



Anna Maria Workshop IX

***How the sustainability challenge **IS** reshaping our
cement and construction industry***

***Walter Lopez
Anna Maria Island, FL
November 11-14, 2008***



Sustainability Definition (1987)

Created at the World Commission on Environmental and Development

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs”

Organizational Alignment Presentation

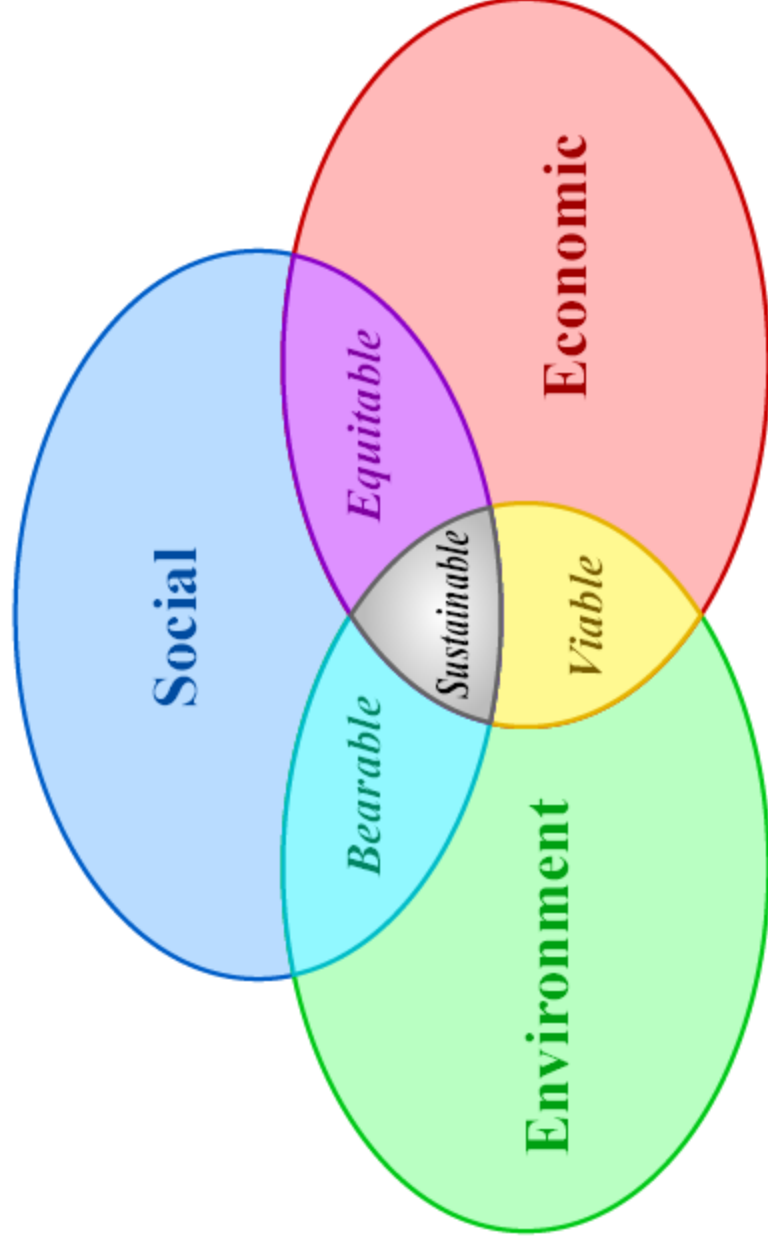
SUSTAINABLE DEVELOPMENT ALIGNMENT
SUPPORTING MATERIALS

An Independent Study Commissioned by
World Business Council for Sustainable Development

