

Industrial Ecology Practice and Implementation at the Holcim Group

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Content of presentation

- SD and the Environmental Policy Statement
- Corporate Industrial Ecology
- Environmental Monitoring & Reporting
- Alternative Fuels & Raw Materials (AFR)
- Environmental Affairs (Lobbying)
- CO₂ Strategy
- WBCSD Cement Sustainability Initiative

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Commitment to Sustainable Development

Our goal is to continually demonstrate our commitment to Sustainable Environmental Performance, and visibly play a leading role in Social Responsibility within our sphere of influence.

- We actively work to improve our performance, and increase our understanding of the challenges we face in this area.
- We promote eco- efficiency, conservation of non-renewable natural resources and the recycling of secondary materials. We recognize our responsibility to the environment ...

Our commitment is to continuously improve our environmental performance and provide positive contributions to our business.

Commitment to Sustainable Development

Holcim Environmental Principles

- | | | |
|--------------------------------|--|---|
| 1 Management Systems | We apply environmental management guidelines and standards worldwide and monitor our performance. | We promote our commitment through training and integration into business processes. |
| 2 Resources Utilisation | We promote eco-efficiency, conservation of non-renewable natural resources and recycling of secondary materials. | We invest in the development of innovative and sustainable products and processes. |
| 3 Environmental Impacts | We measure our performance, continuously improve and promote best practice in our industry. | |
| 4 Stakeholder Relations | We engage our stakeholders and report publicly on compliance, performance and progress. | |

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Corporate Industrial Ecology: Mission statement

Assist Holcim in applying the « Sustainable Development » concept and develop the inherent opportunities.

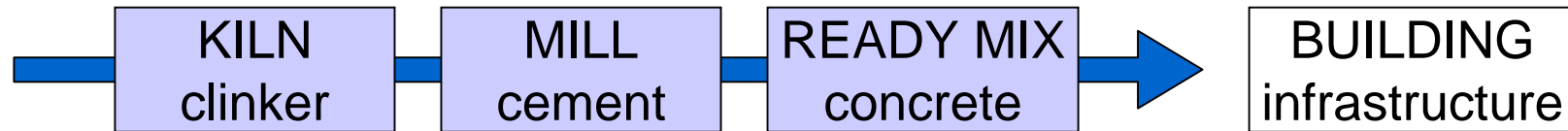
- Identify and follow environmental trends, technologies and players, propose appropriate policies to the EXCO and Group Companies, and follow and support their implementation.
- Propose and assure necessary and appropriate environmental techniques, procedures, statistics, targets and studies.
- Actively promote and support Alternative Fuels and Raw Materials Business Development (AFR-BD) in Group companies to obtain a sustainable and profitable protection of natural resources.
- Steer and co-ordinate the necessary international promotion, support and related communication to achieve the above mentioned objectives.

