) project. The first GNR report was published in 2009. It provided data from 844 cement-manufacturing installations worldwide, which make 75% of the cement production in the Kyoto Annex 1 countries and 20% of the Non-Annex 1 countries. The published figures cover the period 1990 – 2006. The report was hampered by the limited availability of information from China.

An important feature of the published report is that it shows how an effective measuring, verification, and reporting system can be developed for the industry (WBCSD, 2006). Work continues and CSI aims to improve the representativeness of the GNR system.

Stimulated and helped by the good image that came with the GNR project, CSI undertook in 2008 another initiative, the “Sectoral Approach” Project. A sectoral approach is defined as “a combination of policies and measures to reduce greenhouse gas emissions in an industry sector” (WBCSD, 2010d) and is essentially collaboration between governments and cement manufacturers. CSI has performed a set of analyses and modeling work, published in 2009. The main levers identified for substantially reducing the carbon emissions in the cement industry are: energy efficiency, use of alternative fuels, clinker substitution and carbon capture and storage (WBCSD, 2010d).

The same four levers are considered as the maximum impact means for reducing carbon emissions by the “Cement Technology Roadmap 2009”, which is a document released jointly by the International Energy Agency (IEA) and the WBCSD after 12 months of collaborative work. It is the first of its type to cover a whole industry and provides a challenging vision for reducing the carbon emissions extending to 2050 (WBCSD, 2009b).

Carbon emissions are not the only focus of CSI. In yet another report released in 2009 CSI complemented the six sustainability areas outlined in the Agenda for Action by adding a seventh area: “Recycling Concrete”. The report offers a wide range of data and information, from reasons for and aspects of concrete recycling to indicators that can be used for this activity by both the manufacturing companies and their stakeholders (WBCSD, 2009a).

CSI grew and became more complex in the last decade. Consequently, CSI’s membership is now divided in two categories. The cement companies that have a prominent role in financing CSI and a deeper involvement in its activities are the core members; they are members of both WBCSD and CSI. The other CSI companies, which may or may not be members of WBCSD, are the participating members. The core members manage the CSI, define and fund its work programs, invite new members and maintain the CSI Charter – a document identifying commitments and responsibilities of every member company. The participating members agree to the commitments of the Charter, make small contributions to the CSI budget, can participate in individual task forces and, after two years of membership, have the option of becoming core members. CSI has currently 11 core members and 12 participating members (WBCSD, 2010b).

## 2. The GRI guidelines

CSI, through the various projects, guidelines and reports, attempts to mitigate impacts and achieve progress in the initially six and later seven sustainability areas. Identifying performance indicators, developing industry-wide consistent measurement methods, setting targets, measuring and reporting progress - all represent logical outcomes of that work.

Whenever sustainability reporting is considered, reference has to be made to the GRI framework, a pioneering project that has become a widely accepted norm. As will later be seen, there are a lot of similarities between the CSI approach and the GRI framework, although their scopes differ.

Established in 1997, GRI launched in 2006 the third version of its reporting guidelines, known as the G3 Guidelines, following a first edition in 2000 and a second one in 2002. What started as an initiative of setting out principles and indicators for organizations to use in reporting their economic, environmental and social performance has become currently the world's most widely used sustainability reporting framework (GRI, 2010). While the Guidelines were developed as a universally applicable reporting basis, GRI recognized the need for some industries to have specialized guidance, materialized in 15 sector supplements published over time. So far, the cement industry was not among the industrial sectors receiving a dedicated supplement. The National Annexes are the final element of the GRI reporting framework, outlining country or regional specific sustainability issues.

The G3 Guidelines represent the core of the GRI framework and, despite their general applicability, include a very detailed listing of in-accordance report contents (GRI, 2006). Such a report has to start by demonstrating a strategic approach to sustainability by presenting a statement by the CEO, and the commitment to it supported by the results of a business analysis identifying related key impacts, risks and opportunities.

