

Latest Development of the GNR Database

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**Industry Experts Dialogue Workshop – IEA Paris
October 23, 2014**

Agenda

- The new CSI CO₂ and Energy Protocol
- GNR status
- Next steps



CSI Protocol: The Cement CO₂ and Energy Protocol

- Based on international WRI Greenhouse Gas Protocol
- Developed for cement producing companies
- Allows for reliable and standardised determination of energy use and CO₂-emissions inventories

2001: Agreement of CSI member companies on common CO₂ Protocol

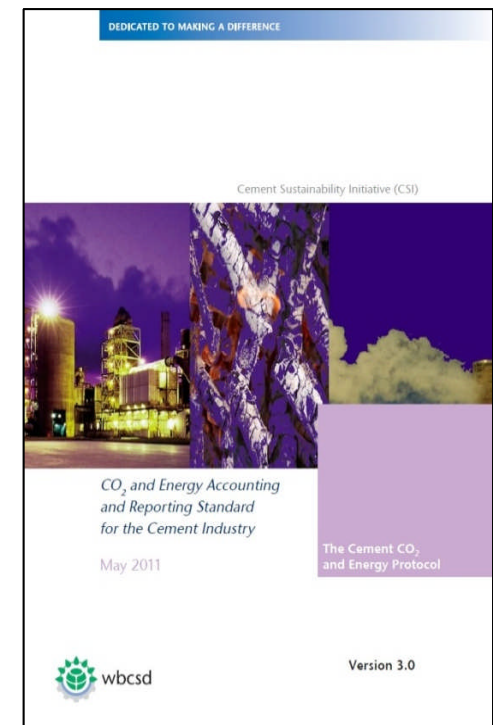
2006: Cement CO₂ Protocol, Version 2

2011: **Cement CO₂ and Energy Protocol, Version 3, English & Chinese**

→ in collaboration with  **ecra**
european cement research academy

2013: Update to **Version 3.1**

2014-2016: International standardisation process



The CSI CO₂ and Energy Protocol V3

The User Guide is available in 4 languages
English, Chinese, Japanese, Korean)

水泥行业二氧化碳核算与报告标准

水泥行业二氧化碳核算与报告标准

DEDICATED TO MAKING A DIFFERENCE



セメント産業向け
CO₂・エネルギー
算定報告基準
2011年5月1日版

水泥行业二氧化碳核算与报告标准



시멘트 산업용
CO₂·에너지
산출
량 보고 기준
2011년 5월 1일



Cement Industry

水泥行业二氧化碳
核算与报告标准
2011年5月1日

水泥行业二氧化碳
核算与报告标准



第三版征求意见稿文件

CO₂ and Energy Accounting
and Reporting Standard
for the Cement Industry

May 2011

The Cement CO₂
and Energy Protocol

Version 3.0

wbcsl



30 冊



CO₂ accounting and reporting standard for CSI

- **Harmonized methodology for calculating CO₂ emissions**
- Direct and main indirect sources of CO₂ emissions related to cement manufacturing process
- Absolute and specific or unit-based terms
- During the last years the CSI companies have adapted their reporting to requirements of the latest protocol v3
- **Most relevant guidance** document for the reporting of CO₂ emissions **in the cement industry** worldwide
- External verification
- **Data collected are published** by CSI at GNR (Getting the Numbers Right)



What to be reported

- Production, consumption, imports and exports for raw materials , intermediate and final products.
- Fossil and alternative fuels consumptions, calorific values and carbon contents.
- Indirect fuels consumption (in transport, heating/cooling and power generation).
- Power consumption for intermediate and final products.
- Internal Power generation (if done) and its destiny.
- CO₂ emitted from power generated externally.
- Calculation of process emissions



GHG Protocol V.3: What is new?

