

Getting the Numbers Right.
A Database for the Cement
Industry

Eamon Geraghty



Objective

CSI CEO's decision October 2006

“Develop representative statistical information on the energy and CO2 performance of clinker and cement production, worldwide and regionally, to serve the need of internal and external stakeholders”



PWC

- PWC appointed as contractor in 2007
 - PWC Paris
- 2 Data collection cycles complete
- Information available for
 - 1990
 - 2000
 - 2005
 - 2006
- Anti-trust concerns preclude collection of data less than 1 year old.



Structure

- Project Agreement
 - WBCSD and PWC
 - Confidentiality
 - Code of Conduct
 - Project Management Charter
- Individual Service Agreement
 - Participant and PWC
 - Participants may be CSI members, non-CSI members or Federations
- Non-CSI members foreseen by the Project Agreement



Intellectual Property Rights

- Database software: PWC
- Database content: PWC
- Database inputs: Participants
- Database outputs:
 - Participant Specific: Participant
 - Federation Specific: Federation
 - Broader than one participant or federation: WBCSD/CSI



Queries

- The GNR will answer queries from interested stakeholders.
- 15 queries have been answered in 2008 to date.
- Queries are channeled through the PMC
- PWC are obligated to anti-trust and confidentiality commitments
- Payment may be requested to cover costs



Queries

- Direct to gnrPMC@wbcsd.org
- Request should indicate:
 - Name and function of requesting organisation
 - Description of the proposed use of the data
 - Contact details for response or clarification
 - Details of the requested information
 - Geographic coverage required
 - Specific variables requested
 - Time frame for data



Basic Data

[Example of Protocol.xls](#)

- Basic document:
 - “The Cement CO₂ Protocol”
 - A methodology for calculation and reporting CO₂ emissions
 - Available at www.wbcscement.org
 - Features
 - An Excel tool
 - Explanation manual
- Aligned with the WRI/WBCSD protocol



Assurance of Data

- Assurance at plant and company level is required for all CSI companies.
- “Limited Assurance” * is the standard.
 - At least every 3 years
 - Practitioner to assess need for site visits
 - National & regional trading system verifications accepted.
 - 1990 is not verifiable
- Assurance necessary, for example, for CDM benchmark setting.
- Collection tool requests the assurance status of all data

* As per ISAE 3000



The Collection Tool

[CRH_Filtering
Tool_V2.8.xls](#)

- Downloaded from PWC, the tool filters the information in the “protocol”
- Simple checks for completion
- Filtered information uploaded to portal and taken into database by PWC
- Both company and plant level information is collected