A comprehensive organizational profile is the next required element, which includes information such as markets served, nature and legal form of ownership, quantity of products and services provided, operational structure etc.

The third part of the report is designed to minimize the number of uncertainties and ambiguities associated with the document. The reporting period, cycle, scope, limitations, data measurement techniques and bases for calculations, the GRI content index, the policy and current practice in seeking external validation of the report are examples of information provided to that end.

The next section of a GRI report provides a detailed picture of the governance structure, processes and procedures of the organization, its commitment to externally oriented initiatives, the number of stakeholders engaged, methods for their identification, selection and engagement, etc.

Representing the bulk of the report, the fifth and final part is the one containing the management approaches and the performance indicators. Due to the general character of the guidelines, GRI developed an impressive set of

79 performance indicators referring to 34 aspects concerning the economic, environmental, and social performance of an organization.

It is obvious that, given the amount of information required and the associated degree of transparency, publishing a report in accordance represents a considerable effort for any company, irrespective of its size and available resources.

### **3. Comparing the CSI and GRI guidelines**

Having an intrinsically different purpose and a much narrower scope due to its industry focus, CSI avoids a number of complexity generating issues that GRI could not stay away from.

Of the seven sustainability areas in CSI reporting, the only one not receiving a dedicated document is internal business processes. Specific documents including guidelines and key performance indicators (KPIs) were put together for the other six. The purpose was to unify the industry in its approach to tackling the issues and in its way of measuring both the status quo and the progress made. By applying the guiding principles and concepts and by adopting the recommended KPIs, the internal business processes of all CSI members would invariably be changed and adapted to better serve the effort of advancing towards sustainability.

Early data showed the cement industry was in a top position globally in terms of carbon emissions, being responsible for 5% of the man-made CO<sub>2</sub> (WBCSD, 2002). This prompted giving the recording, monitoring and reducing CO<sub>2</sub> emissions a high priority. The 2003 “CO<sub>2</sub> Accounting and Reporting Standard” (WBCSD 2005a), while targeting carbon related aspects of cement manufacturing, is very similar in structure to GRI in accordance reporting.

Unlike GRI reporting, where commitment to sustainability had to be backed up by statements of strategic intent, the CSI standard requires members to disclose more detailed information, down to the manufacturing plant level. The reporting, apart from disclosing general data such as geographic location, company affiliation and type of technology used in the manufacturing process, has to very clearly define the boundaries of the carbon inventory. In addition it has to provide information, mostly numerical values, on a staggering 273 different indicators, carbon related operational aspects and emission rights. The 273 items are grouped in 35 categories, much like the indicators of a GRI report. The similarity does not stop here, many of these categories referring to issues similar to the GRI ones. Aspects related to materials, energy, emissions, transportation, products, and services are covered in the environmental performance section of a report in accordance and are common to both GRI guidelines and the CSI standard. An analysis of emission values by company, by country, by region, by membership in the Kyoto Annex lists, etc. can then be done.

The “Health and Safety in the Cement Industry: Examples of Good Practice” (WBCSD, 2004) released in 2004 by CSI, followed in 2005 by the “Health and Safety in the Cement Industry: Guidelines for Measuring and

Reporting” (WBCSD, 2008), addresses monitoring and progress made in the third sustainability area identified in the Agenda for Action. The second revision of 2005 was later updated in 2008, demonstrating a continuous focus on this topic. It includes nine KPIs, all related to the number of fatalities and injuries recording and reporting.

The “Examples of Good Practice” document includes significantly more information, presenting standardized Occupational Health and Safety (OH&S) Management Systems in use and other systems for health and safety management. The document is industry specific, providing an in-depth analysis of the given KPIs, identifying a large number of health and safety related issues and exemplifying good practices industry-wide. By comparison, in a GRI sustainability report OH&S performance has a more limited coverage as the Labor Practices and Decent Work subsection of the Social Performance section.

