The WBCSD - Cement Sustainability Initiative Energy and CO2 performance database for policy measures and market mechanisms

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Holcim = global cement company

2011:
- 168 Mton cement/year
- 102 Mton CO₂/year
- ~80,000 people
- > 70 countries

Regional % cement production:
- ~8 %
- ~14 %
- ~16 %
- ~4 %
- ~55 %
- ~3 %

KP Annex 1: 27%
KP Non Annex 1: 73%
Cement Sustainability Initiative
24 member companies

One third global cement production
Two thirds outside of China
Communication Partners

- Arab Union for Cement & Building Materials
- Association of Cementitious Material Producers
- Cement Industry Federation Australia
- Mineral Products Association
- Brazilian Cement Association
The solid foundation of any market based instrument, baseline and benchmark is data, reliable data.

The solid foundation is Monitoring, Reporting and Verification (MRV)

And reliable sectoral databases of energy, CO2 emissions and production.
“Getting the Numbers Right”: the CO$_2$ and Energy performance information system of the cement industry globally and regionally

- WBCSD – Cement Sustainability Initiative (CSI)
- WBCSD - WRI Cement Energy & CO$_2$ Monitoring, Reporting & Verification Protocol
- Capacity building in all regions, including major emerging and developing countries
- “Getting the Numbers Right” database: CSI initiative – operated by PriceWaterhouseCoopers
- Also for non-CSI members
- The global statistics of all parameters and the regional benchmarks are available on: www.wbcsdcement.org
- Stakeholders can request additional analyses via: gnrpmc@wbcsd.org
Data collected in “Getting the Numbers Right”

- Installation and company name; location of installation
- Type of installation and kiln technology
- Nominal capacity
- Production volumes of clinker, cement and cementitious products
- Volumes of clinker substituting materials
- Thermal and electrical energy consumption
- Fuel mix (fossil fuel / alternative fossil fuel / biomass): energy, volumes and CO$_2$ emission factor / sub-categories
- Clinker to cement ratio
- Absolute gross and net CO$_2$ emissions
- Specific gross and net CO$_2$ emissions per tonne product
- Waste heat recovery
GNR - “Getting the Numbers Right”

Percent of regional cement production included in GNR database

- Europe: 97%
- North America: 92%
- Central America: 71%
- Brazil: 73%
- Africa: 66%
- India: 69%
- South America exc Brazil: 64%
- Japan-Australia-New Zealand: 57%
- Rest of Asia: 39%
- World: 36%
- CIS: 17%
- Middle East: 15%
- China: 6%

- 50 companies
- 934 installations
- 640 Mton clinker in 2010
- 850 Mton cement in 2010

- Credible & verified source of information for market mechanisms
- CSI aims at further expanding coverage, especially in CIS and Asia
Example: Regional average net CO₂/ton cement

Average net CO₂ emissions per tonne cementitious
(All GNR Participants - Geographical)
Example: Regional statistics net CO$_2$/ton cement

**CSI - "Getting the Numbers Right"**

Year: 2010
Region: World
Company: All GNR participants

**Graph generated with data at company and country level**

Net CO$_2$ emission per tonne cementitious (Company level)

P-20

% cementitious production

CO$_2$t

Weighted average: 634 kg CO$_2$/t cementitious
Corresponding percentage: 49%
Standard deviation: 222 kg CO$_2$/t cementitious

Formula of the linear regression between 10% and 90%:
y = 2.48 x + 513
Regression coefficient (r$^2$) between 10% and 90%: 0.97

Number of companies: 248
Total production volume in the graph: 840 Mt cementitious
Use of cement sectoral Energy & CO2 database in flexible market mechanisms:

- Complete, Versatile, Harmonized database
- Application adaptable to regional circumstances
- Applicable for all types of Policy and Flexible Market Mechanisms (Emissions Trading Systems, Baseline and Credit trading systems, CDM, National Appropriate Mitigation Action, Taxation)
- Choice of multiple performance metrics (Energy or CO2; different products; different CO2 sources)
- Applicable for definition and quantification of baselines, benchmarks, demonstration of additionality, etcetera
- Benchmarks can be based on:
  - regional averages of performance metric,
  - regional averages minus sectoral or cross sectoral reduction percentage
  - Percentiles of the performance metric
  - Technology Roadmap
Requirements and Actions to develop sectoral databases:

- **Organization:**
  - Legal entity for the management of the system (e.g. WBCSD – CSI)
  - Legal entity for the operation of the database (e.g. PWC)
  - Contractual agreement with participating companies
  - Quality assurance
  - Publication (internal & external) (e.g. www.wbcsdcement.org)

- **Systems and tools:**
  - Development & availability of sectoral Monitoring, Reporting and Verification standards (MRV) (now available for most industry sectors)
  - Training, Learning and Application by industrial companies
  - Third party verification & quality assurance procedures
  - Data collection and statistical analysis
  - Publication (internal & external)
Challenges:

- A (global) international sectoral organization is needed (e.g. WBCSD – Cement Sustainability Initiative; WorldSteel Association; International Aluminium Institute).

- Recognition or accreditation of the mandate and the competence of the legal entity(ies) that manages and operates the system with respect to multinational or national regulatory market mechanisms.

- Voluntary or mandatory participation by companies.

- Global standard – Regional / national implementation.
CSI CDM Twin Benchmarking methodology

A Twin Benchmarking concept guarantees environmental integrity and possibly a meaningful business incentive.

The Twin Benchmarking concept can be applied for several performance indicators, e.g. CO₂/ton product, thermal efficiency, electrical efficiency, clinker factor, fuel mix, biomass fuel switch rate, …
Comments to the guidelines for CDM standardized baselines

- Use baselines and benchmarks based on CO2 emission performance of output products wherever possible and use fuel, feedstock or technology based baselines only for those sectors where the product performance based baselines are not possible.

- Maintain an adequate balance between emission reduction and business incentive, otherwise the methodologies will remain unused.

- Make procedures as simple as possible, as complicated as needed, otherwise the methodologies will remain unused.