The new V3 Protocol allows:

- Using different levels of complexity - and uncertainty - in order to facilitate to join for new companies
- Taking into account biomass CO₂ from mixed (alternative) fuels - similar methodologies used in EU ETS
- Inclusion of a detailed method for considering CO₂ emissions from on-site power generation – consequence of increased CSI membership from Asia
- Using harmonized rules to avoid double counting of internal clinker, cement and MIC transfers and consolidation of plant level to company level accordingly - consequence of experiences with previous version

Furthermore it gives:

- more flexibility in reporting different types of fuels
- more support to use appropriate default values e.g. for power demand



Key KPIs

- **For fuel substitution:**
 - Conventional and alternative fuel rate and biomass fuel rate
- **For energy efficiency:**
 - Specific power consumption in the phases of clinker and cement from external and internal production
 - Specific heat consumption
- **For clinker substitution:**
 - Clinker content in products
- **Final KPIs reported:**
 - Specific and absolute CO₂ emissions per ton of final and intermediate products. Differentiating process and fuels emissions
 - Net and gross emissions (related to the use of conventional and alternative fuels).
 - Indirect CO₂ from power production and internal transport

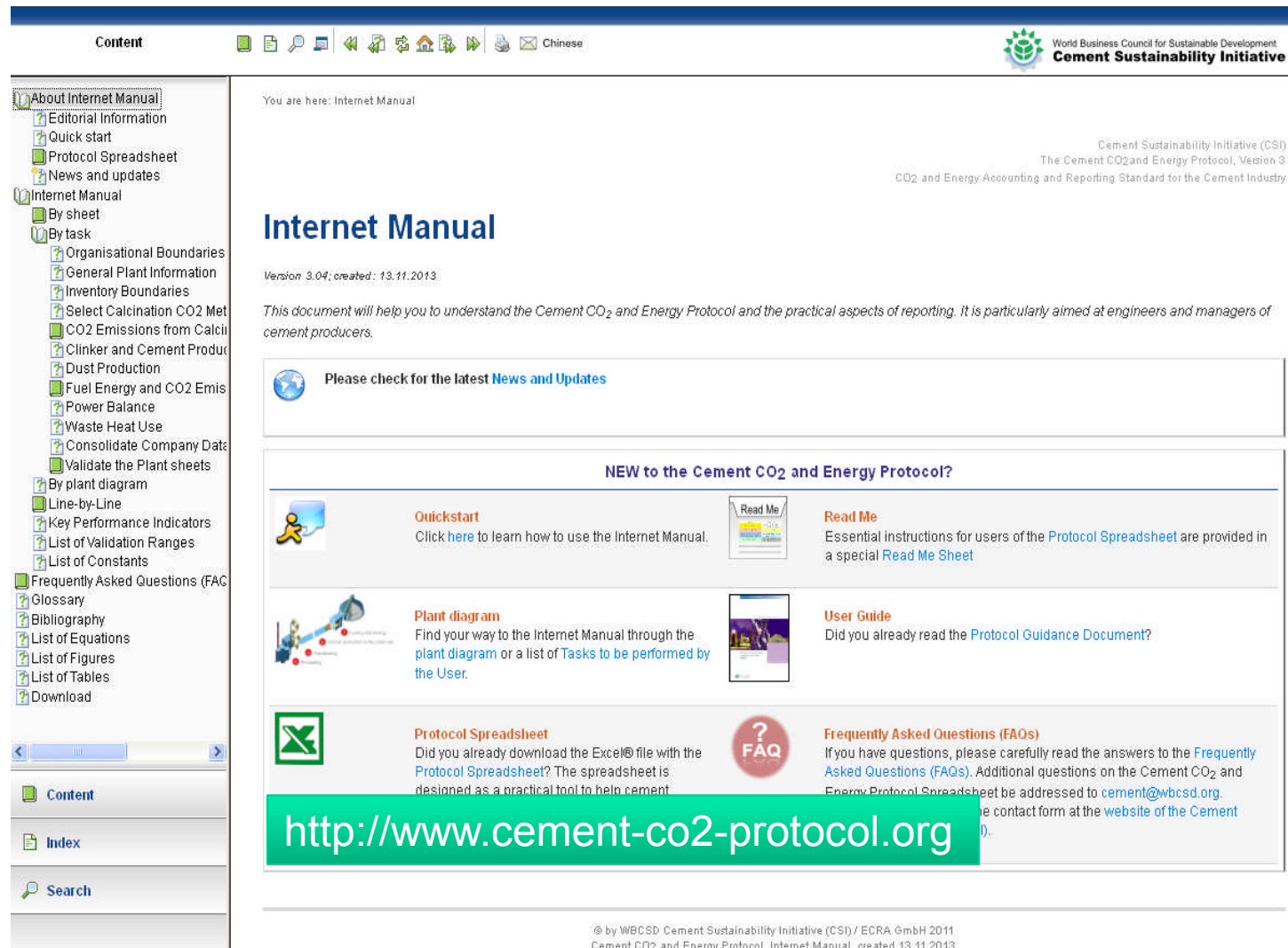




GHG Protocol V.3: New KPIs

- New denominator “equivalent cement”, which is cement production from clinker produced on site
- CO₂ emission factor for kiln fuel mix in t CO₂/GJ
- Total conventional fossil fuel rate at plant level in %
- Total alternative fossil fuel rate at plant level in %
- Total biomass fuel rate at plant level in %
- Specific power consumption of clinker production in kWh/ t clinker



CSI supports its members with an Internet Manual – English Version ...



Content   World Business Council for Sustainable Development
Cement Sustainability Initiative


You are here: Internet Manual

Cement Sustainability Initiative (CSI)