THE BOSTON ENVIRONMENTAL GROUP

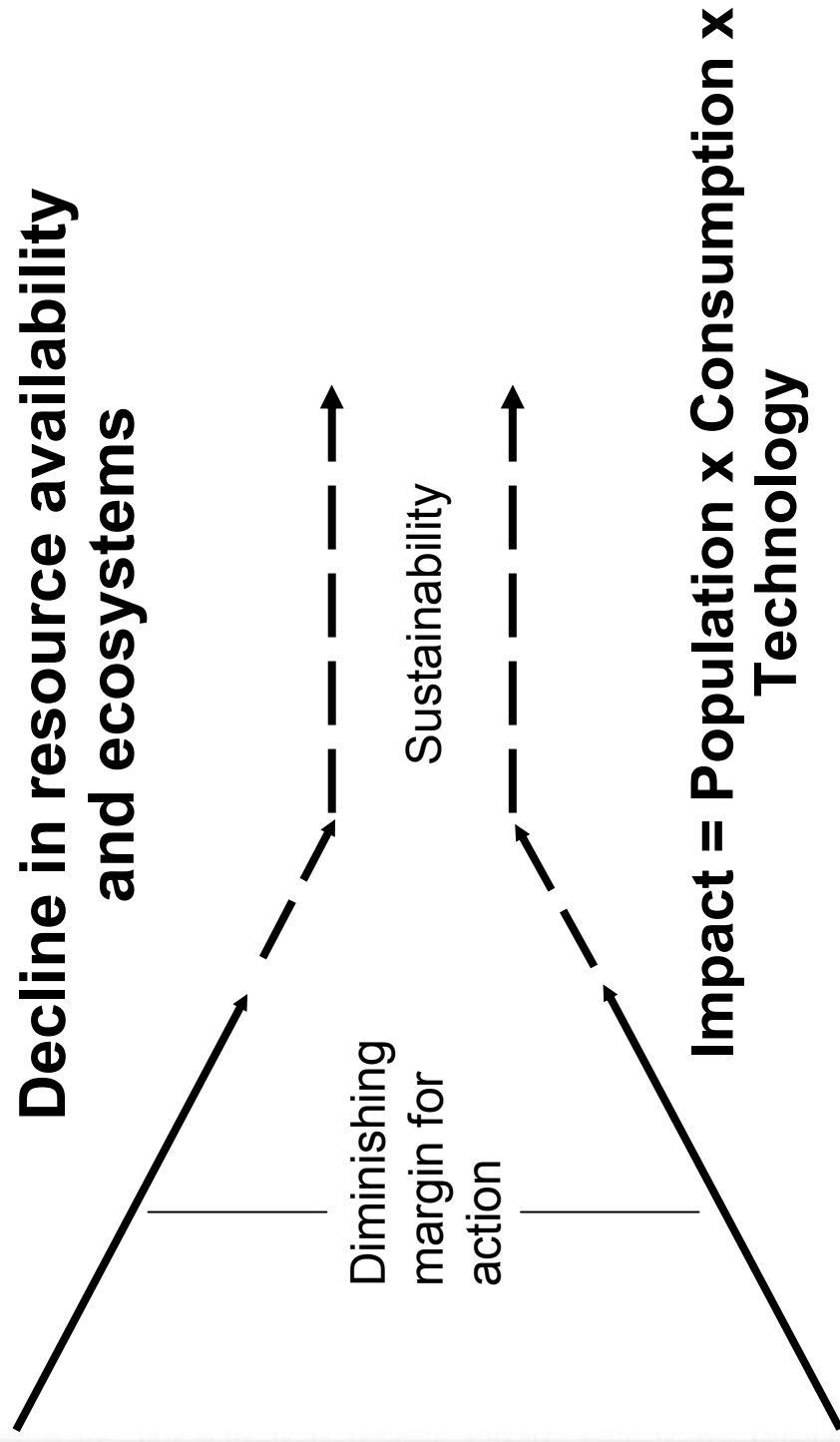


The three pillars of Sustainability





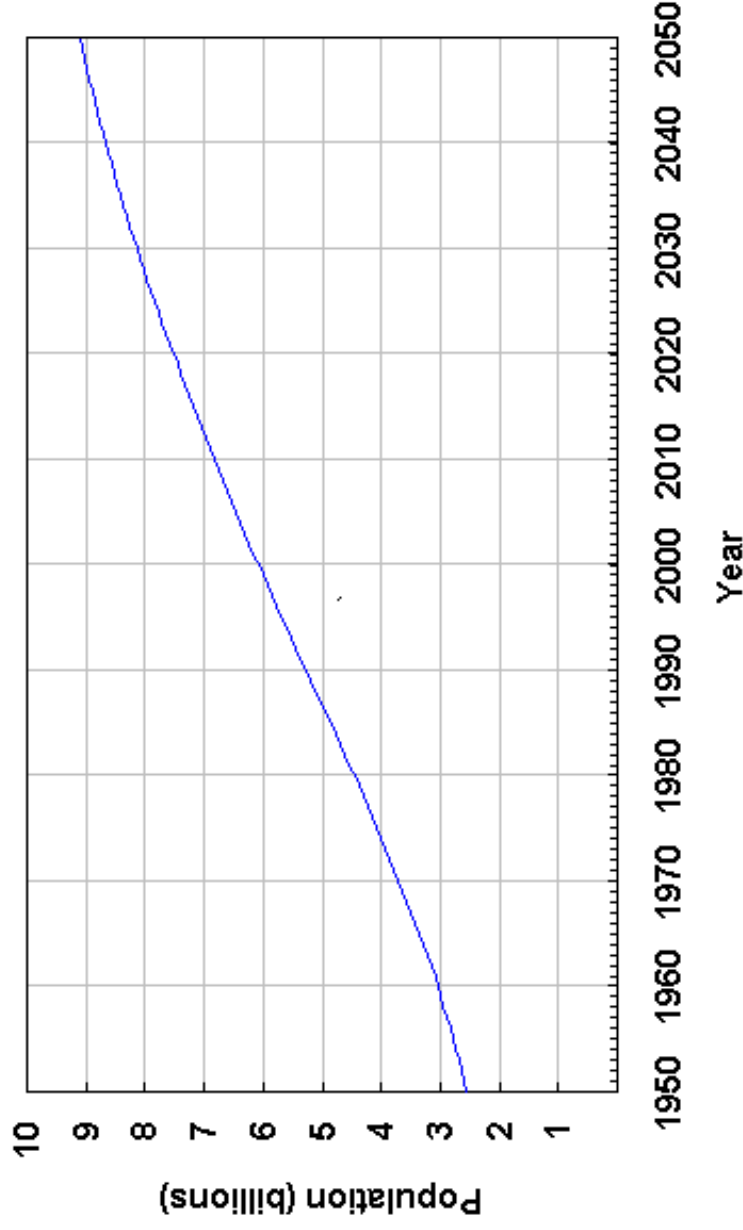
The challenge of sustainable development arises from these two major converging trends





Demography: World population is increasing to unprecedented levels

World Population: 1950-2050



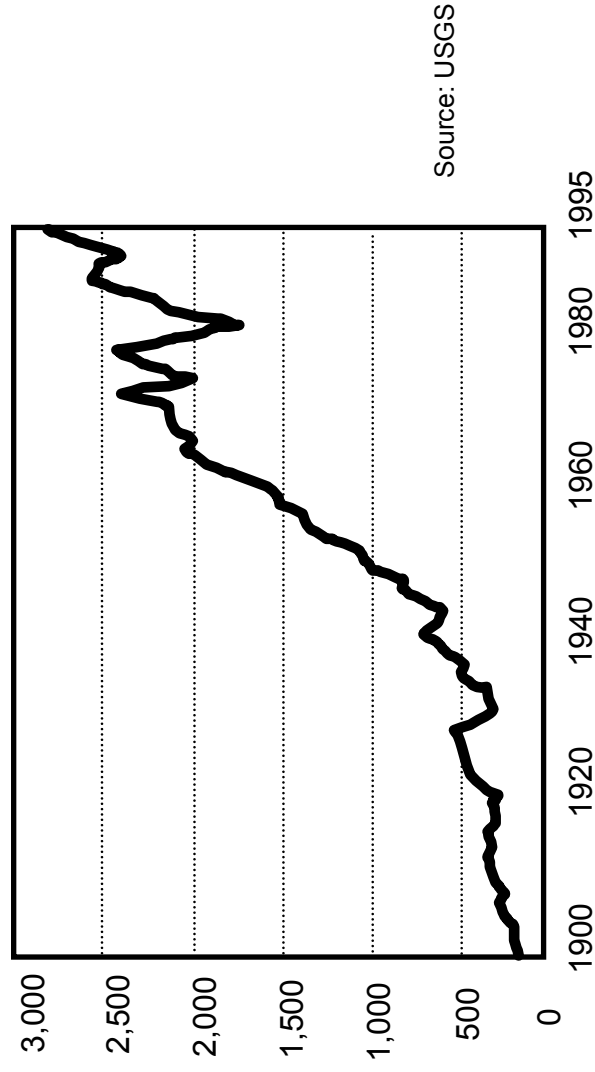
Source: U.S. Census Bureau, International Data Base 5-10-00.



Massive flows of material and energy are used to meet the needs of this expanding population

Raw Materials Consumed in the US -More than all previous societies combined

Millions of Metric Short Tons



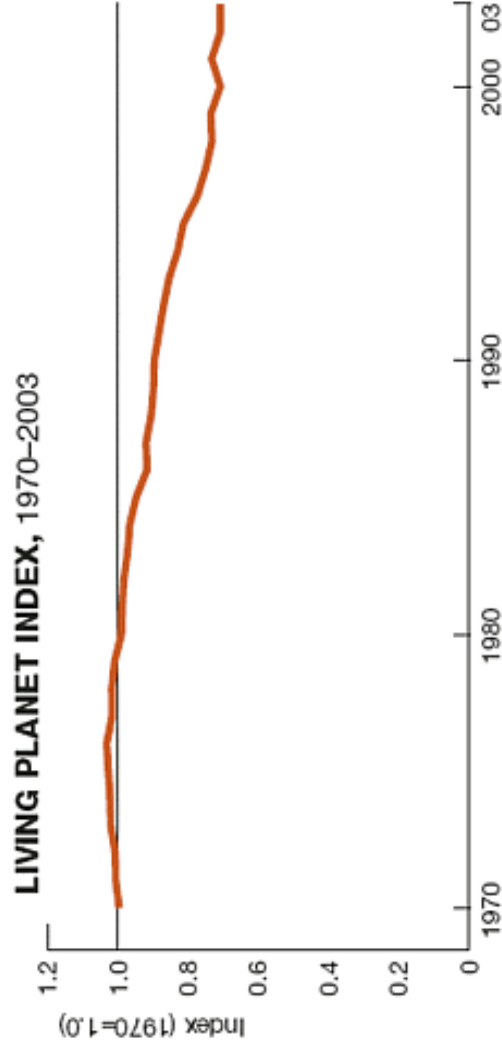


These trends are leading to a decline in the health and capacity of natural ecosystems worldwide