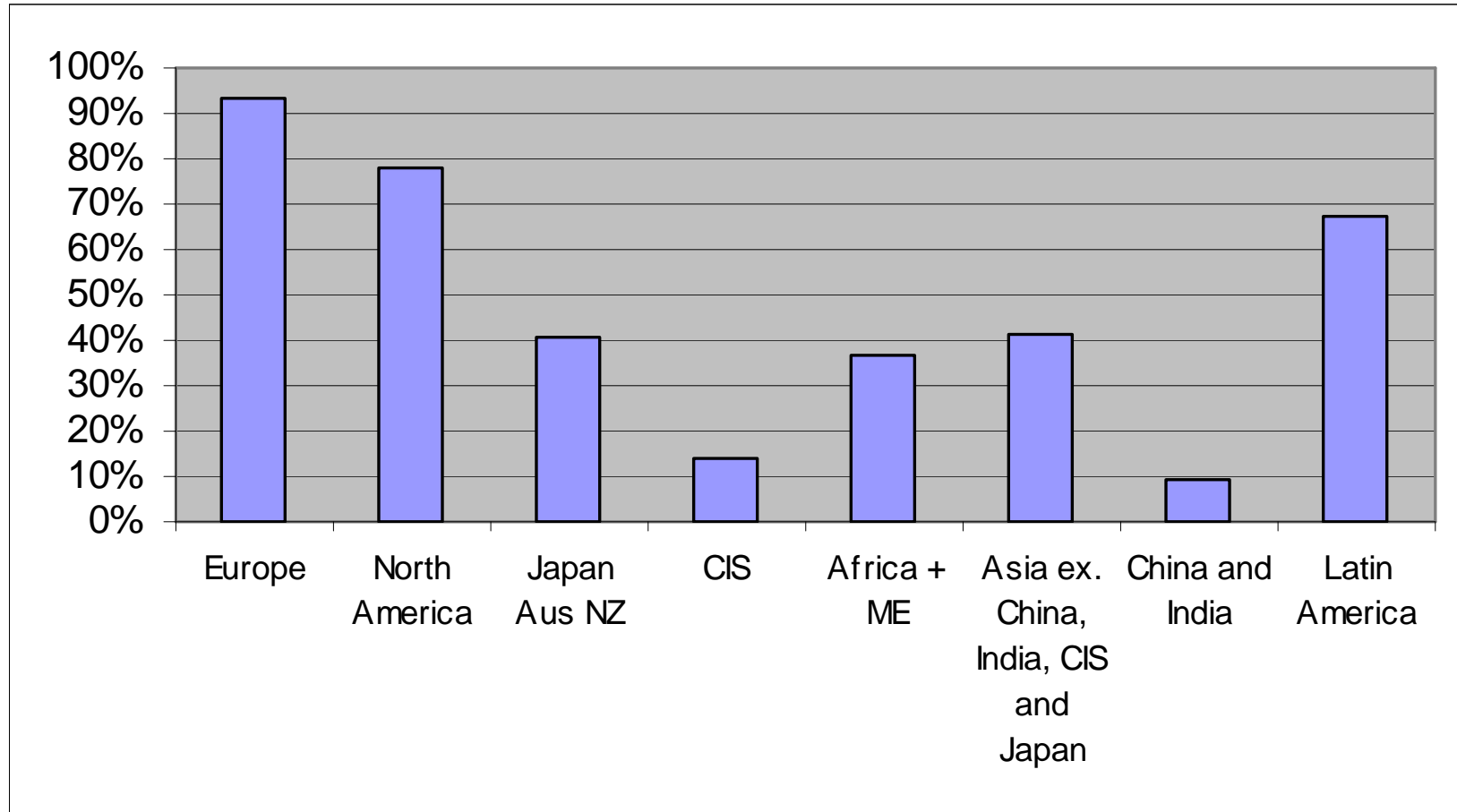


The data base

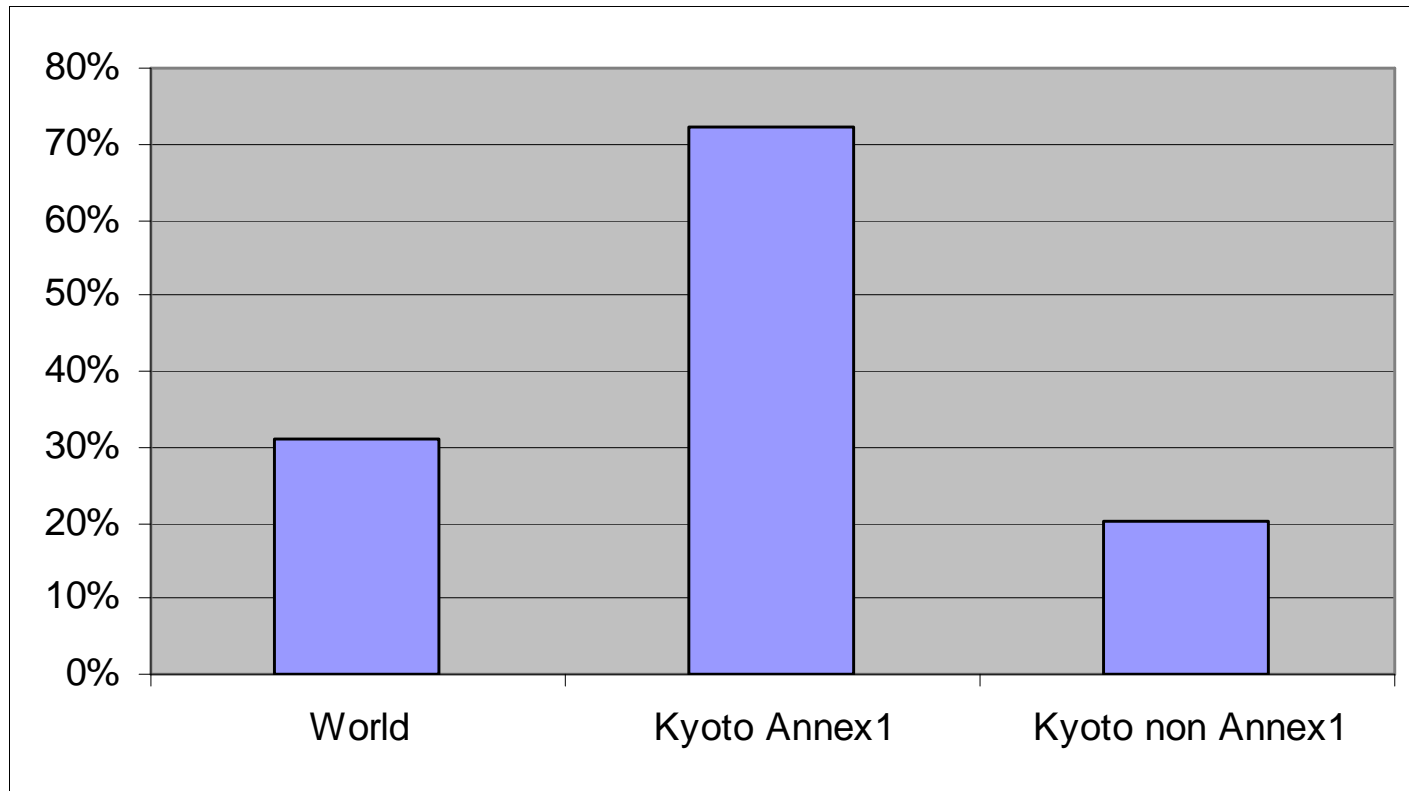
- PWC execute a number of “business” checks on incoming data including:
 - Compatability with industry norms
 - Compatability with historical data
- Clarifications of inputs regularly required.
- PWC consolidates to:
 - Specific company reports
 - Regional and world reports



Coverage : 794 million tons



Coverage



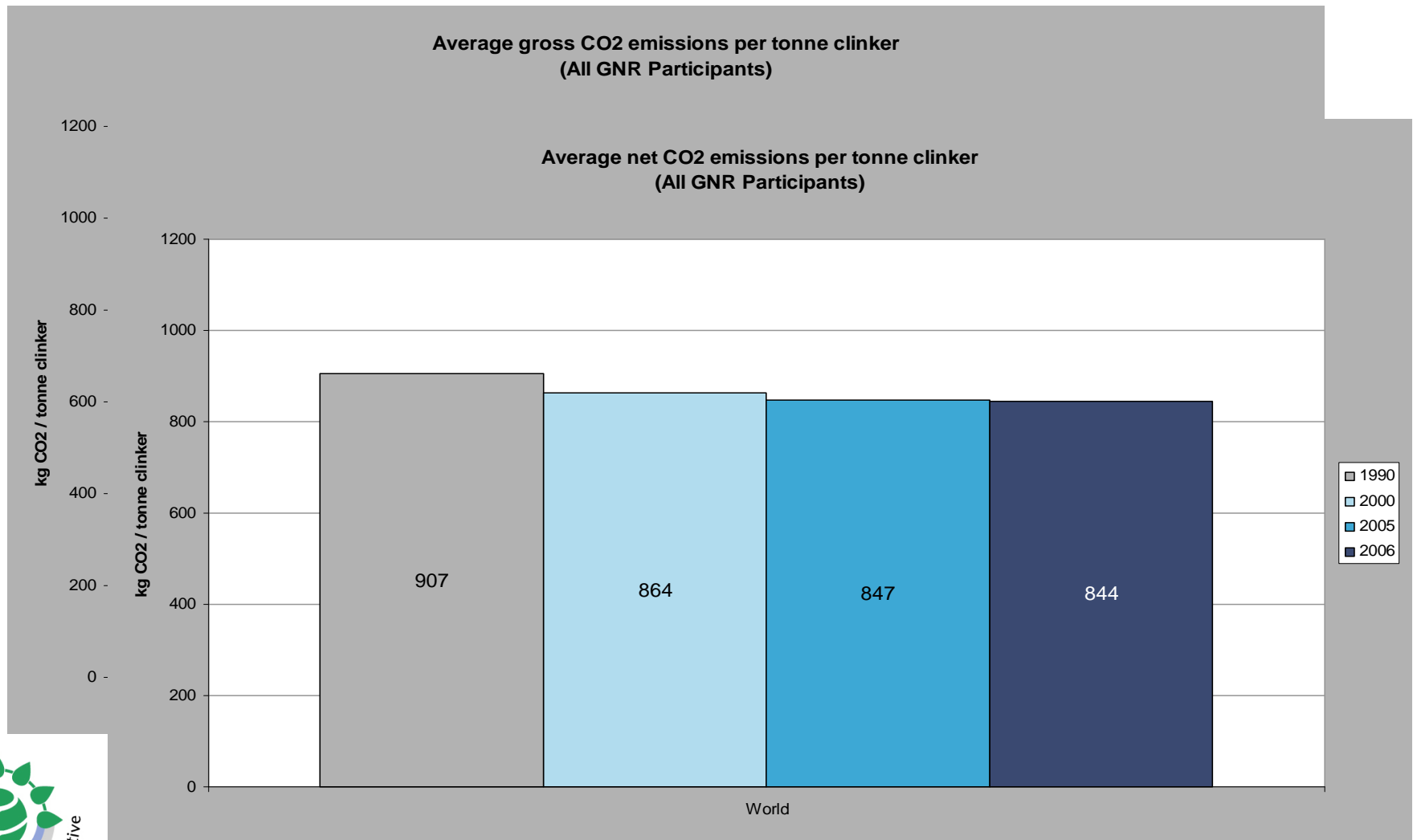
The representivity of the data base varies from region to region. Care is required in interpretation.