The Cement CO₂ and Energy Protocol, Version 3
CO₂ and Energy Accounting and Reporting Standard for the Cement Industry







Internet Manual

Version 3.04; created: 13.11.2013

This document will help you to understand the Cement CO₂ and Energy Protocol and the practical aspects of reporting. It is particularly aimed at engineers and managers of cement producers.

 Please check for the latest [News and Updates](#)

NEW to the Cement CO₂ and Energy Protocol?

 Quickstart Click here to learn how to use the Internet Manual.	 Read Me Essential instructions for users of the Protocol Spreadsheet are provided in a special Read Me Sheet
 Plant diagram Find your way to the Internet Manual through the plant diagram or a list of Tasks to be performed by the User .	 User Guide Did you already read the Protocol Guidance Document ?
 Protocol Spreadsheet Did you already download the Excel® file with the Protocol Spreadsheet ? The spreadsheet is designed as a practical tool to help cement	 Frequently Asked Questions (FAQs) If you have questions, please carefully read the answers to the Frequently Asked Questions (FAQs) . Additional questions on the Cement CO ₂ and Energy Protocol Spreadsheet be addressed to cement@wbcsd.org . The contact form at the website of the Cement

<http://www.cement-co2-protocol.org>

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Cement CO₂ and Energy Protocol, Internet Manual, created 13.11.2013



... and the Internet Manual – Chinese Version ...

World Business Council for Sustainable Development
Cement Sustainability Initiative

您在此处：网络手册

网络手册

3.04版：创建：11.11.2013

本文件将帮助您理解《水泥行业CO₂和能源议定书》以及报告的实际操作。本文主要供水泥公司的工程师及管理人员参考。

最新消息请点击 [新闻和更新](#)

您是使用《水泥行业CO₂和能源议定书》的新手吗？

快速入门
点击 [此处](#) 了解如何使用网络手册。网络手册

工厂示意图
根据 [工厂示意图](#) 或 [用户需要完成的任务清单](#) 索引网络手册。

能效议定书电子表
您是否已使用 [能效议定书电子表](#) 下载了 Excel® 文件？电子表格是帮助水泥企业编制其 CO₂ 排放和能源使用清单的实用工具。

常见问题 (FAQs)
如果您有任何疑问，请仔细阅读“常见问题”(FAQ) 的答复。常见问题 (FAQs) 有关《水泥行业CO₂和能源议定书电子表格》的其他问题，请发送电子邮件至 cement@wbcsd.org。您也可以使用 [水泥可持续发展倡议行动组织\(CSI\)网站上的联系表格](#)。

[目录](#) [索引](#) [搜索](#)