Industrial Ecology for our Value-chain

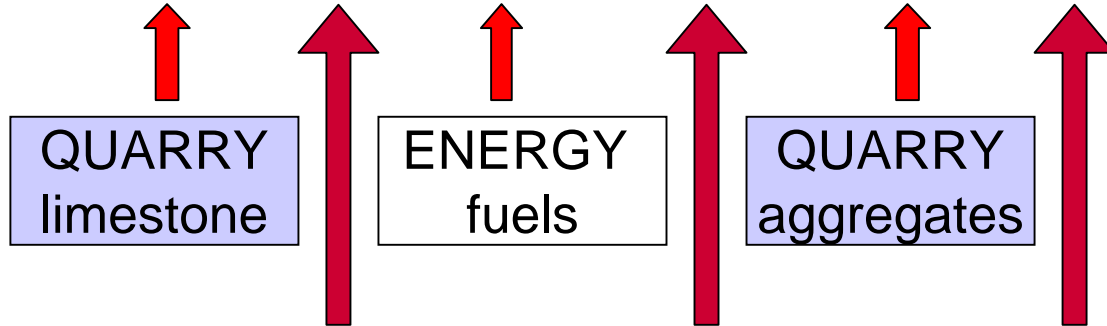
Emissions

CO₂

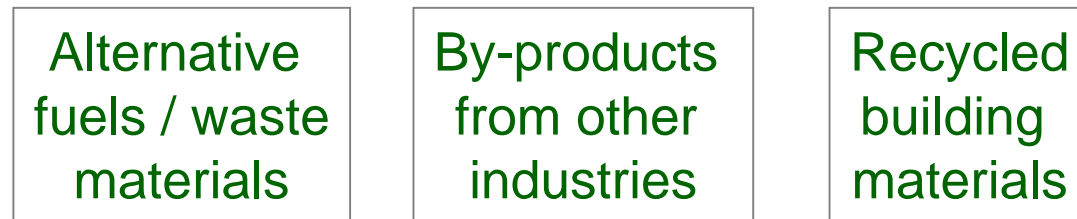
Operations



Natural Resources



Substitutes



Industrial Ecology



“Wastes of one industry are the starting materials of another”

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Plant Environmental Profile (PEP)

All companies are to have

- The Plant Environmental Profile (PEP)
- The Environmental Performance Indicators (EPI)
- The Environmental Activities Reporting (EAR)

Environmental Monitoring and Reporting (EMR)

All companies are

- To install and operate continuous emission monitoring (CEM) equipment for Dust, NO_x, SO₂, VOC (and O₂) on the kilns
- To measure HCl, NH₃, C₆H₆, D/F and HM emissions (at least) once per year
- To report by latest 2004

Objectives of EMR and PEP

Objectives at Corporate Level

Internal

- Know where we are in terms of (main stack) emissions from cement plants
- Plan progress by setting targets and standards
- Demonstrate progress by transparent and reliable measurements and reporting

External

- Build up and maintain corporate credibility and trust
- Create and maintain corporate SD image
- Contribute to enterprise value

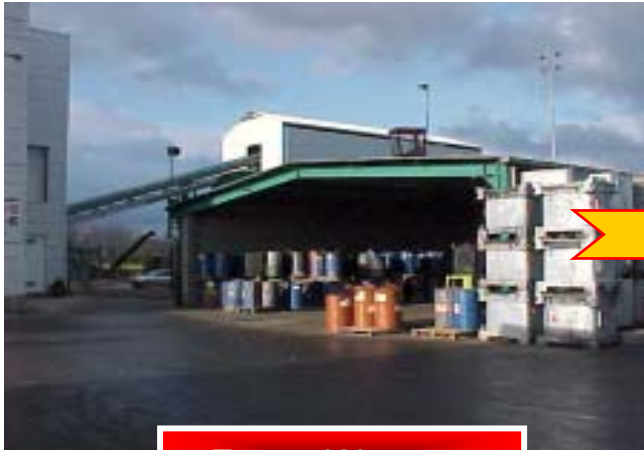
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AFR: A new business