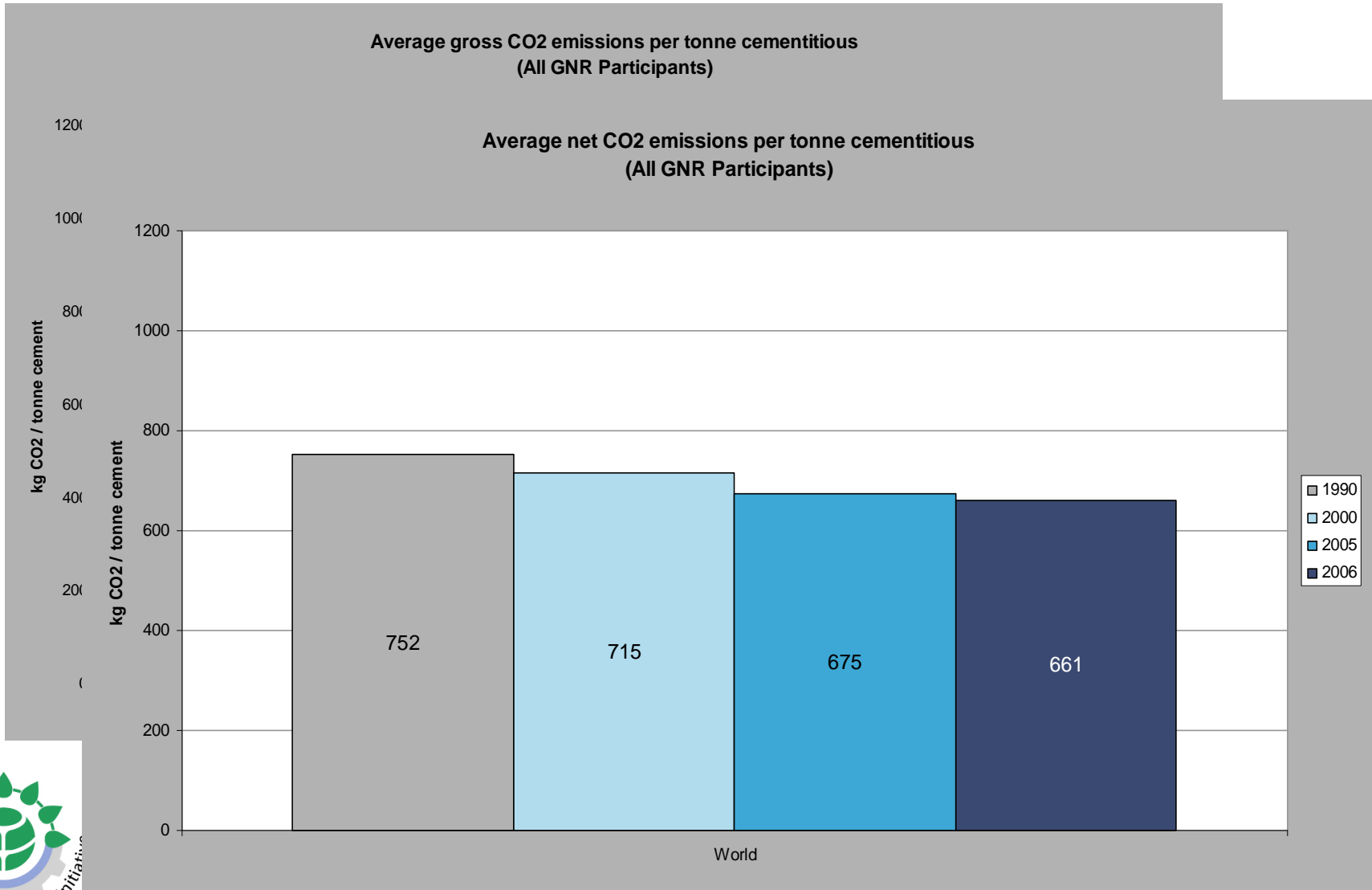
GNR Outputs 2006



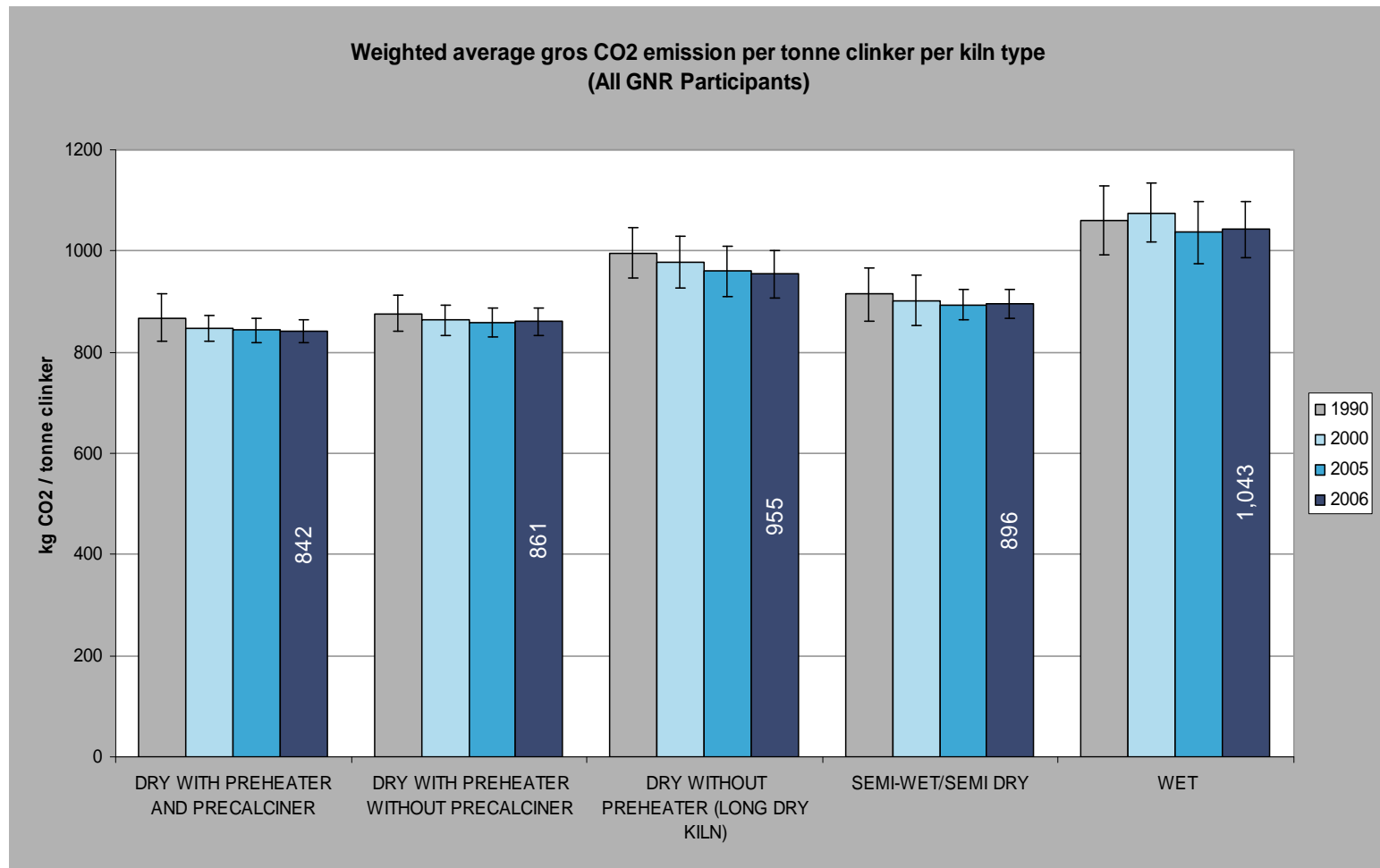
CO₂ Emissions Per Tonne Clinker