<http://www.cement-co2-protocol.org/cn>

水泥行业CO₂和能源议定书，网络手册，创建：11.11.2013



... and specific trainings



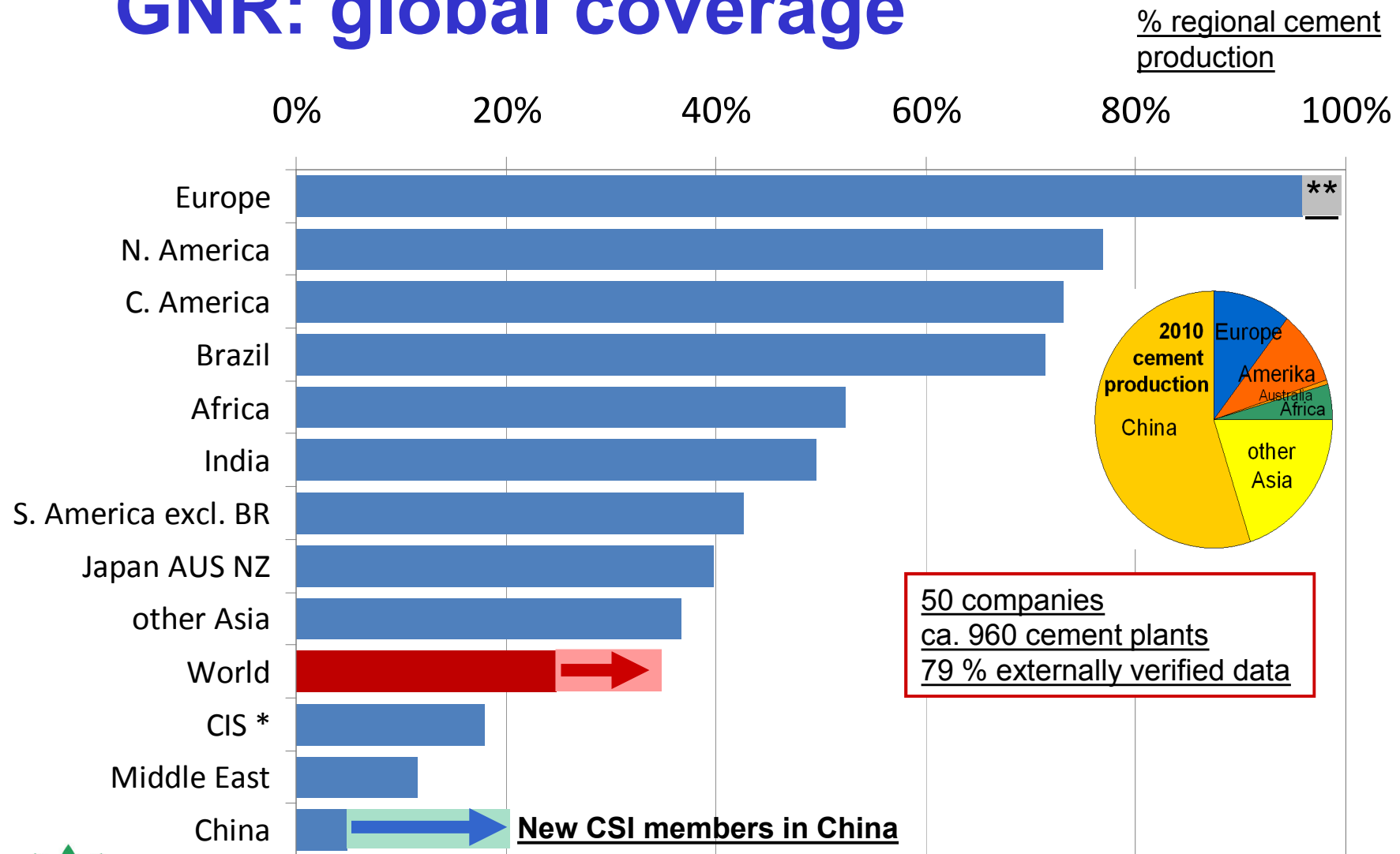
Capacity Building: Train-the-trainer workshop, Tengzhou, China, August 2012
performed by ECRA