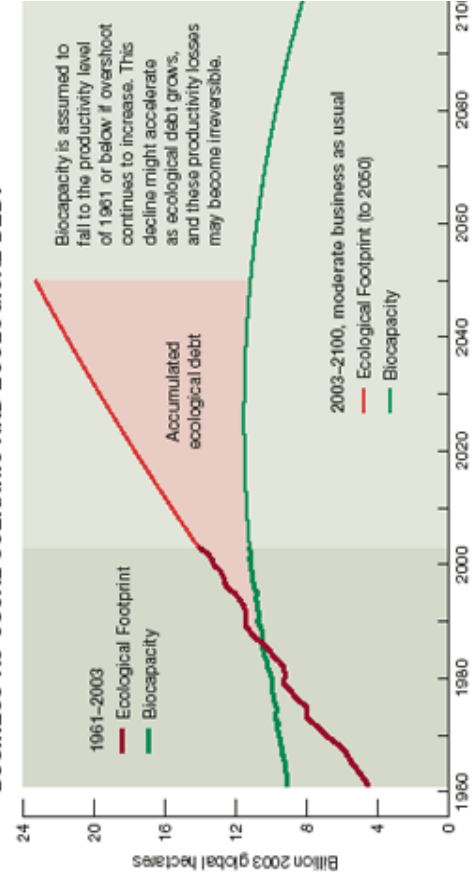
- Biologists: greatest extinction rate in 63 million years
- Global 50% drop in freshwater available per person
- 13 out of 17 fisheries collapsed or endangered
- Forest losses equal to area of UK/year, plus reduced diversity, acid rain etc.
- 30-80% topsoil losses significantly reduce diversity, absorptive capacity, and agricultural productivity