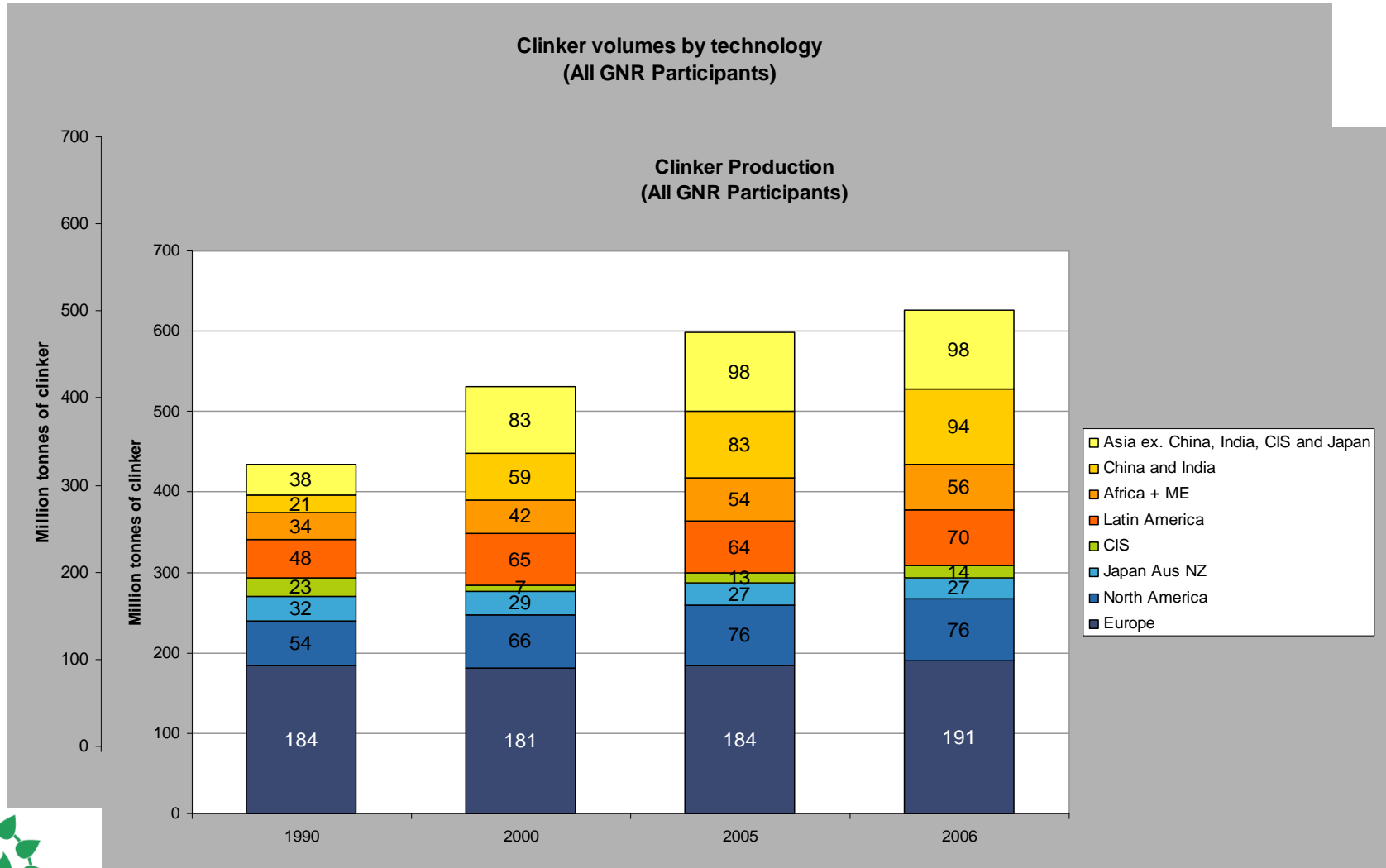
CO₂ Emissions Per Tonne Cementitious



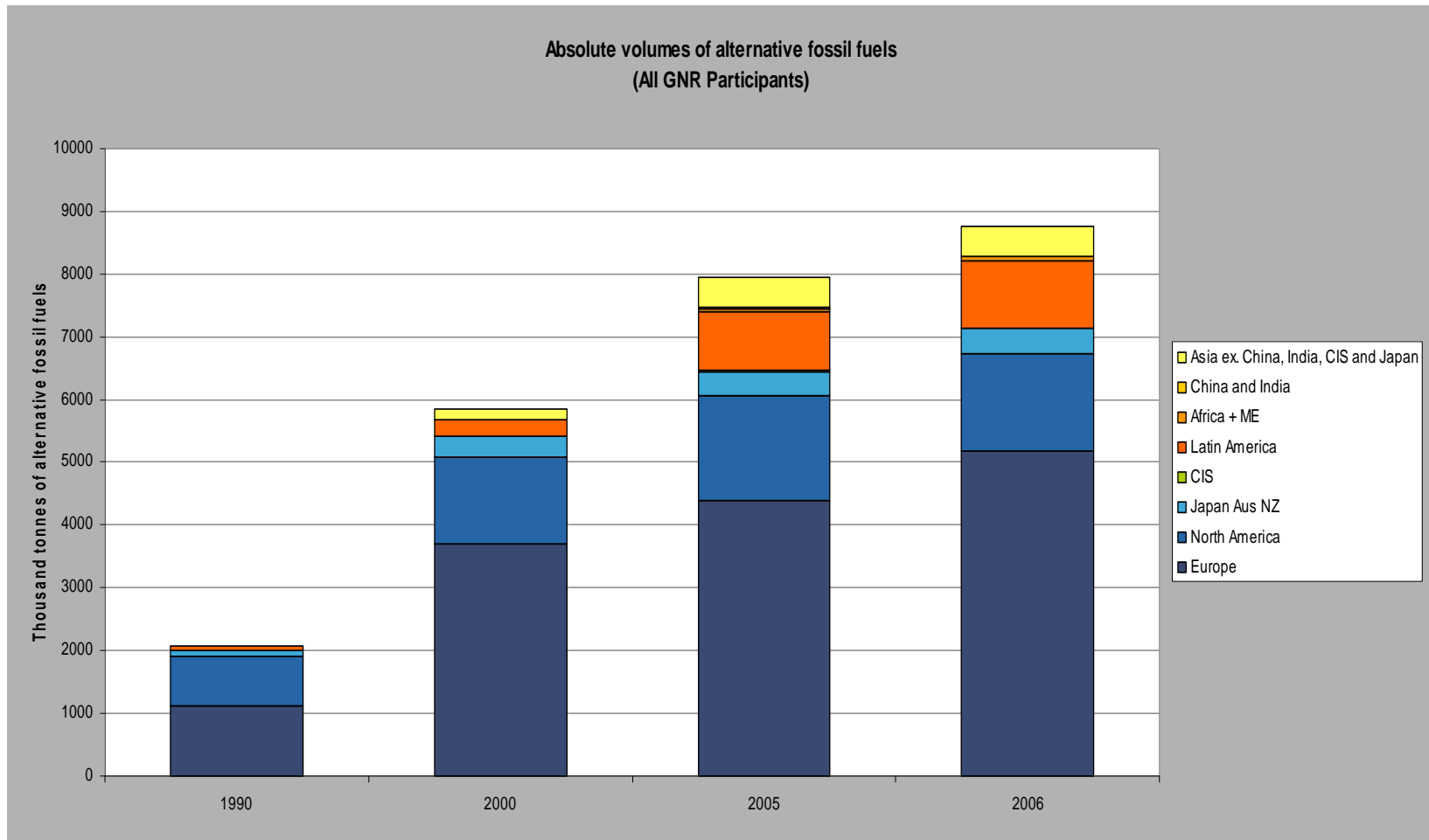