AFR: From waste to AFR



From Wastes



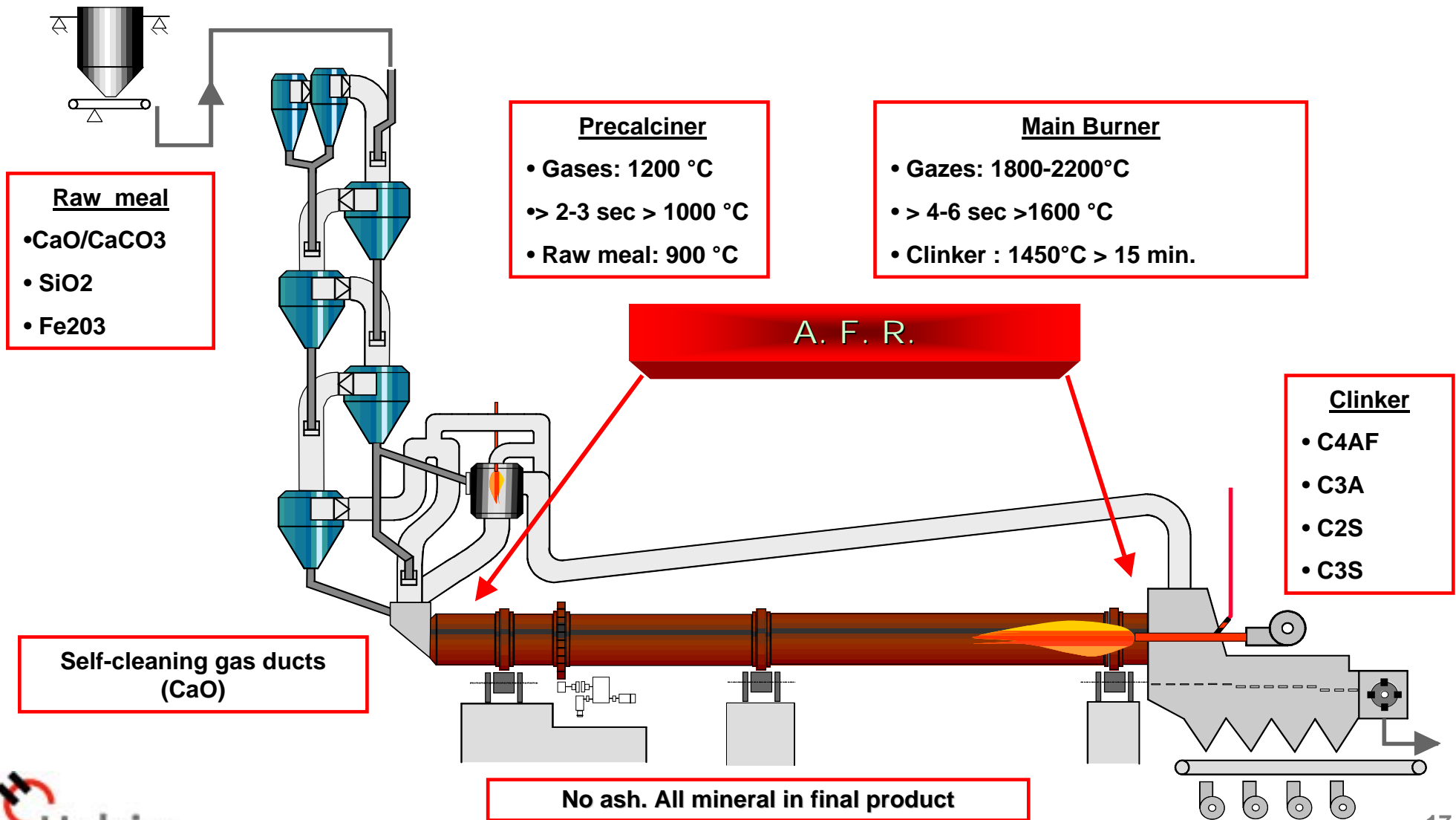