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- **GNR status**
- Next steps



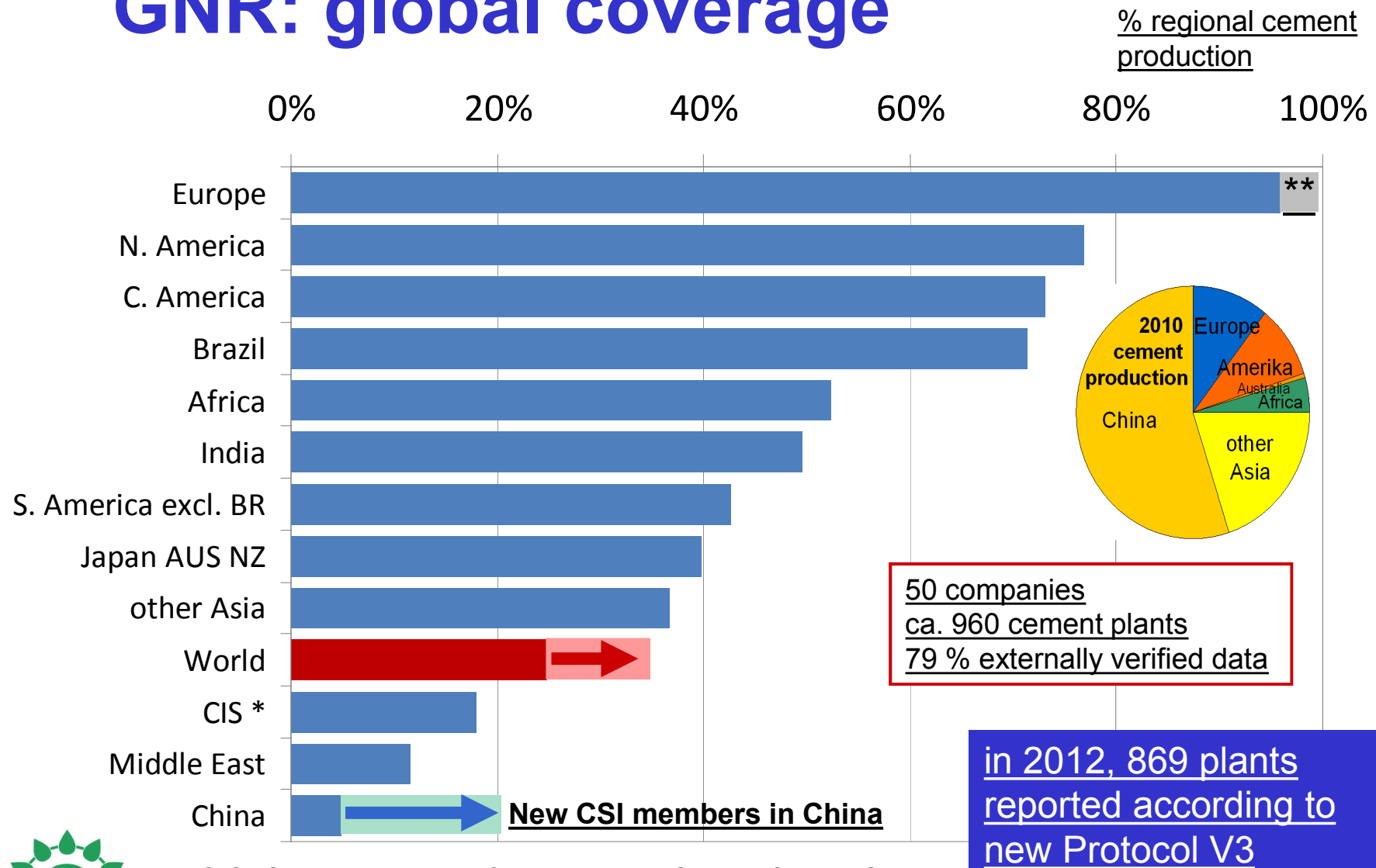
GNR: global coverage



* CIS: Commonwealth of Independent States (former Soviet Union countries)

