

# Harmonization in the construction sector

## A global EPD Tool for cement and concrete



*Rose Nangah Mankaa,  
Swiss LCA DF 57 : Life cycle assessment in the  
building sector  
2<sup>nd</sup> December 2014, Zurich*



# WBCSD member companies



The **Cement Sustainability Initiative** is a member-led program of the **World Business Council for Sustainable Development (WBCSD)**



# Cement Sustainability Initiative

## 24 member companies



One third global cement production  
Two thirds outside of China



# Responsibilities vs. challenges

Cement industry faces several **sustainability challenges**:

- Can its **climate impacts** be well managed ?
  - How can **employee safety** be improved?
  - “Green (sustainable) building” codes are growing in importance. Is concrete a **sustainable construction material**?
  - Is **water use** being well managed?
  - What are the impacts of quarries on **biodiversity**?
- ➔ By answering these questions responsibly, cement (and concrete products) will be the key to **economic and sustainable development** in our rapidly changing and expanding societies.





# Communication Partners



Arab Union for Cement &  
Building Materials



Association of Cementitious  
Material Producers



Cement Industry  
Federation Australia



Brazilian Cement Association



Cement Manufacturers' Association



# CSI EPD Tool for cement and concrete

## Objectives

- Develop a calculation tool to **help member companies of the CSI prepare EPDs of cement and concrete**
- User-friendly web-based tool for **primary data input** in order to guide the user throughout the data collection process, to allow for easy EPD preparation, and to calculate the impacts according to the 24 indicators as per the PCR
- Calculate and **report the environmental impacts** (24 indicators) of clinker, cement and concrete systems according to and in agreement with the PCR

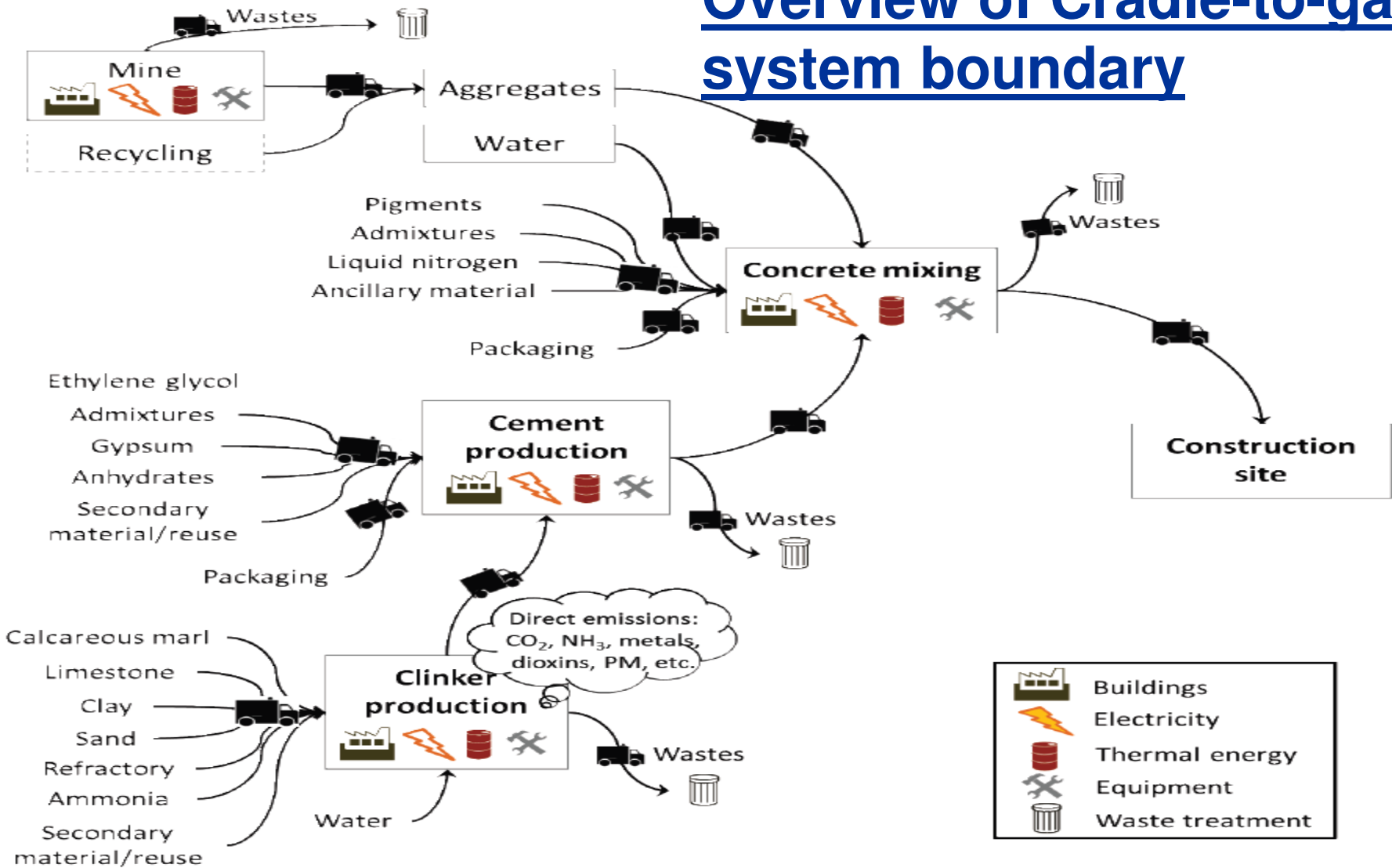
Product Category Rules for unreinforced concrete  
(under **The International EPD System**)