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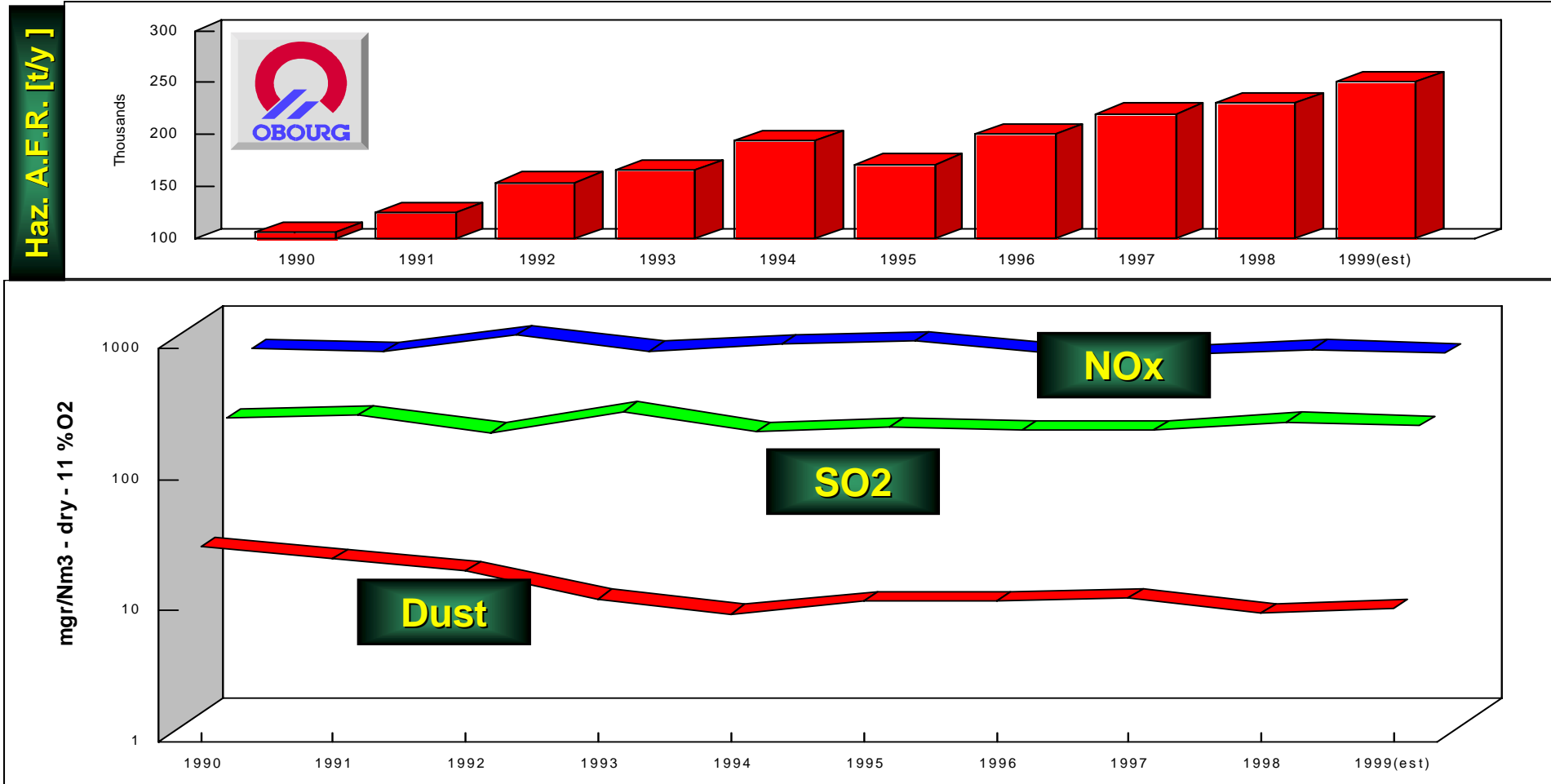
To A.F.R.