CO₂ Emissions for Kiln Type



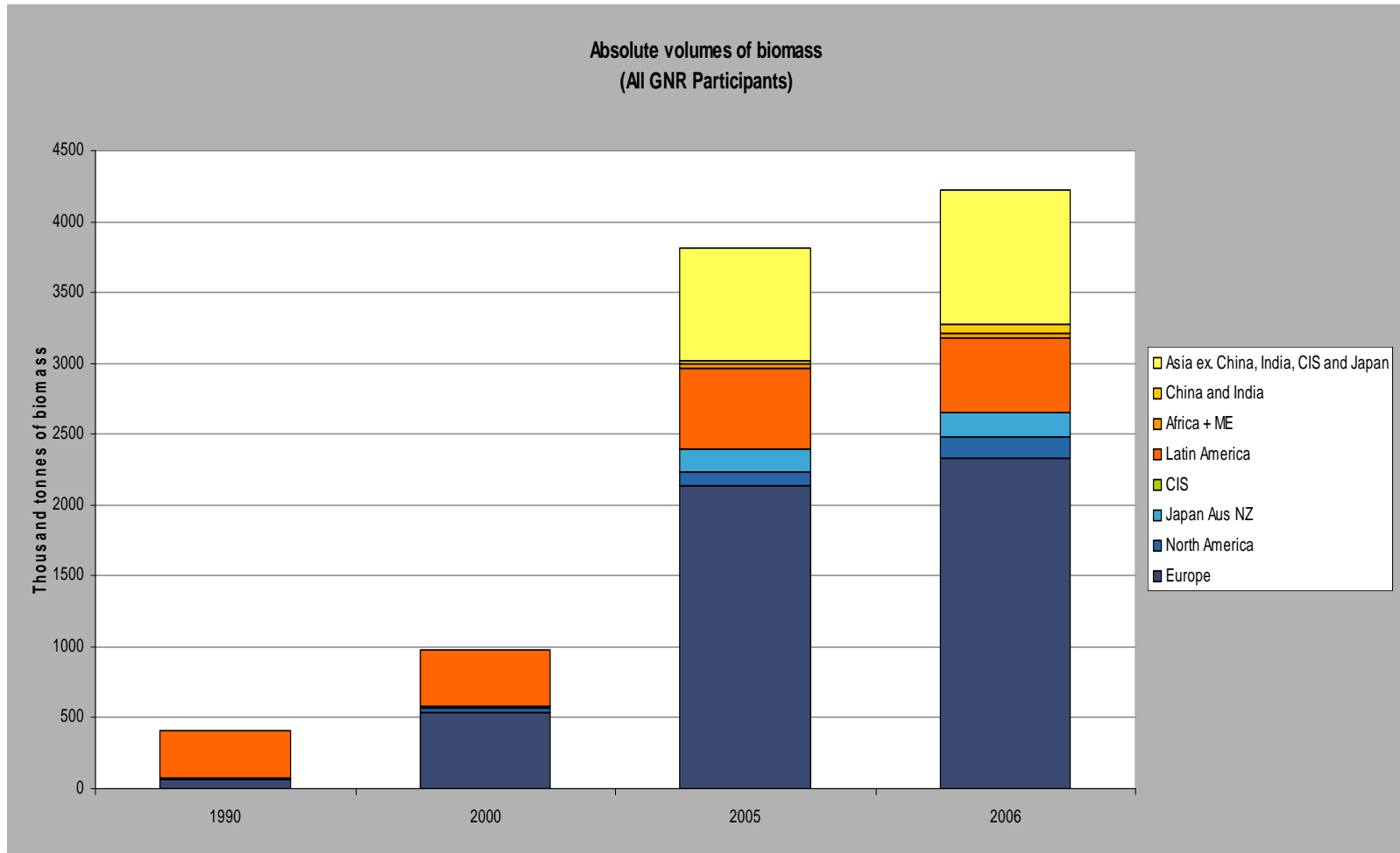
Clinker Volume by Technology



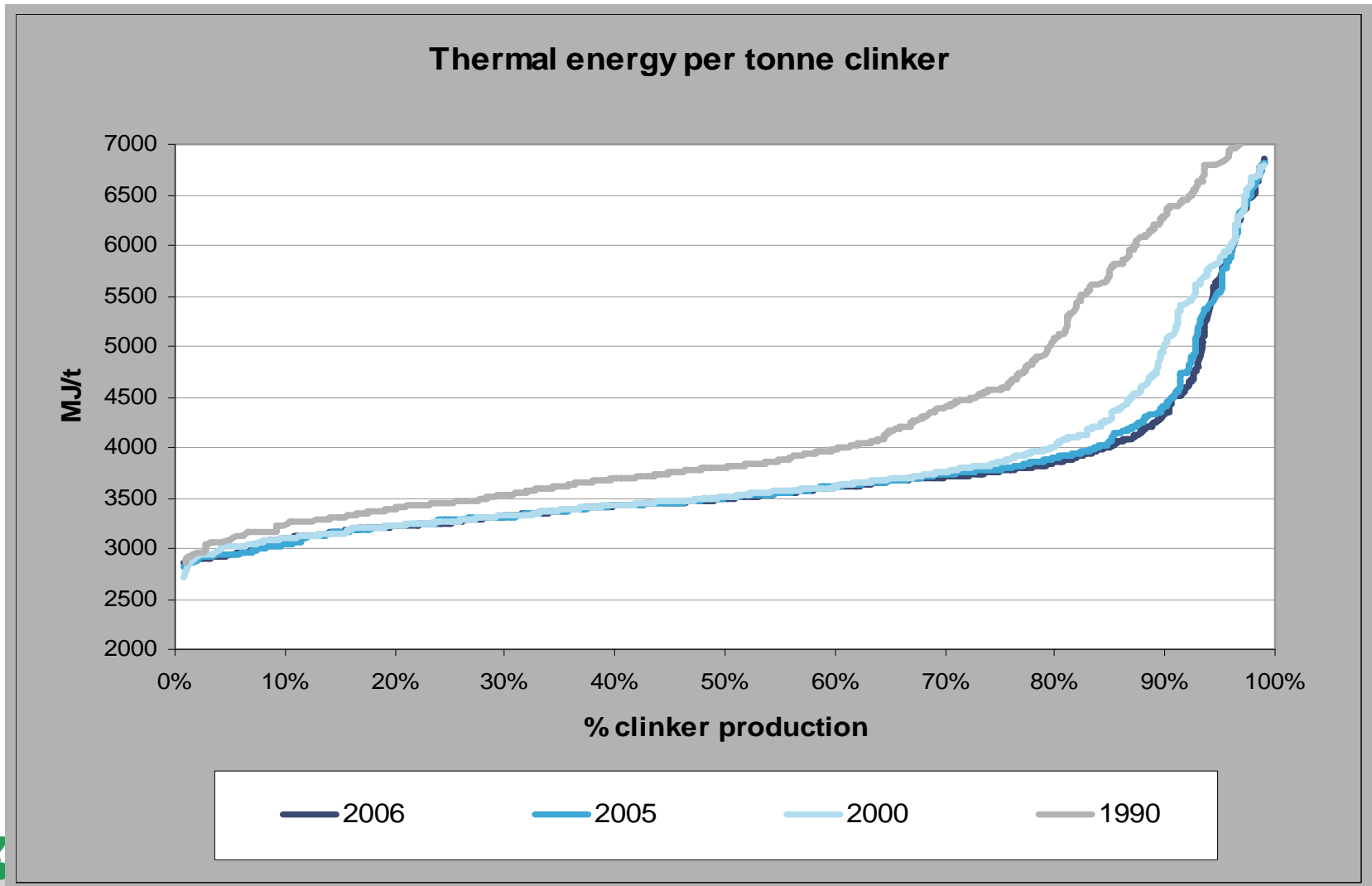