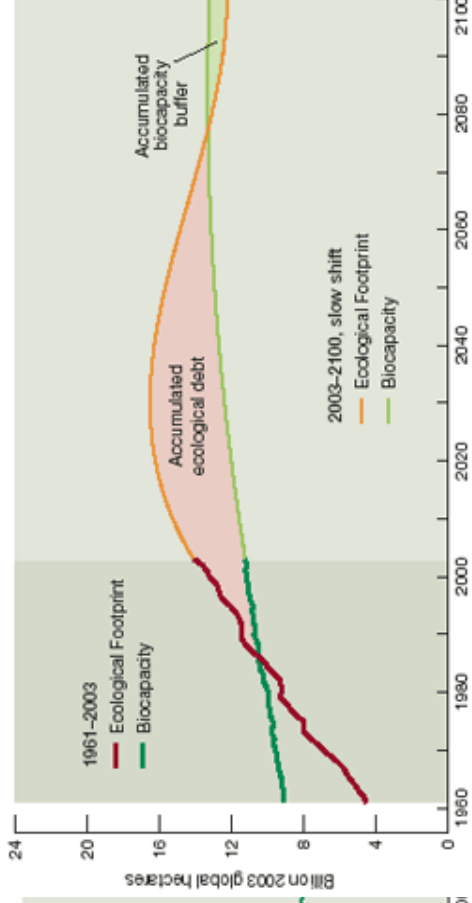
The living Planet Index



BUSINESS-AS-USUAL SCENARIO AND ECOLOGICAL DEBT



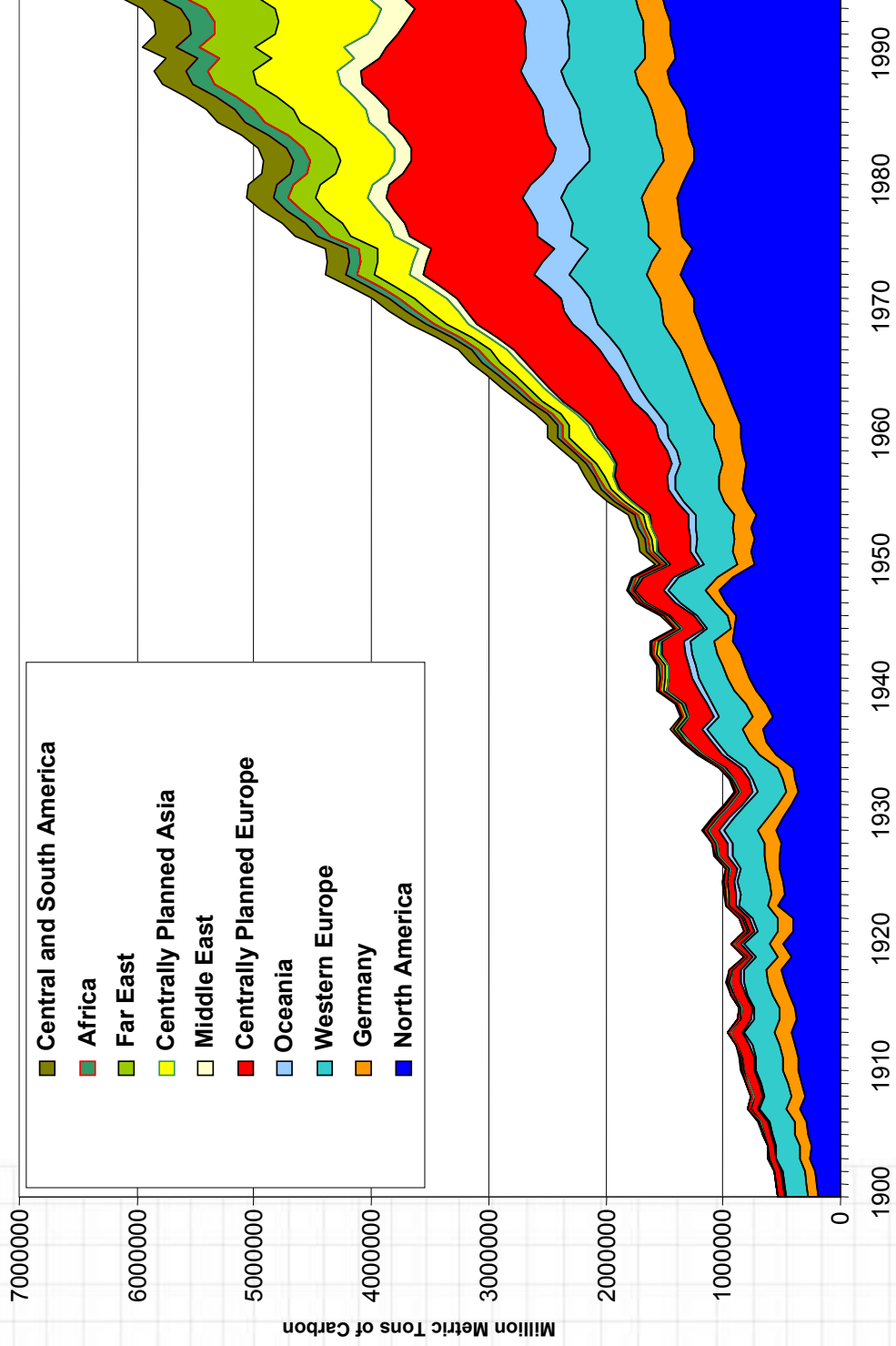
SLOW-SHIFT SCENARIO AND ECOLOGICAL DEBT





Global Trends: Atmospheric CO₂ emissions are rising

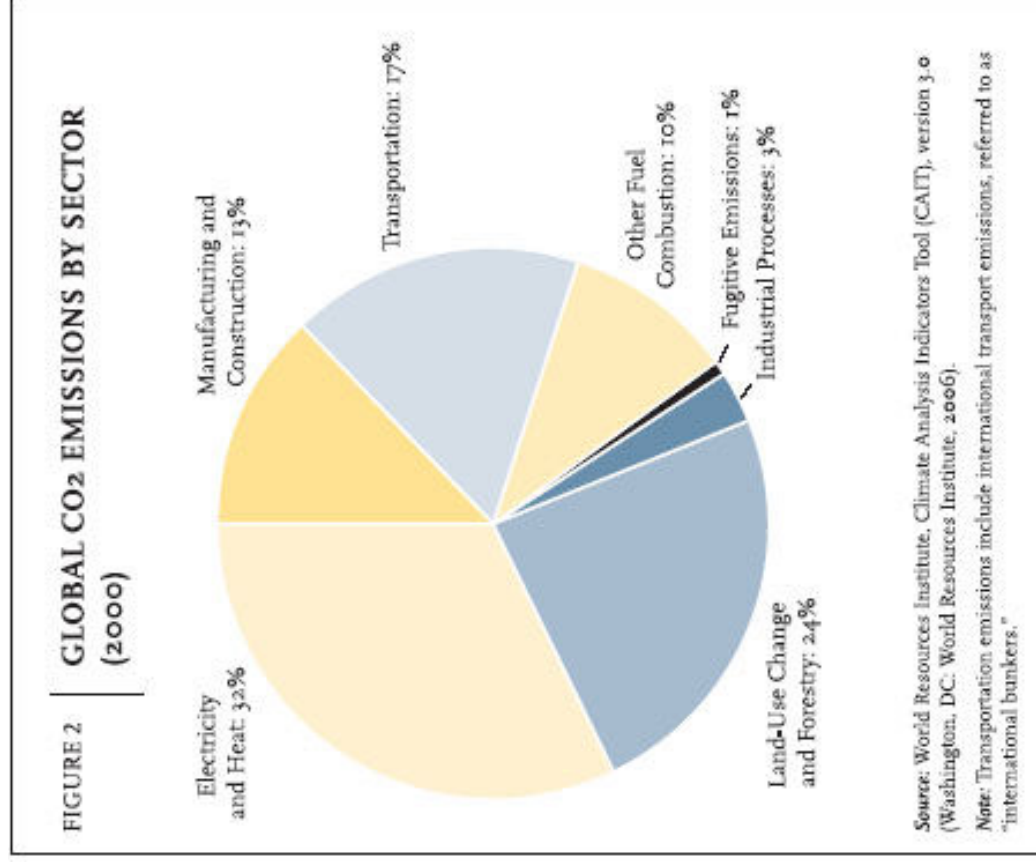
Carbon Emissions from Fossil Fuel and Cement



Source: CDIAC

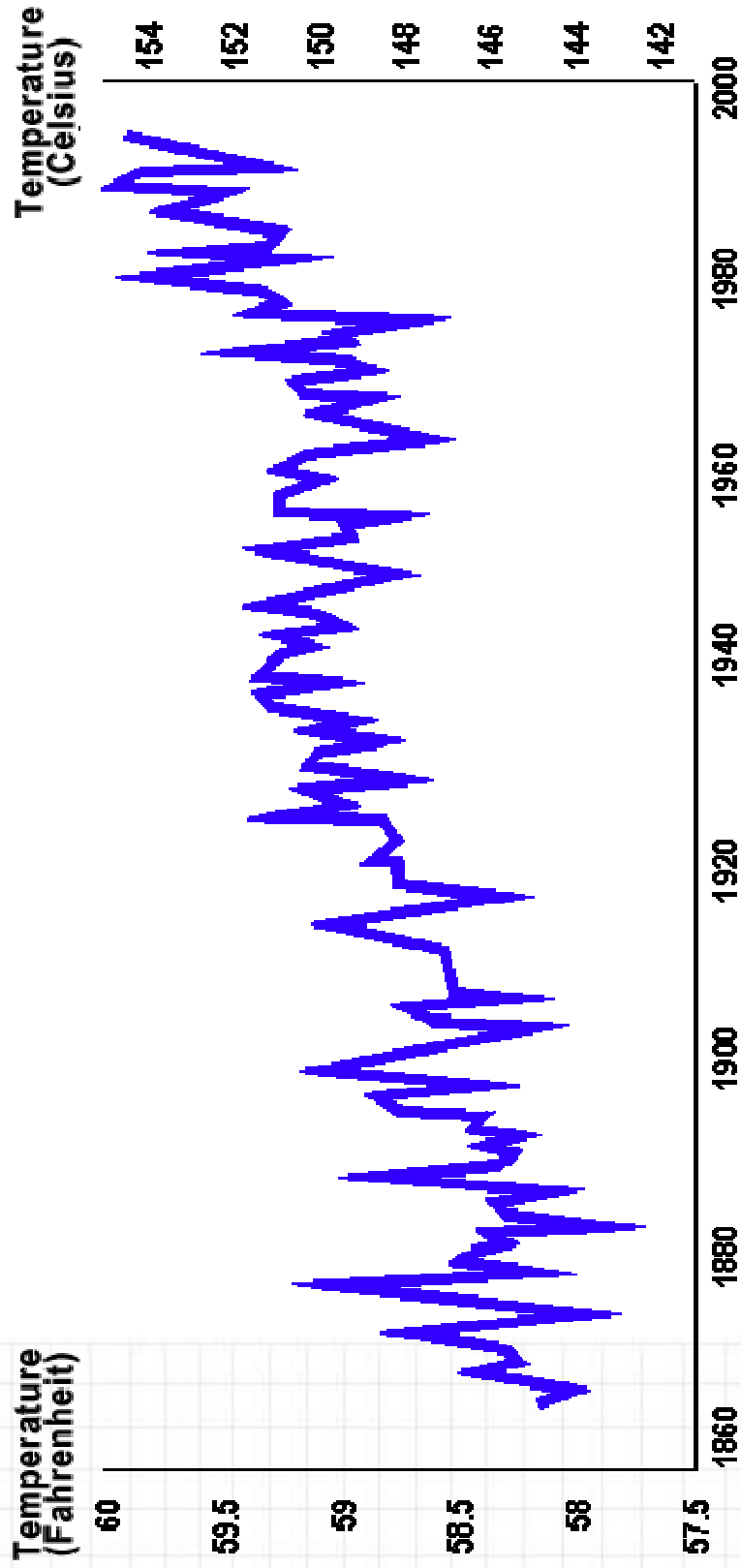


Global Trends: Atmospheric CO₂ emissions are rising





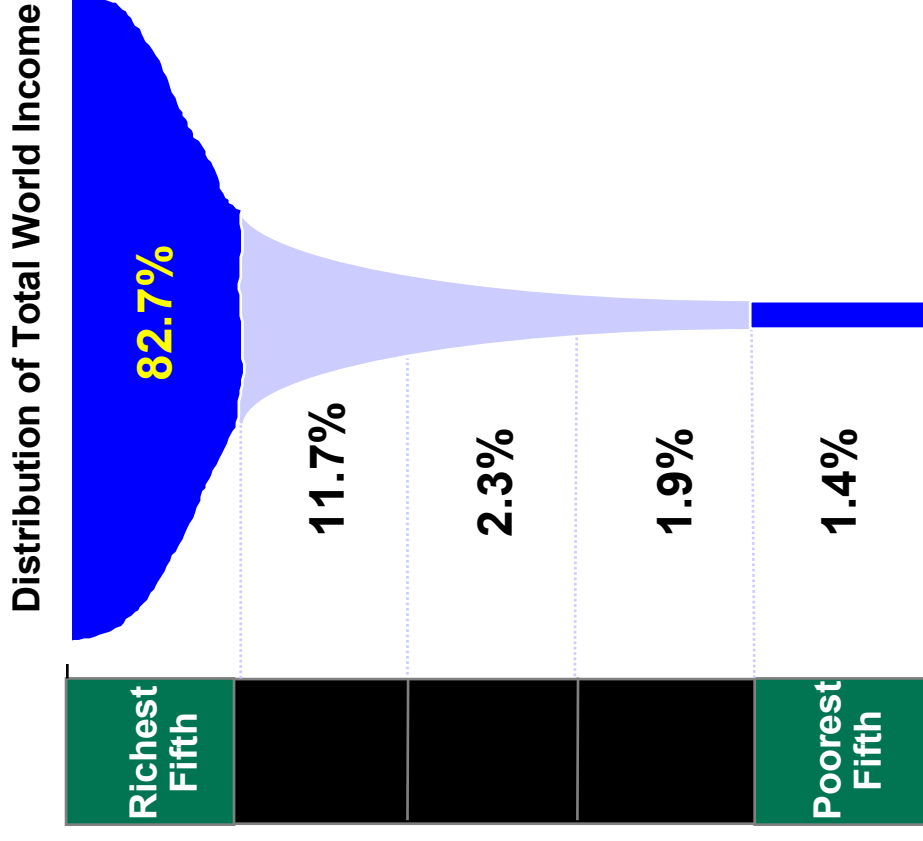
Surface temperatures have warmed over the past century





Inequity: At the same time, millions of people worldwide are struggling to meet their basic needs

- 1.3 billion people live in absolute poverty, with incomes less than \$1/day (World Bank)
- 841 million people in developing countries suffer from basic protein-energy malnutrition (UN Food and Agriculture Organization)
- Nearly 1 billion people either cannot work or are employed in jobs where they cannot support their family (International Labor Organization)



(UNDP, Human Development Report 1992)



How many planets would we need if all the world's population lived like an average North-American?