The “Environmental and Social Impact Assessment (ESIA) Guidelines” is a set of “concise guidelines for an ESIA process for the cement industry to enable cement companies and local communities to identify and address some of the critical issues during each phase of a cement facility's development, operation and eventual closure” (WBCSD, 2005d). Given the broad scope of the guidelines, no specific set of KPIs has been put together for this sustainability area. Nevertheless, key aspects to be considered in each stage of a facility’s lifecycle are presented and detailed throughout the document. By comparison, such an assessment covers a large percentage of the 34 aspects in all three areas of performance included in a GRI sustainability report.

Another incursion in the environment related sustainability areas was made by CSI in 2005, when the “Guidelines for Emissions Monitoring and Reporting” were issued. Besides having to deal with the CO<sub>2</sub> emissions, the cement industry has to tackle a number of other pollutants, as these guidelines demonstrate (WBCSD, 2005e). For example, dust emissions have long been the best-known environmental issue related to cement manufacture. More recently, nitrogen and sulfur oxides became pollutants that gained prominence. All are included in the set of dedicated KPIs developed for monitoring and reporting emissions. The guidelines also include recommendations for the selection of emission sources to be continuously monitored, the methods to be used, the frequency of measurements, and quality assurance for measuring.

The “Guidelines for the Selection and Use of Fuels and Raw Materials” (WBCSD, 2005b) contribute with five KPIs to the total required from a cement plant: three KPIs for energy and two for raw materials usage. Thus, cement manufacturers received practical guidance for the selection of fuels and raw materials and were provided with insights on alternatives to the traditional options. The guidelines also specify two principles for achieving eco-efficiency and for the sustainable use of fuels and raw materials in the cement manufacture.

The last two aforementioned sets of guidelines complete the CSI environmental performance related recommendations.

“Recycling Concrete” (WBCSD, 2009b), issued in 2009, is the latest document in the CSI set of guidelines. It resulted from an attempt to mitigate impacts in a sustainability area that was identified later by the cement industry. While the relationship to environmental performance is obvious, recycling concrete is also a social aspect of cement production. GRI’s set of guidelines (GRI, 2006) includes product responsibility as a subsection in the social performance section, and CSI has followed suit. CSI has produced two sets of KPIs recommended to the industry: one set for the aggregates, cement and concrete companies, and another set for key stakeholders. Both are intended for reporting improvements and eventually, high performance (WBCSD, 2009b).

The CSI guidelines are founded on overviews, indicators, principles, and best practices. The main target of those documents is to create a general framework and KPIs for the industry’s members to use in reporting to CSI. The framework brings uniformity and comparability of the reported information, thus making consolidation of data and analysis of dynamics easier.

In closing this section, it is important to underline that of all sustainability aspects discussed above the most significant for the cement industry remain energy consumption and CO<sub>2</sub> emissions.

#### **4. The GNR initiative. Reporting principles**

With the reporting framework in place, a mechanism was needed for collecting information on the sustainability performance of the industry to be used in assessing the industry’s contribution to combating global warming. “Getting the Numbers Right (GNR)” is the initiative designed to make this possible. The declared purpose of GNR is “to develop representative statistical information on the CO<sub>2</sub> and energy performance of clinker and cement production worldwide and regionally to serve the needs of internal and external stakeholders” (WBCSD, 2006). The goals served by GNR are:

- ✓ obtaining up to date and timely data from the industry,
- ✓ providing stakeholders with means of understanding the industry’s emissions and the factors that impact them, and
- ✓ providing a sound basis for benchmarking.

Technically GNR is a platform open to all cement companies worldwide. It allows global coverage and offers the possibility to analyze data at any desired level. The platform was created and is currently owned and managed by PricewaterhouseCoopers (PwC), which won the project by tendering. For obvious reasons, an objective, independent party has the responsibility for managing the database, data collection and reporting process (WBCSD, 2006).