Alternative Fuel Usage



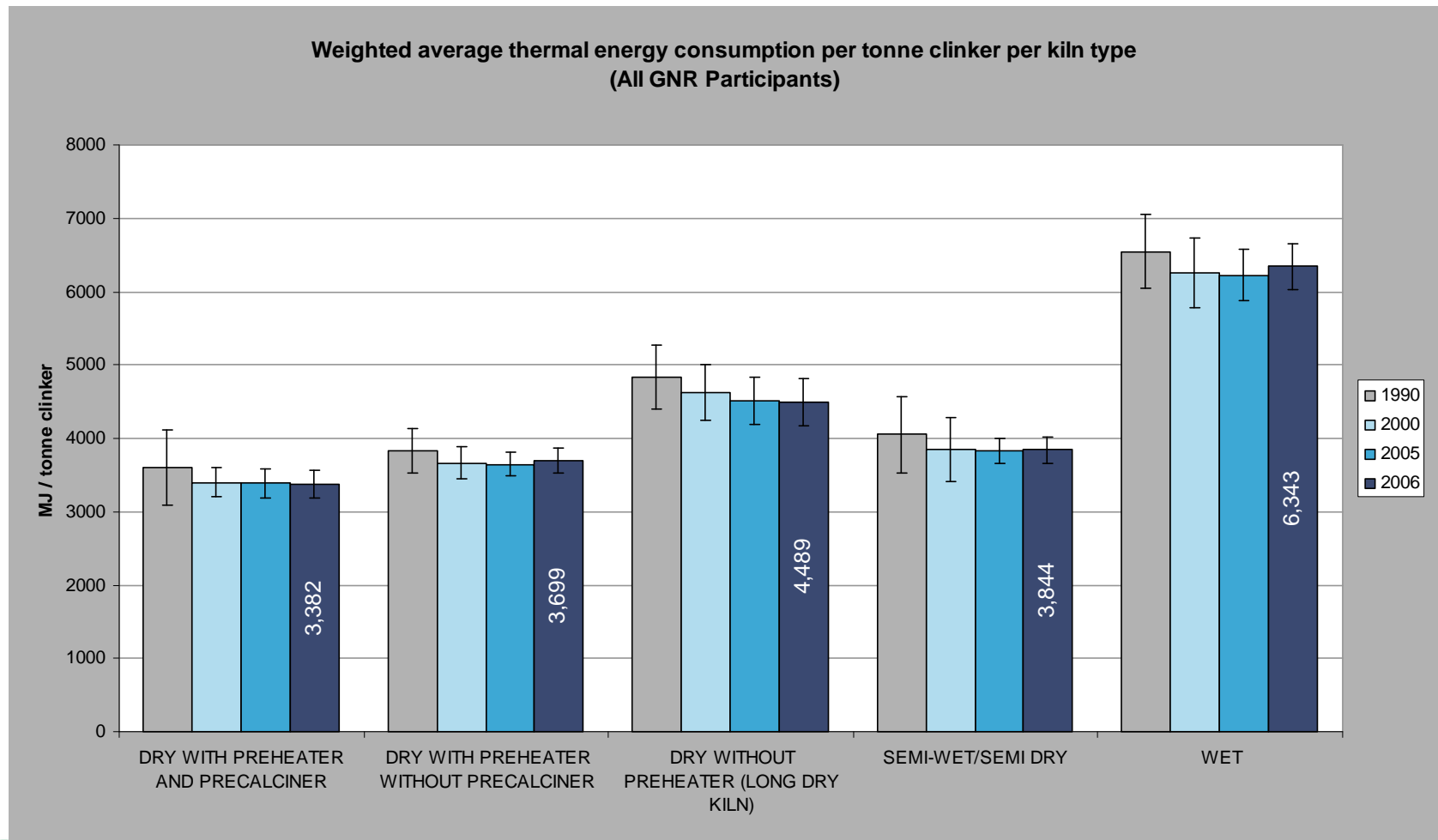
Biomass Usage



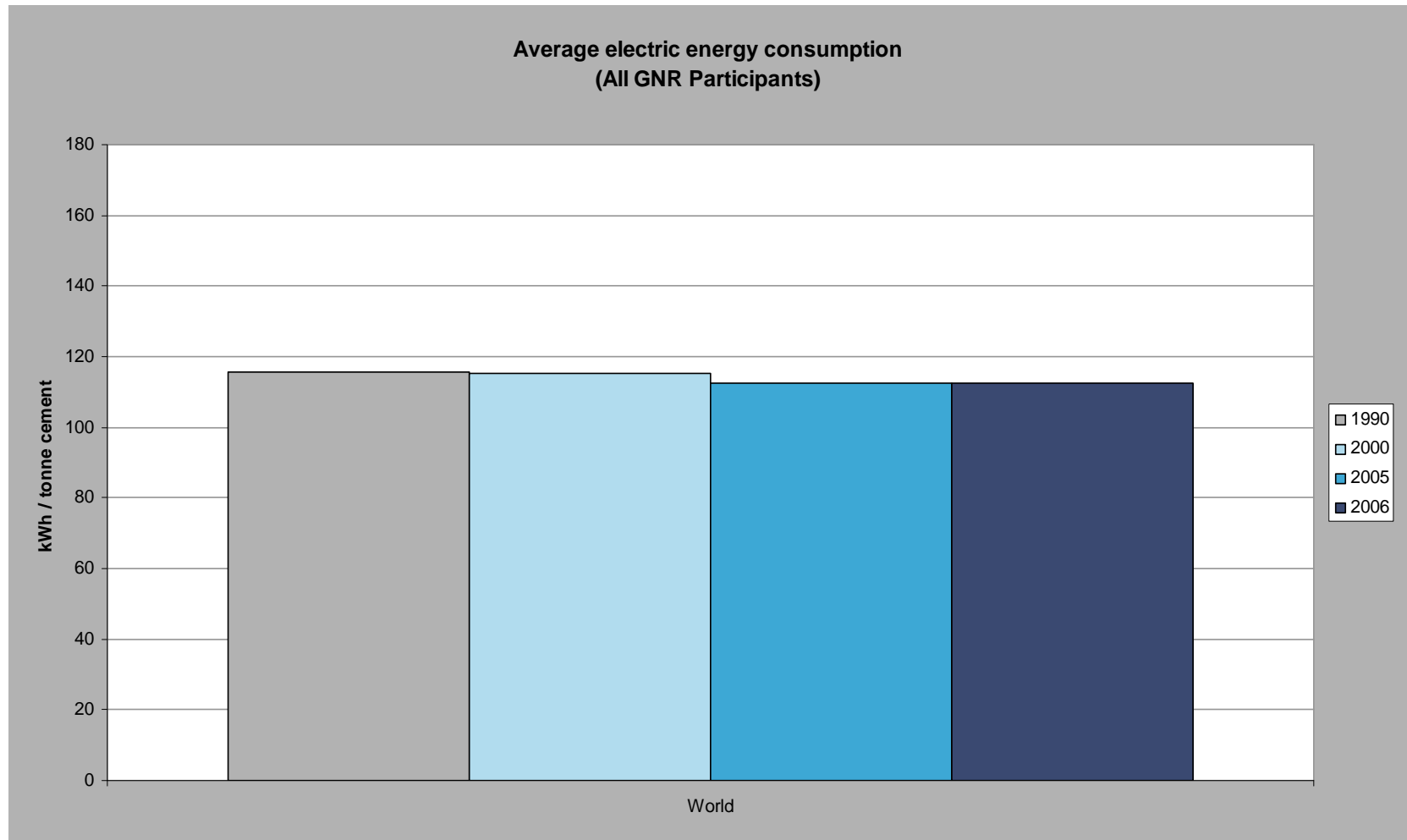