WWF - Living Planet Report - Windows Internet Explorer

http://www.panda.org/news_facts/publications/living_planet_report/index.cfm

how many planets

WWF - Living Planet Report

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Living Planet Report

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- > Using report graphics

Living Planet Report

How many do we need?

Humanity's demands exceed our planet's capacity to sustain us

The Living Planet Report is WWF's periodic update on the state of the world's ecosystems.

It describes the changing state of global biodiversity and the pressure on the biosphere arising from human consumption of natural resources.

It is built around two indicators:

- the **Living Planet Index**, which reflects the health of the planet's ecosystems; and
- the **Ecological Footprint**, which shows the extent of human demand on these ecosystems.

These measures are tracked over several decades to reveal past trends, then



How many planets would we need if all the world's population lived like an average North-American?

5 Planets!!!

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One Planet Living

If we all lived like an average North American we would need **five** planets

Concerned about your environmental

Our vision: a world in which people everywhere can lead happy, healthy lives within their fair share of the earth's resources, leaving space for wildlife and wilderness.

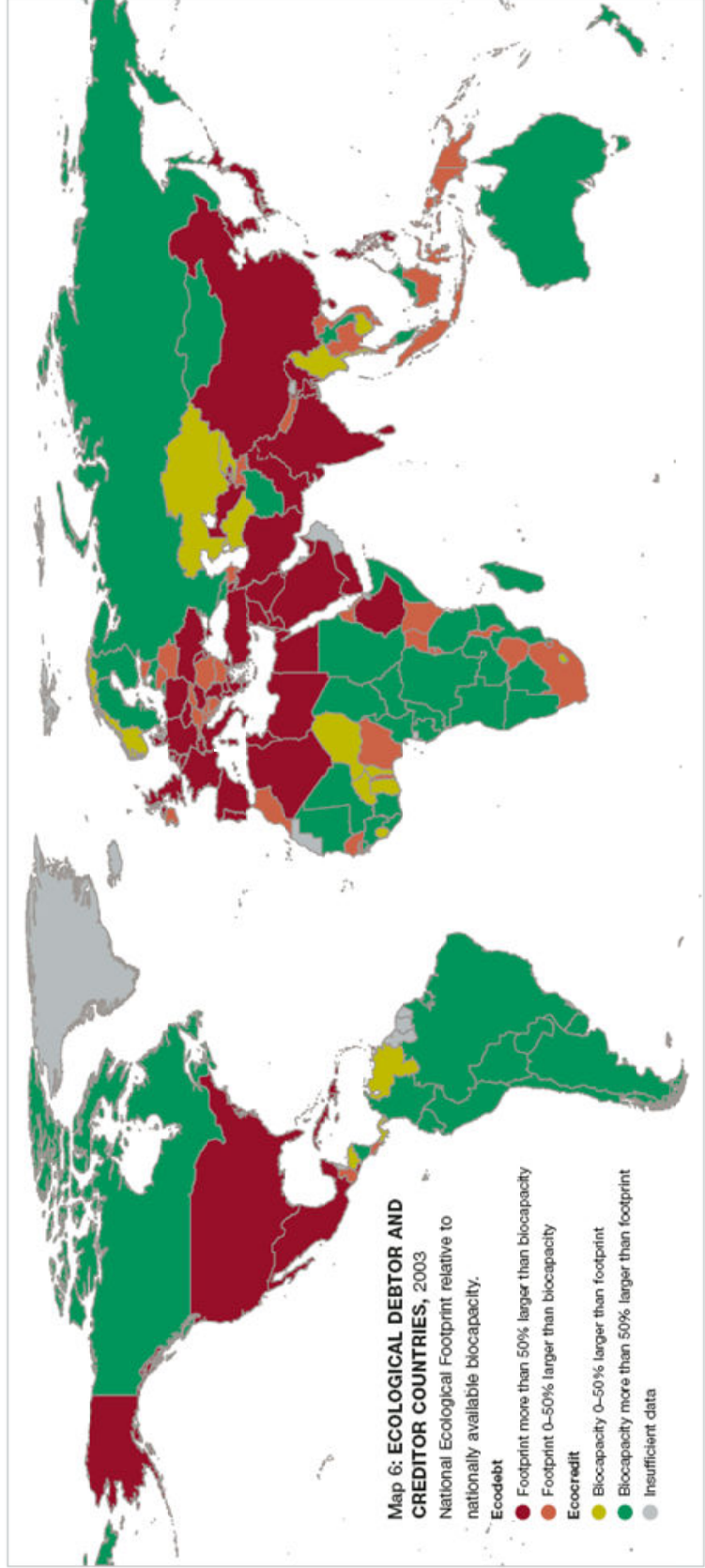
“ One Planet Living will allow us to make a difference on a scale, and with the urgency that all of



World's Ecological Footprint

Sustainability Dilemma

ECOLOGICAL FOOTPRINT





World's Ecological Footprint

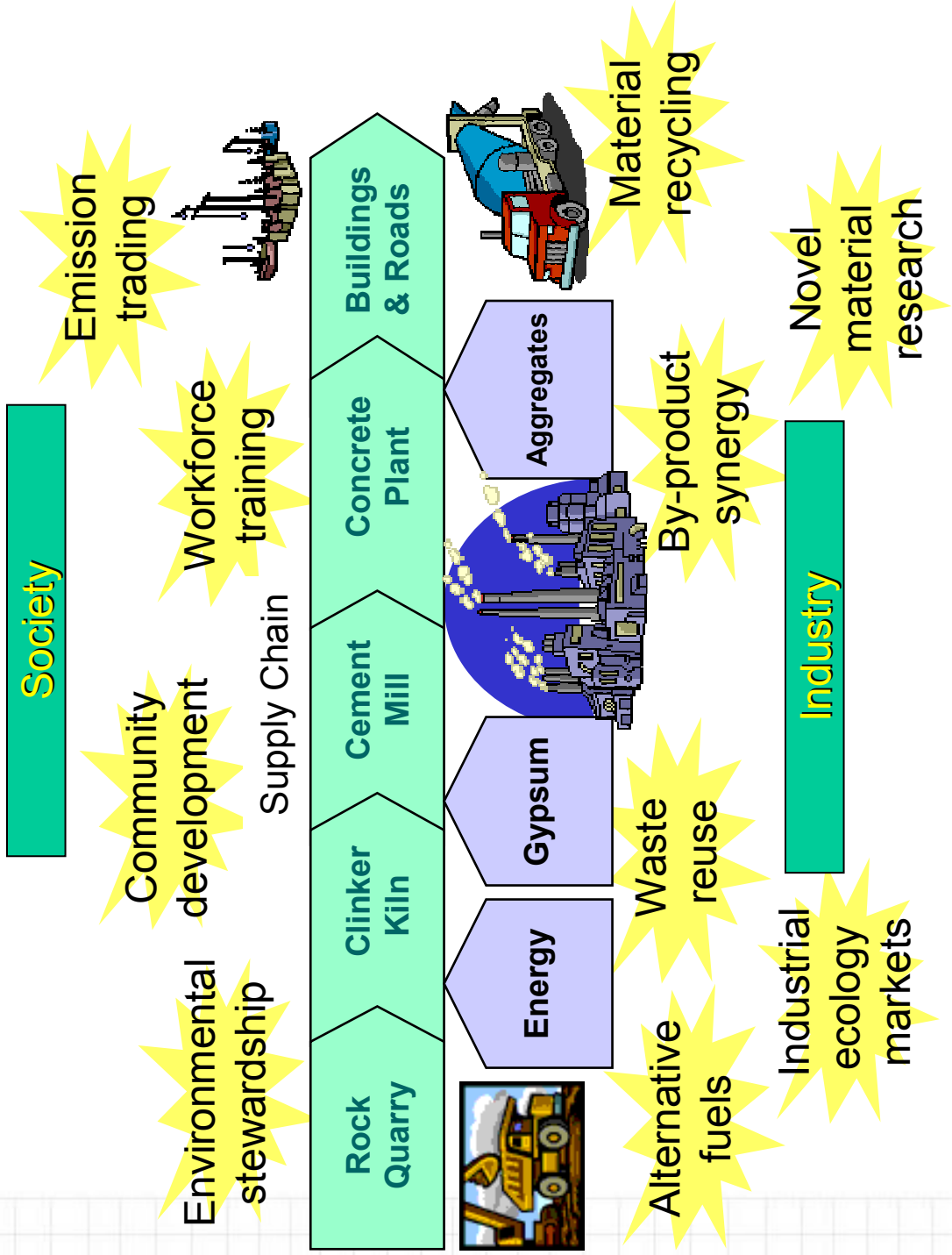
Table 1: ECOLOGICAL DEMAND AND SUPPLY IN SELECTED COUNTRIES, 2003