Product Category Rules for concrete ISO 14025 Type III EPDs  
(under **The Carbon leadership Forum**)

Product Category Rule for cement  
(under **The International EPD System**)



# Overview of Cradle-to-gate system boundary

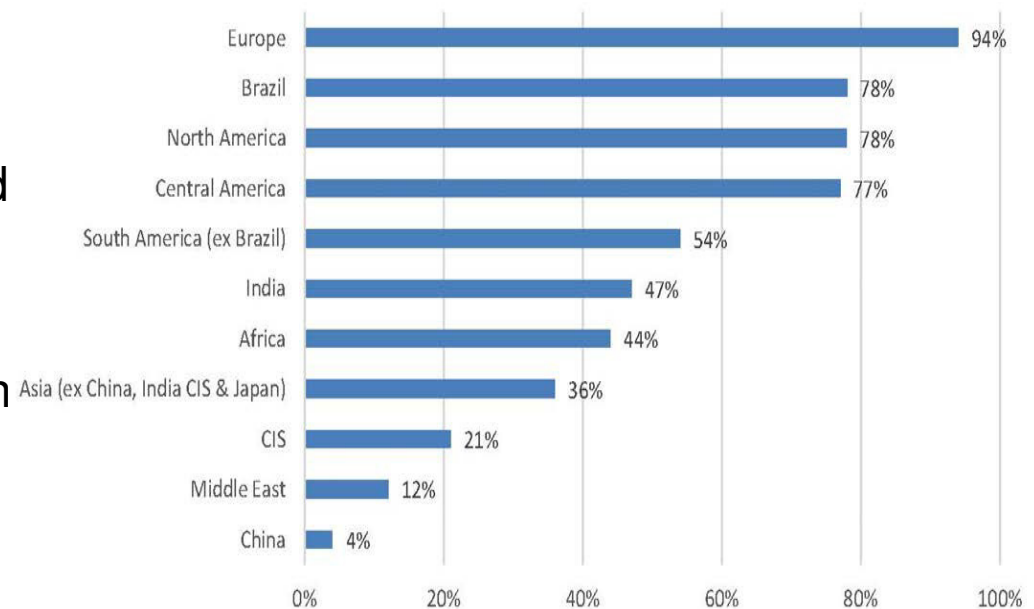


# Representative worldwide and regional datasets

From the [CSI Getting the Numbers Right Database \(GNR\)](#) on energy and CO<sub>2</sub> and pollutant emissions performance of clinker and cement production.

- public database
- voluntary reporting
- complies with anti-trust laws
- managed by independent 3rd party
- common protocol for transparency in accounting and reporting

GNR geographical coverage 2012





# Third party Pre-verified EPD Tool

Nov  
7, 2014

## FIRST PRE-VERIFIED EPD® TOOL PUBLISHED

The International EPD® System has accepted the first pre-verified tool for creating EPDs: "WBCSD-CSI tool for concrete and cement EPDs", with registration number S-P-00553. The pre-verification of this tool means that some of the checks that is normally done by the verifier is already assured if the tool has been used. There is still a need for verification, e.g. that the input data is correct, but the time needed for this phase is reduced if the tool is used.