Thermal Energy Per Tonne Clinker



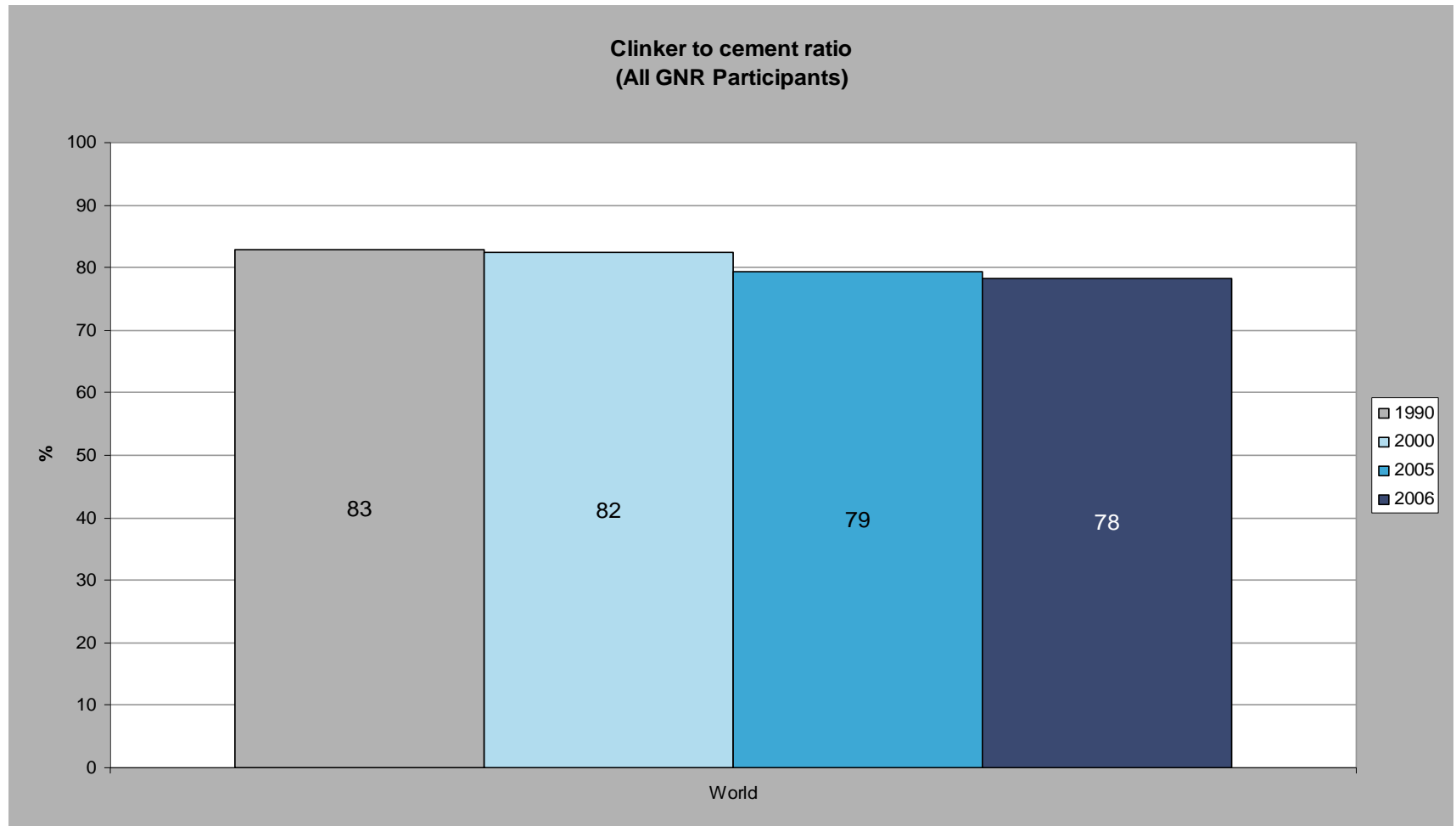
Energy Consumption Per Tonne Clinker Per Kiln Type