	Total Ecological Footprint (million 2003 gha)	Per capita Ecological Footprint (gha/person)	Biocapacity (gha/ person)	Ecological reserve/deficit (-) (gha/person)
<i>World</i>	14 073	2.2	1.8	-0.4
United States of America	2 819	9.6	4.7	-4.8
China	2 152	1.6	0.8	-0.9
India	802	0.8	0.4	-0.4
Russian Federation	631	4.4	6.9	2.5
Japan	556	4.4	0.7	-3.6
Brazil	383	2.1	9.9	7.8
Germany	375	4.5	1.7	-2.8
France	339	5.6	3.0	-2.6
United Kingdom	333	5.6	1.6	-4.0
Mexico	265	2.6	1.7	-0.9
Canada	240	7.6	14.5	6.9
Italy	239	4.2	1.0	-3.1

Notes: Totals may not add up due to rounding. For an explanation of global hectares (gha) see page 38.



These trends can create strategic business opportunities (Sustainable Development)





But these trends can also create **business constraints**

Environmental & Social Impacts

- Water shortages
- Increasing toxicity
- Deforestation
- Water contamination
- Landfill shortage
- Lack of employment
- Lack of housing
- Income disparity

Legal/Market Constraints

- Regulation
- Insurance/banks
- Consumer/NGO pressure

Actual Constraints

- Water shortages
- Waste disposal overloaded
- Political unrest
- Economic recession

Business Implications

- Cost increases
- New compliance requirements
- Unpredictable energy/ raw material supply
- Reduced consumer demand
- Volatile markets



Like other extractive, energy-intensive industries, the cement industry is not on a sustainable path

- Major industry aspects are arguably unsustainable:
 - Quarrying impacts
 - Depletion of minerals
 - Energy use (quarrying and production)
 - Carbon dioxide emissions
- The market for cement could be influenced by emergence of “preferred” alternative construction methods and materials.
- The large energy requirements of cement production will become untenable in the face of rising costs and global warming concerns.
- Vast emerging markets in Asia may not follow the same consumption patterns as the developed nations.
- Cement plant expansion initiatives face increasing resistance from local communities as well as NGOs and other stakeholders, so that maintaining “right to operate” is more costly and time-consuming.



Sustainability is driving a new wave of binders with less than 10% clinker in the US market

This is the new message: Binders vs Portland cement

! CERATECH's binder technology will eliminate 1 ton of CO² emitted into the atmosphere per ton of material produced

Worldwide, the production of Portland cement alone accounts for 6 - 8% of all human generated CO² greenhouse gas*

CERATECH MATERIAL PRODUCTION PROCESS

- Industrial Waste Stream Material
- inert Minerals
- Fuel/Grease Oils
- Low Energy Mechanical Blender
- Final Products
- Bulk Containers
- End User
- End User

PORTLAND CEMENT PRODUCTION PROCESS

- Water & Dry Natural Resources
- SLURRY
- CRINDING
- BLENDING
- High Energy Kiln
- COOLERS
- MIX
- CRINDING
- Portland Cement

For more information log on to www.ceratechinc.com
***Research & statistics acquired from EPA**

1/17/08



Societal expectations are changing regarding how global business affects these trends and its responsibilities to address them

Poll of 25,000 adults in 23 countries in 1999 found:

- ✓ 90% want companies to focus on more than profitability
- ✓ 73% say companies should be responsible for protecting the environment
- ✓ 56% judge companies on 'social responsibilities'
- ✓ Over 60% in Europe and America consider punishing companies who are not socially responsible

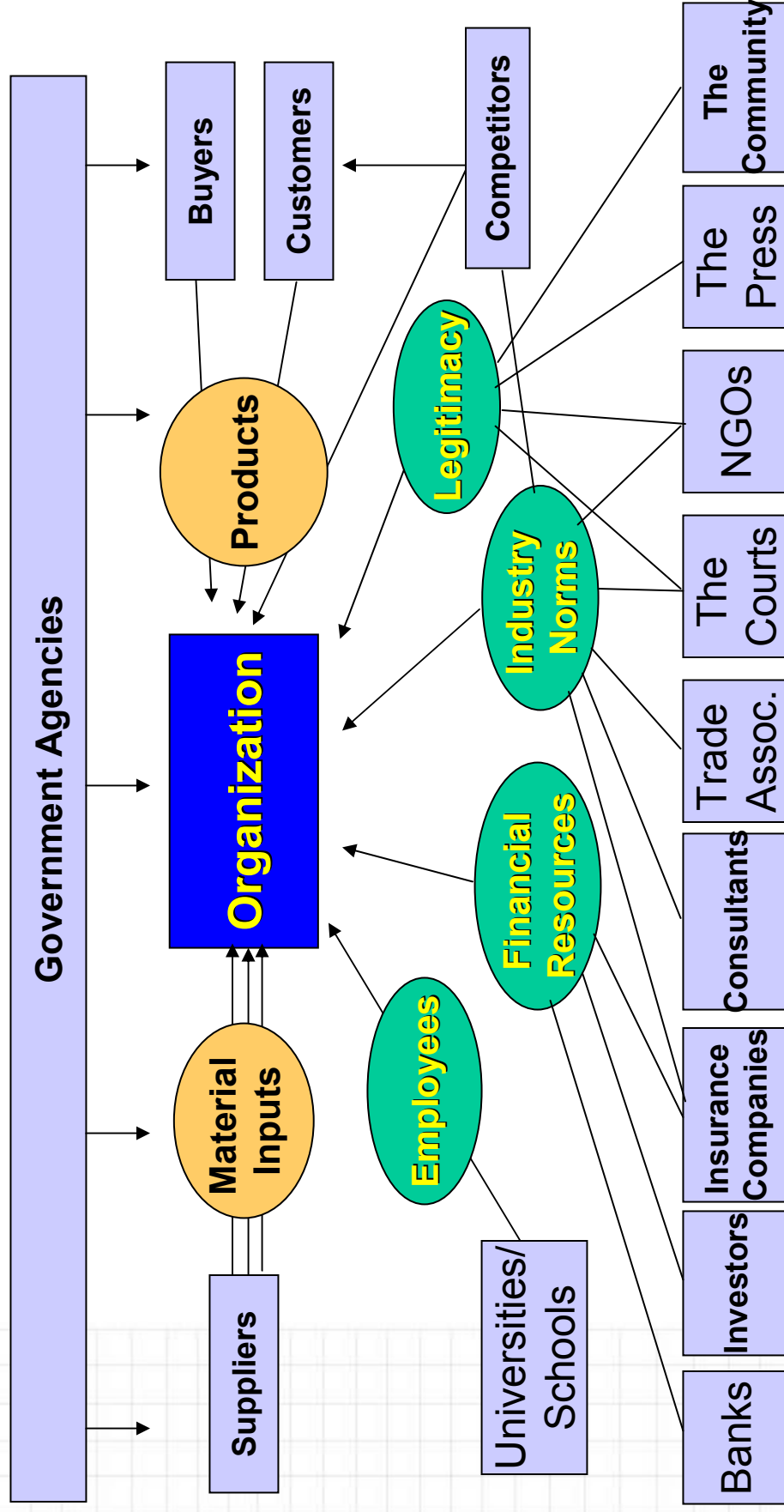
We cannot wait for governments to do it all...you, in business, labor and civil society organizations, have skills and resources that are vital in helping to build a more robust global community.