** EU 28 in CEMBUREAU CITL Data

GNR: global coverage



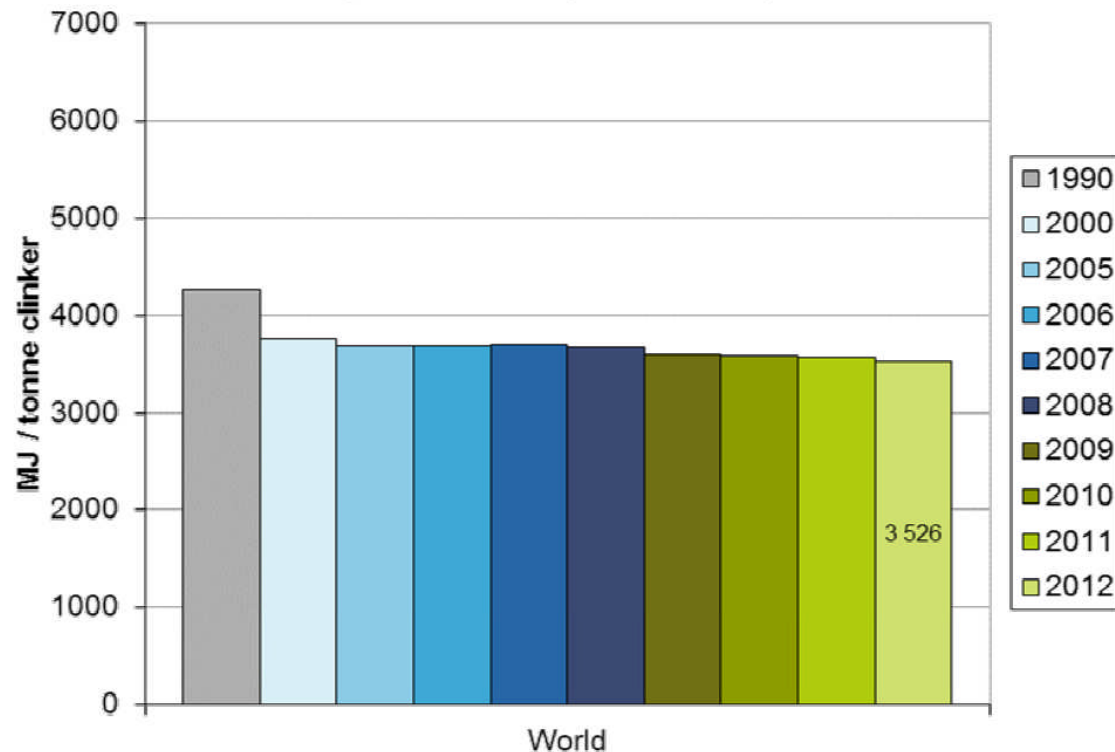
* CIS: Commonwealth of Independent States (former Soviet Union countries)

** EU 28 in CEMBUREAU CITL Data

GNR - example of published data (1)

GNR Project
Reporting CO2

Heat consumption over time excluding drying of raw materials
(All GNR Participants - World)