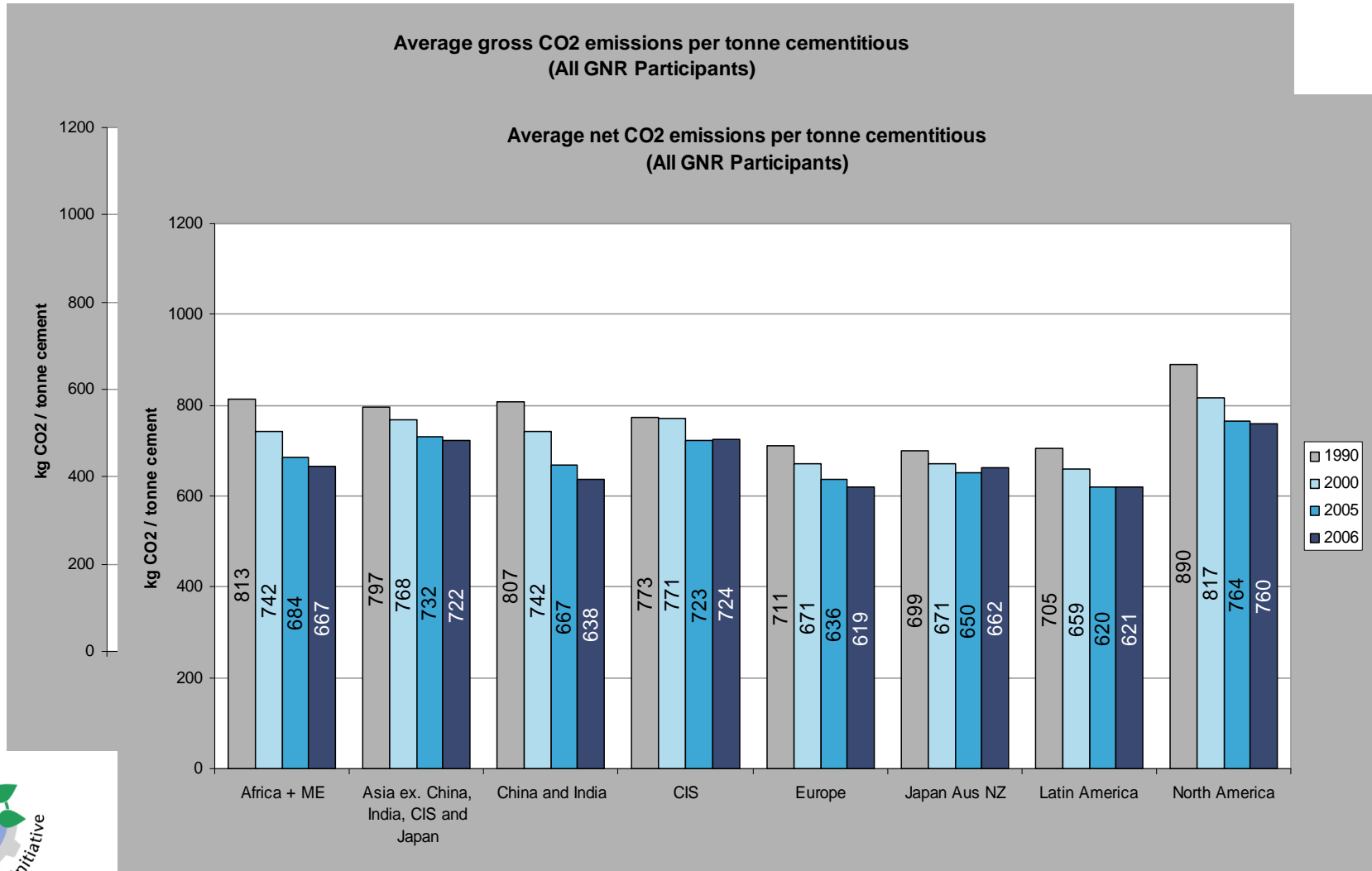
Energy Consumption Per Tonne Cement



Clinker Cement Ratio



Regional average emissions



2006 Net CO₂ per tonne clinker

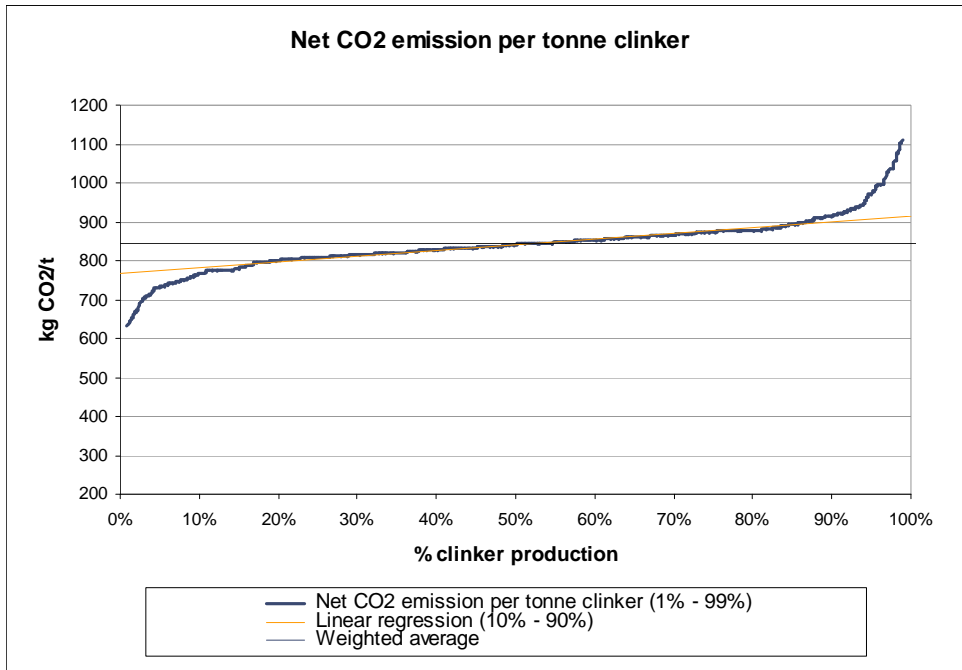


CSI - "Getting the Numbers Right"

Year: 2006

Region: World-wide

Company: All GNR participants



Formula of the linear regression between 10% and 90%	$y = 1,49x + 766$
Regression coefficient (r ²) between 10% and 90%	0.98

Weighted average	844 kg CO ₂ /t clinker
Corresponding percentage	52%
Standard deviation	97.6 kg CO ₂ /t clinker

Number of plants	615
Total production volume in the graph	620 Mt clinker



2006 Net CO₂ per tonne cement

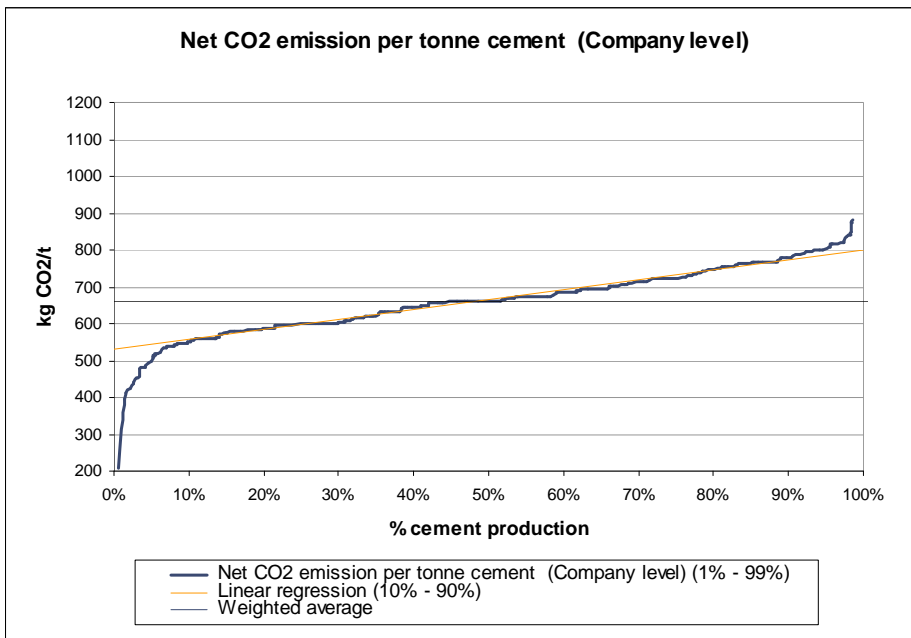


CSI - "Getting the Numbers Right"

Year: 2006

Region: World-wide

Company: All GNR participants



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

Formula of the linear regression between 10% and 90%	$y = 2,68 x + 530$
Regression coefficient (r2) between 10% and 90%	0.99

Weighted average	661 kg CO ₂ /t cement
Corresponding percentage	49%
Standard deviation	222 kg CO ₂ /t cement

Number of companies	231
Total production volume in the graph	800 Mt cement



Objective and Conclusion

Objective

“Develop representative statistical information on the energy and CO2 performance of clinker and cement production, worldwide and regionally, to serve the need of internal and external stakeholders”

Conclusion: GNR:

- A wealth of data
- to develop knowledge
- to manage and improve the cement industry's CO2 and energy performance
- CSI invites further participation especially PCA, Latin American Federations, China, Russia & Japan.