The GRI principles of reporting, specifying the criteria for selecting information to be included in sustainability reports, can be meaningfully applied to a large variety of reporting processes. They are observed by the CSI’s GNR project as well.

GRI divides the reporting principles in two categories: principles for defining content, and principles for defining quality.

The content defining principles are: materiality, stakeholder inclusiveness, sustainability context, and completeness. The goal is to ensure the reported data is important, meaningful, sustainability related and complete (GRI, 2006). In the case of GNR, these principles were addressed by recommending one comprehensive reporting tool to all reporting entities, the "CO<sub>2</sub> Accounting and Reporting Standard" (WBCSD, 2006). The tool also observes several of the quality defining principles, while other principles, such as balance, do not apply to GNR because the purpose of the initiative is to provide CSI with accurate, actual data on energy and CO<sub>2</sub>. PwC, which interprets and evaluates the reported data, comes up with a negative or positive assessment of the quality of the reported values.

Another quality defining principle is the reliability of data. PwC applies this principle, as the party gathering, managing, verifying and interpreting the reported results. This approach is intended to remove doubts about the data management system and the objectivity of the presentation of outcomes.

All the other quality principles: comparability, accuracy, timeliness and clarity (GRI, 2006), are observed by use of the standard as the reporting tool. CSI decided in favor of a unified method for data generation and reporting in order to ensure the consistency of data, observance of the reporting intervals, completeness of the input values, and their accuracy.

Three steps aim to achieve the goal of conformity with the reporting principles. The first step, recommended to GNR participating companies, is to use CSI protocols and templates to collect energy consumption and CO<sub>2</sub> related information at all levels. Data uploading to PwC, via a secure Internet connection, is the second step of the process. The third is data consolidation and reporting involving coherence, quality, and consistency checks by PwC.

Quality control assurance includes use of the CSI protocol, and CO<sub>2</sub> data certification by an independent party at least once every three years. The consistency checking requires PwC to verify whether data has been supplied for all facilities, if the supplied values fall within the range specific to the industry for the type of technology used, and if the data is correctly situated in the system. PwC also has to ensure that all the figures which can be traced back to the individual facilities and companies will not be disclosed to any unauthorized stakeholder, internal or external (WBCSD, 2006).

## **Conclusion**

This paper made a comparison between WBCSD/CSI and GRI guidelines for reporting. To the authors' knowledge, such an analysis has not been done so far. The comparison outlined differences between the two initiatives, both in the means they use to achieve their goals and in design. Yet, common ground exists and the comparative analysis revealed a large body of similarities.

A convergence tendency stems from the overarching goal pursued, which is sustainability. It is to be expected that different projects that analyze and consider ways for measuring and reporting on sustainability will face similar obstacles and eventually reach similar conclusions and approaches. Similarly, while moving forward, they will uncover progressively areas and topics that were unaddressed previously and will find it useful to include them in the methodology. For example, identifying concrete recycling as a promising sustainability area in cement manufacturing has significantly improved the potential of the cement industry to contribute to sustainable development.

Reporting guidelines are under continuous review and improvement. GRI is currently revising its G3 Guidelines in order to reconcile it with other guides such as the UN Global Compact and the emerging ISO 26000. Further developments are considered given the trend of integrating financial and sustainability reporting (Leeson, 2010).

The differences in methodologies for assessing business sustainability can be explained by two conditions:

- the existing limitations in understanding and accepting what sustainable development entails at the level of an organization's actions;
- the limited analytic and modeling capability of capturing the effect of the various perceived factors of influence.

It is the belief of the present paper's authors that convergence towards a basic set of KPIs for measuring and reporting on sustainability is inevitable since business sustainability is inextricably intertwined with sustainable development regardless of the business specifics. The progress people will make in uncovering the core set of criteria that serve the overarching sustainable development goal will help with reducing the aforementioned limitations and, thus, will speed up the convergence.

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