AFR: Characteristics for wastes co-processing



AFR: Impact on air emissions



AFR Opportunities

AFR is not only about \$... 0 thermal energy cost by 2006

It is also ...

- Sustainable environmental performance
- Service to society
- Reputation
- Stakeholder communication

... as part of our **SD commitment**

AFR is ...

Respecting our **Environmental Policy**
while reducing costs

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Environmental Affairs: mission statement

- Monitor legal developments in relation with the environment
- Assess ensuing business risks and opportunities
- Formulate positions and recommendations for action in close collaboration with EAT's
- Co-ordinate corresponding lobby actions both within Holcim and with trade associations (Cembureau)
- Assist group companies in complying with existing environmental legislation, in anticipating and possibly shaping future developments

Waste and AFR-BD related issues

- Legal limits to waste access
 - ▶ Waste / hazardous waste definition
 - ▶ Preference for alternative uses (re-use, recycling, landfilling)
 - ▶ Landfilling (restricted)
 - ▶ Transborder shipments
- Legal limits to use of waste
 - ▶ Max. allowed % of waste for fuel substitution
 - ▶ Restrictions on types of wastes (>0 or <0 lists)
 - ▶ Minimum calorific value
 - ▶ Blending restrictions
 - ▶ Pollutant content limits on inputs & outputs (leaching risk & LCA)
- Permitting procedure & requirements
- Emissions limits; measuring & reporting requirements