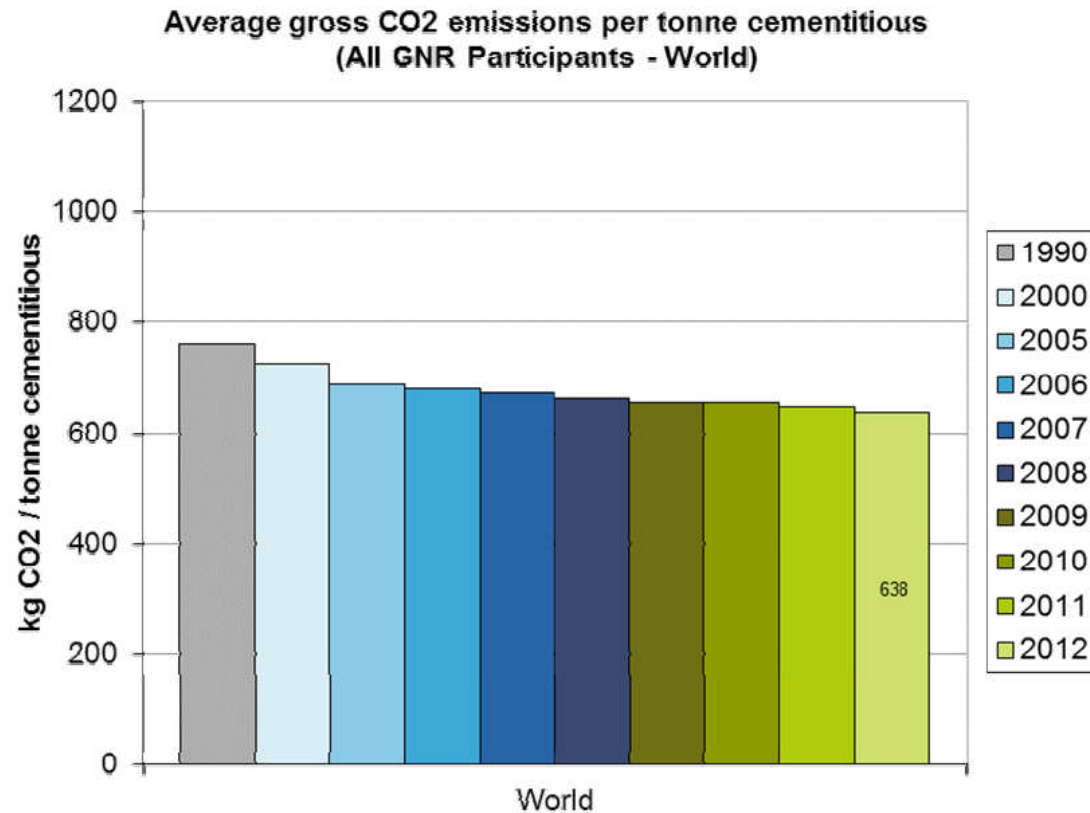
The error bars display the standard deviation of the data set for each category

Region	1990 (MJ/t clinker)	2000 (MJ/t clinker)	2005 (MJ/t clinker)	2006 (MJ/t clinker)	2007 (MJ/t clinker)	2008 (MJ/t clinker)	2009 (MJ/t clinker)	2010 (MJ/t clinker)	2011 (MJ/t clinker)	2012 (MJ/t clinker)
World	4 250	3 750	3 690	3 690	3 700	3 670	3 590	3 590	3 570	3 530



GNR - example of published data (2)

GNR Project
Reporting CO2



Region	1990 (kg CO2 / t cementitious)	2000 (kg CO2 / t cementitious)	2005 (kg CO2 / t cementitious)	2006 (kg CO2 / t cementitious)	2007 (kg CO2 / t cementitious)	2008 (kg CO2 / t cementitious)	2009 (kg CO2 / t cementitious)	2010 (kg CO2 / t cementitious)	2011 (kg CO2 / t cementitious)	2012 (kg CO2 / t cementitious)
World	761	724	688	680	673	663	654	654	646	638

GNR - example of published data (3)