Kofi Annan, former UN Secretary General

Poll conducted by Environics



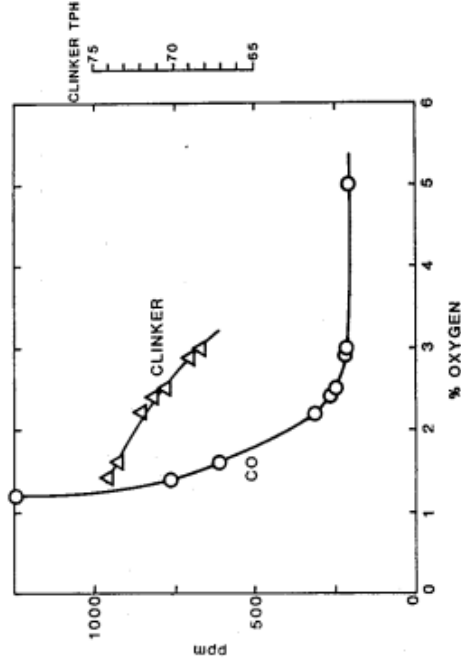
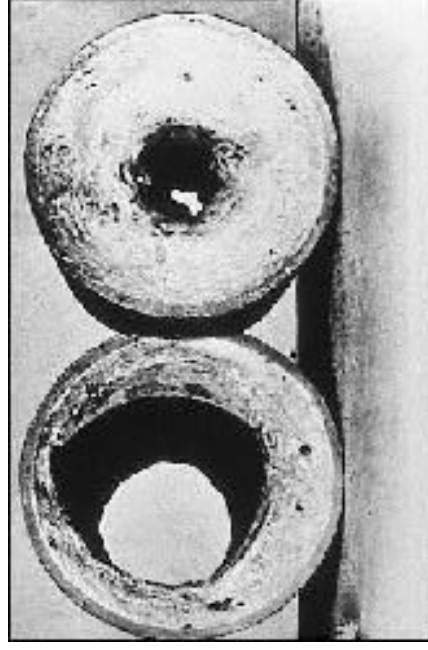
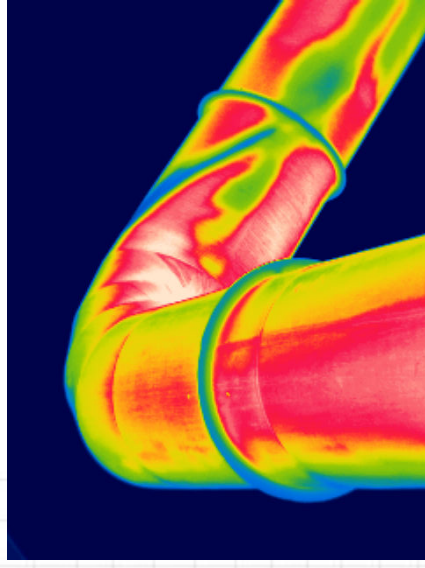
Each company is embedded in a web of relationships that can create pressure for action



Source: Hoffman, Competitive Environmental Strategy



The sulfur challenge: build-ups, plugs & production loss



Kiln Production vs. Excess Oxygen²



The sulfur paradigms in the cement industry

Old sulfur paradigm (XIX-XX centuries)

- ✓ Minimize sulfur in the process to avoid build-ups and plugs in the kiln
- ✓ Strict control of sulfur in the process to keep it at the minimum possible (raw materials and fuels).
- ✓ Balance $\text{SO}_3/\text{Na}_2\text{Oeq}$ ratio ~ 1.0
- ✓ SO_3 clinker < 1.0
- ✓ SO_3 cement $< 3.5\%$

New sulfur paradigm (XXI century)

- ✓ Optimize sulfur in the process to be flexible and to minimize variable cost of cement
- ✓ Strict control of sulfur in the process to assure desired sulfur phases in clinker
- ✓ $\text{SO}_3/\text{Na}_2\text{Oeq}$ ratio $\gg 1.0$
- ✓ SO_3 clinker $\gg 1.0$
- ✓ SO_3 cement $\gg 3.5\%$



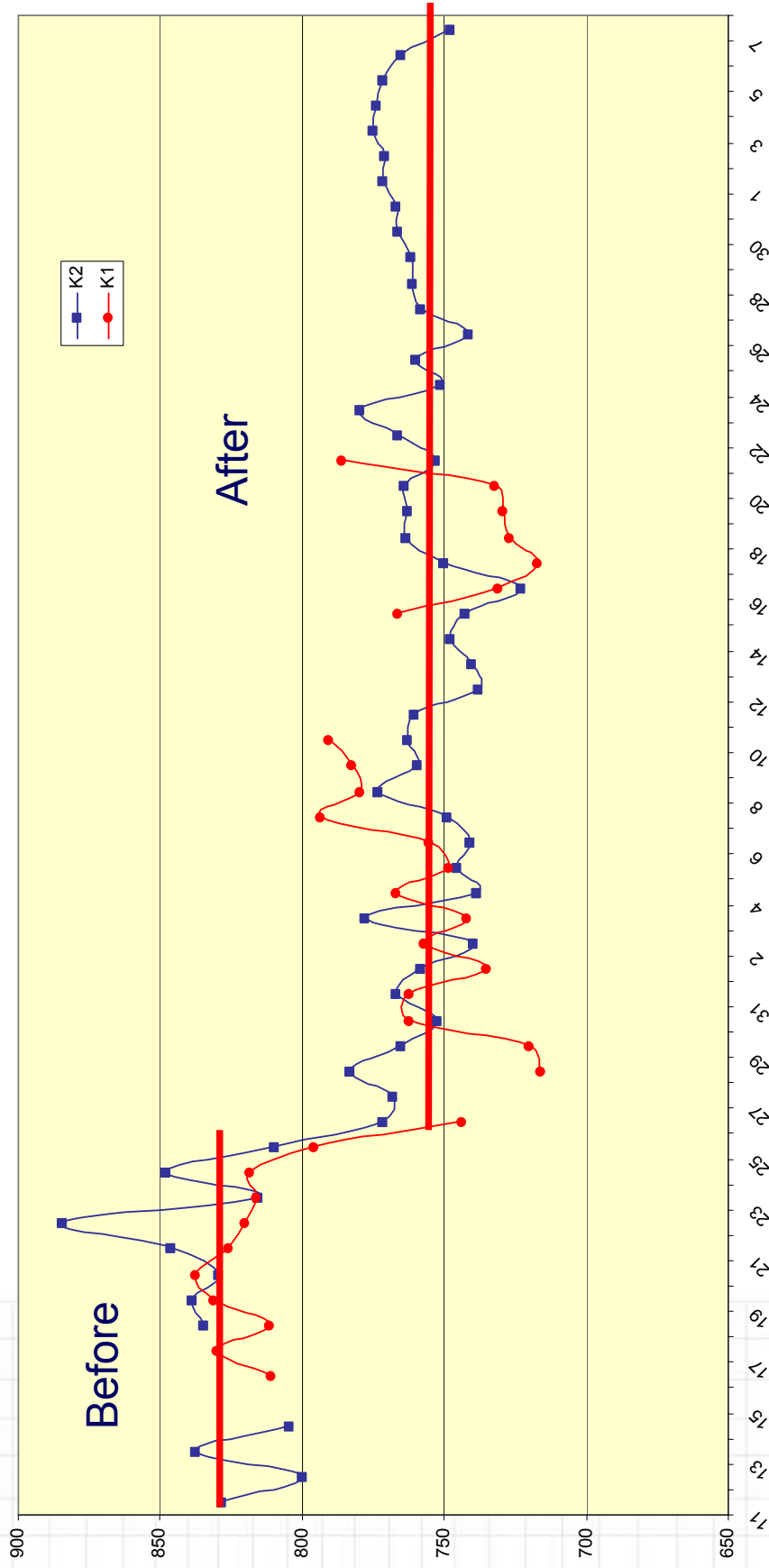
CX's response to the Sulfur challenge: Calcium sulfoaluminate cement (C_4A_3S)