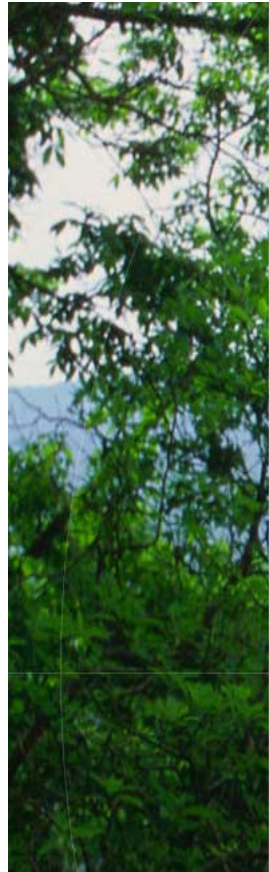
The EPD verifier shall ensure that data uploaded to the Tool are in line with the verified LCA core model implemented in the Tool. Data generated using the Tool is equivalent to specific or selected generic data, and does not need further verification during the verification stage of the EPD. The verification statement written by the EPD verifier must include information on which data was uploaded to the Tool to produce the EPD. The EPD verifier shall also check that Tool maintenance and updates have been performed and verified.

This pre-verified tool is expected to act as a model for similar tools in other industries, simplifying the procedure to develop and register an EPD® and reducing the time needed for verification.

[More information about the WBCSD-CSI tool \(external link\)](#)  
[PCR for concrete](#)

## Pre-verification coverage

- Choice of data and datasets
- Data quality, sources and references
- IT features
- LCA modeling hypotheses
- Calculation rules
- Description of indicators
- Functionality for generation of various outputs
- Procedures for updating the information in the tool
- Tool supporting documents



# From the EPD Tool to a registered EPD



World Business Council for Sustainable Development  
**Cement Sustainability Initiative**

## Environmental Data Sheet

Self-Declaration based on CSI product category rules UN CPC 375 Concrete

### Default cement for reporting

Manufacturer: Quantis (CH)  
 Declared unit: 1 ton of cement  
 Product identification: Default cement for reporting, Default cement for reporting  
 Production site(s): Lausanne  
 Scope: cradle to concrete plant  
 Methodology: CSI EPD calculator 1.1 / CML v4.2  
 Date of issue: 2014-04-28

### Environmental impacts

Global warming potential, GWP (100 years)  
 Depletion potential of the stratospheric ozone layer, ODP  
 Acidification potential of soil and water, AP  
 Eutrophication potential, EP  
 Formation potential of tropospheric ozone, POCP  
 Abiotic depletion potential for non-fossil resources, ADP-element  
 Abiotic depletion potential for fossil resources, ADP-fossil fuels  
 Human toxicity potential, HTP  
 Freshwater aquatic ecotoxicity potential, FAETP  
 Marine aquatic ecotoxicity potential, MAETP  
 Terrestrial ecotoxicity potential, TETP  
 Numbers in brackets ( ) refer to impacts from wastes used as alternative raw materials

### Resource use

Renewable primary energy used as energy resource  
 Renewable primary energy used as raw materials  
 Total renewable primary energy  
 Non-renewable primary energy used as energy resource  
 Non-renewable primary energy used as raw materials  
 Total non-renewable primary energy  
 Secondary material  
 Renewable secondary fuels  
 Non-renewable secondary fuels  
 Net fresh water

### Waste

Hazardous waste disposed  
 Non-hazardous waste disposed  
 Radioactive waste disposed

### Output flows

Components for re-use  
 Materials for recycling  
 Materials for energy recovery  
 Exported energy

### Extra indicators

Electricity use  
 Total dust



- Preparation of EPD using EPD Tool (user input data)
- Verification of user input data, EPD Report and background report by independent verifier
- Registration and publication

Business-to-Business EPDs necessary for Environmental assessment of buildings



# CSI EPD Tool for cement and concrete

Web-based for worldwide accessibility

# *Thank you*

For further details, please visit

[www.wbcscement.org](http://www.wbcscement.org)

or email us at [cement@wbcscd.org](mailto:cement@wbcscd.org)

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