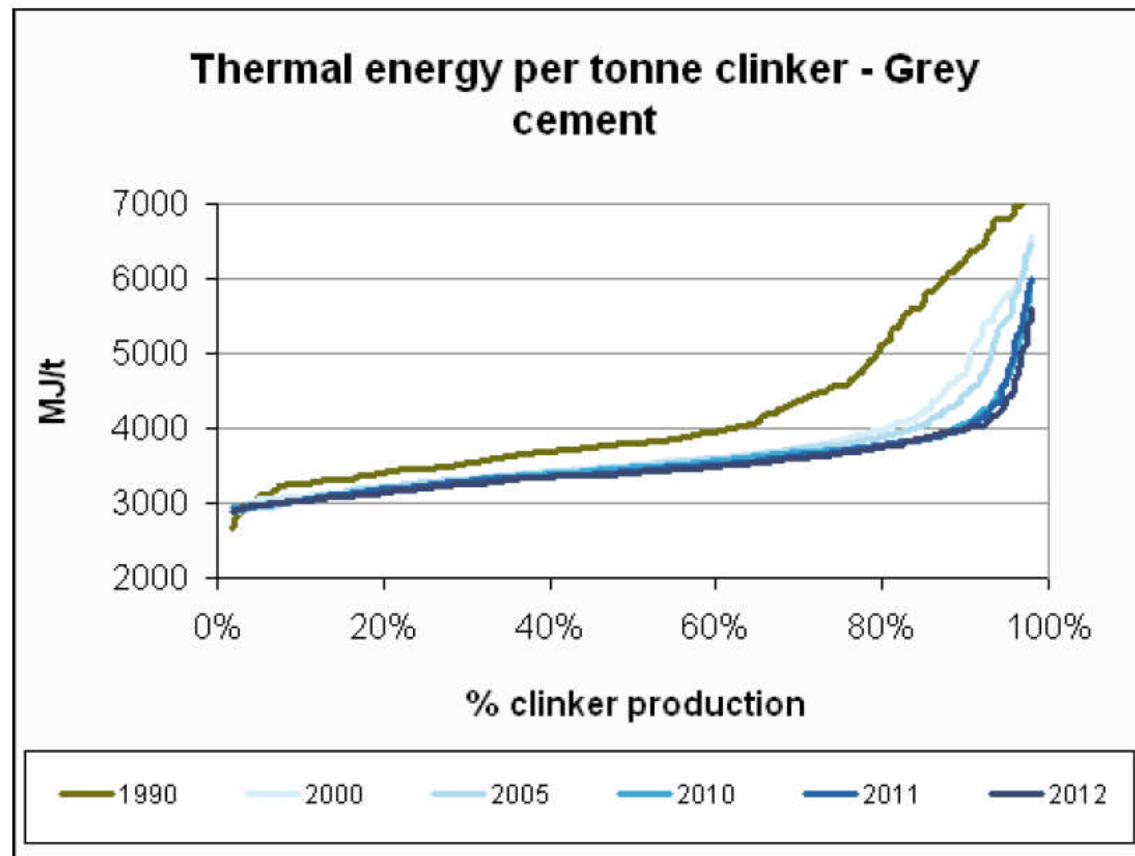
Year: all year
Region: world
Company: All GNR Participants

Select a region: world

Select a year:

Display

Statistical analysis of
the Performance
indicators



Queries from external stakeholders

	Total received	Number completed
2007	3	3
2008	28	20
2009	18	10
2010	14	5
2011	7	3
2012	3	0
2013	7	2
Total	83	43

Main reasons for non-answered questions:

- Information not available
- Information not “releasable” due to anti-trust & confidentiality
- Questioner refused to accept costs



Stakeholders sending queries

(examples)

- IFC
- UNFCCC
- Climate Registry
- Boston Consulting Group
- US EPA
- California Air Resources Board
- Coalition for Sustainable Cement Manufacturing & Environment, California
- ... (consulting companies, universities etc.)



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Standardization of the CSI Protocol

- Together with 4 other industry sectors, the cement industry is working on CEN standards for GHG emission reporting and benchmarking
- Sectors: cement, lime, iron and steel, non-ferrous metals, aluminum
- The CSI Protocol is the basis for the new standard for the cement industry
- ISO has been involved from the beginning as most sectors are aiming at global standards



Looking ahead...

- Concrete (made with cement) is the **most used man-made material** in the world
- In an increasingly urbanised population, concrete and cement will continue to play a **vital part in shaping our built environment**
- Essential to measure properly the positive and negative externalities (**impacts** and **benefits**) to acquire the intelligence in aiding informed decision

CSI's response

- To finalize a Scope 3 Emissions Protocol
- To initiate and conduct a broad analysis of the externalities of the cement and concrete sector, based on the basis of robust data, models and evaluation tools developed over the years
- An attempt to systematically measure and account for the **full impacts and benefits** of externalities – **environmental** as well as **social**



Thank you

CSI is a member-led program of the
World Business Council for Sustainable Development