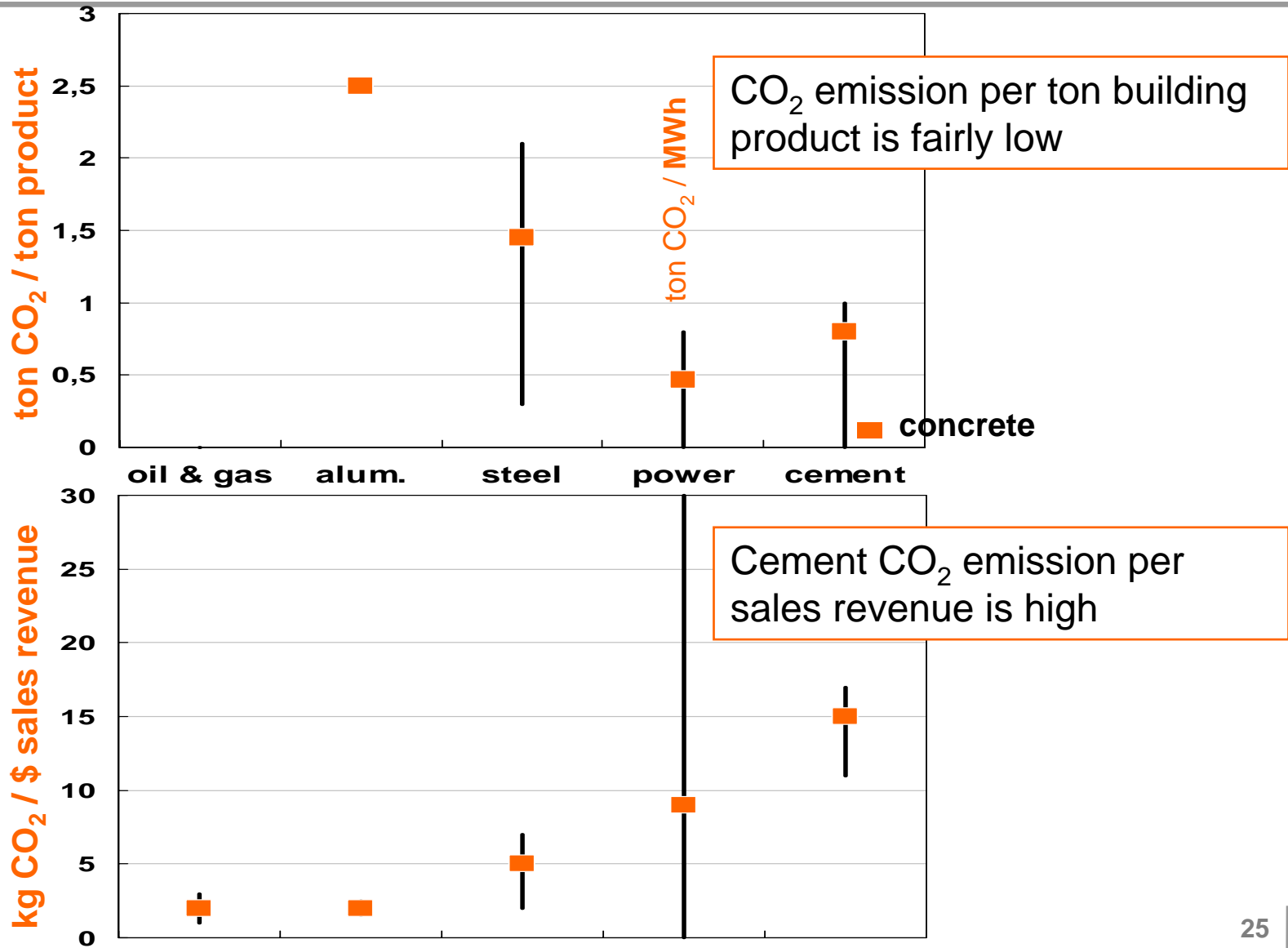
Environmental issues

- Licence to operate (permitting)
- Climate change
 - CO₂ emissions ceilings & trading (Kyoto Protocol)
 - Project-based CO₂ credits (JI & CDM)
- Air pollutants
 - National Emission Ceilings on NO_x and SO₂ (Gothenburg)
 - Emission Monitoring and Reporting; Emission Guideline Values
- Aggregates recycling
- CO₂ / Energy taxation - Voluntary agreements
- Environmental liability

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CO₂ reduction obligation: Business Risk



CO₂: Holcim Strategy

Holcim has been the key player to establish the WBCSD / WRI Greenhouse Gas Protocol, for the cement industry worldwide.

The above protocol supports Holcim's strategy to reduce the amount of CO₂ produced per each tonne of cementitious binder by:

1. Reducing the clinker factor using MIC
2. Improving energy efficiency
3. Utilizing AFR
4. Avoid distorted competition

Outlook: Cement of the future

Today's World Average

Ordinary Portland Cement (OPC)

1.000 kg
OPC Cement

1.500 kg Natural minerals
limestone, clay, bauxite,
gypsum

4.800 MJ Fossil fuels
Coal, oil, gas

900 kg
CO₂

Sustainable Future

Blended Cement with minerals

1.000 kg
Blended Cement

900 kg Natural minerals
400 kg MIC

Zero Fossil fuels
2.800 MJ AFR

400 kg
CO₂

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WBCSD Cement Sustainability Initiative

- A WBCSD Member Project supported by the WBCSD member companies from the cement industry
Launched in 1999, originally planned to run for 2 years
- The initial idea was to produce an independent study about the SD issues of our industry called the “Toward a Sustainable Cement Industry” report
- In retrospect this can be called phase 1 of the CSI
- The CSI has now entered phase 2 = Translating the results of phase 1 into concrete actions

Phase 1 “Toward a Sustainable Cement Industry”

- Project initiated by Holcim, Cimpor and Lafarge
 - ▶ CEO's co-chair the process
 - ▶ Cemex, Heidelberger, Italcementi, RMC, Siam Cement, Taiheiyo and Votorantim have joined the project

- The "Working Group Cement" (WGC) has engaged the Battelle Memorial Institute (USA) to consult on the project:
 - ▶ world's largest not-for-profit R&D company
 - ▶ pioneer in sustainable business practices and technologies
 - ▶ numerous awards for R&D and environmental excellence

Phase 1 “Toward a Sustainable Cement Industry”

- Objectives of the independent study:
 - ▶ assess the global cement industry’s status on SD
 - ▶ identify opportunities for improvement
 - ▶ develop recommendations and options for change

- Deliverables for Battelle:
 - ▶ policy paper for high-level advocacy work and recognition of the industry
 - ▶ structured broad basis for external communication and lobbying
 - ▶ reference document for internal alignment of objectives, policies and actions

CSI Phase 1: Learnings for the WGC

- The Battelle study delivered an independent assessment of the main SD issues of the cement industry
- It does not reveal, however, fundamentally new insights
- But all participating companies profited from the process
 - ▶ Gaining a better understanding of all relevant SD issues
 - ▶ The engagement with external stakeholders in dialogues
 - ▶ Building alignment among the WGC members about the principle SD challenges and priorities for action
- This laid the foundation for the joint decision by all WGC members to carry the CSI into a second phase