Chemical Composition	Calcium Sulfoaluminate Cement	Calcium Aluminate Cement	Calcium Silicate Cement (Portland type I)
	% weight		
SiO ₂	13.3	5.0	20.2
Al ₂ O ₃	14.6	40.5	5.5
Fe ₂ O ₃	1.8	16.0	2.2
CaO	52.0	38.0	63.9
MgO	2.1	0.3	2.0
SO ₃	14.0	0.0	3.4
Na ₂ O	0.29	0.13	0.27
K ₂ O	0.64	0.05	0.79
LOI	1.2	0.3	2.8
NaO eq	0.71	0.16	0.79
Insoluble residue	0.45	4.62	0.24
Free-lime	0.37	0.11	0.73
Mineralogical composition by XRD			
Main phases	C ₄ A ₃ S, C ₂ S, C ₃ S	CA, C ₂ F	C ₃ S, C ₂ S
Secondary phases	C ₄ AF, C ₃ S	Fe ₃ O ₄ , C ₄ AF	C ₃ A, C ₄ AF



CX's response to Sulfur challenge: Low Temperature Clinker

Reduction of specific thermal consumption at the kiln (Kcal/Kg clinker)





CX's response to Sulfur challenge: CREA™ Cement

Mineral Phase composition	Clinker phases (%)					SO ₃ in clinker (%)	Calcination Temperature °F (°C)	SO ₃ in cement (%)	Compressive strength (Mpa)			
	C ₃ S	C ₂ S	C ₃ A	C ₄ A ₀ S	C ₁₁ A ₇ .CaF ₂				CS	1 day	3 days	7 days
1	61	24	0	9	4	3	2282 (1250)	6	16	32	44	50
2	61	24	0	12	0	3	2282 (1250)	6	22	34	51	65
3	61	24	7	3	0	3	2462 (1350)	4	15	29	43	57
Typical calcium silicate cement	63	23	14	0	0	0.2	2642 (1450)	3	20	27	39	52



CX's Sustainability Strategy:

“To run highly efficient and profitable business that ensures the well being of employees, protects the environment and contributes to the development of communities”

THIS IS CEMEX / PRODUCTS & SOLUTIONS / CEMEX PEOPLE / SUSTAINABILITY / INVESTOR CENTER / MEDIA CENTER / OUR COMMITMENT / OUR PEOPLE / ENVIRONMENT / SOCIETY / CASES AND AWARDS / REPORTS

Our path toward sustainability

Message from our CEO / Our approach / Our stakeholders / Global partnerships / Our sustainability history

For CEMEX, sustainability means continually increasing long-term competitiveness and conducting our operations with the least possible impacts, while reaching out to our stakeholders to foster positive long-term relationships.

Our sustainability strategy is to run a highly efficient and profitable business that ensures the safety and well-being of employees, protects the environment, and contributes to the development of our communities.

This strategy is based on our Code of Ethics and the following key drivers:

2007 Sustainable Development Interim Report

CEMEX Worldwide

Cemex: Patrimonio Hoy

A Case Study Discussion prompted by

“Cemex: Innovation in Housing for the Poor”
Research directed by C.K. Prahalad



Modify the Tanda Savings Model

- Pool money as a group savings club
- Savings are distributed by lottery
- Cemex modified Grameen Bank's model
- 3 changes for Patrimonio Hoy
 1. Build brand trust among low-income consumers
 2. Extend credit and skills where there were none
 3. Shift managers' focus from sales to solutions

© World Resources Institute

Innovate the Construction Business

CX's Sustainable Initiative



Patrimonio Hoy = Inheritance Today

Lesson Learned from Mexico's 1994 Economical Crisis

Patrimonio Hoy is a micro financing program for low income families that wish to build or improve their homes




- Micro-Credit**
 - CEMEX finances 80% of the cost of materials
 - Commits groups of 3 participants
- Building Materials***
 - Supply and delivery
 - Fixed prices during the project cycle
 - Storage service
- Technical Support**
 - Technical assistance and project
- Fast and Safe**
 - Reduces time by 65% and costs by 35%
 - Increases quality functionality
- Accessible**
 - Weekly payments of US\$14.8, with service centers in their communities

By improving life conditions through housing, Patrimonio Hoy supports a healthier development and family integration.

* Cement, reinforcing steel, blocks, bricks, aggregates



Cement Sustainability Initiative (CSI) Goals and Progress of the "Agenda for Action"



2007
SUSTAINABLE DEVELOPMENT
INTERIM REPORT

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sustainability targets and performance

SUSTAINABILITY

targets and performance

This table gives an overview of our sustainability progress¹. We are committed to improving our performance in all areas and will continue to disclose our achievements and challenges. Some targets may be revised in the future to reflect the continued growth of our company.

Area	Indicator	Targets	2007 Progress	Page #
Employee Health and Safety	Participation in our employee health program ²	100% by 2010	▲	6-7
	Drivers certified by our training programs	100% by 2010	◆	6-7
	Lost Time Injury frequency rate for direct employees ³	5.0 by 2010	▲	6-7
Local Impact on Land and Communities	Active sites with quarry rehabilitation plans	82% by 2010 100% by 2015	✓ ▲	8-9
	Reduction in CO ₂ emissions per metric ton of cementitious product from 1990 baseline	25% by 2015	▲	8-9
CO ₂ and ClimateChange	Alternative fossil fuels substitution	10% by 2015 15% by 2020	▲	8-9
	Biomass fuels substitution	5% by 2015 8% by 2020	▲	8-9
	Alternative raw materials substitution	12% by 2015 15% by 2020	✓ ▲	8-9
Use of Alternative Fuels and Raw Materials	% of clinker produced with continuous monitoring of major emissions (dust, NOx and SOx)	50% by 2010 100% by 2020	▲	8-9
	Reduction in specific emissions per ton of clinker from 2005 baseline	50% for dust by 2015 15% for NOx by 2015 10% for SOx by 2015	▲ ▲ ▲	8-9

▲ Positive progress ▼ Negative progress ◆ Measurement in progress ✓ Target achieved, we keep working towards our longer-term objectives

1. Except for health and safety, and for the reasons stated in 'About this report', indicators cover our cement operations only. We are working on upgrading our data systems to report the sustainability performance of all our business segments.
 2. The participation in our employee health program is reported for the first time, this figure excludes our US operations as health services there are managed externally.
 3. Our lost time injury frequency rate was previously reported as 'accident rate.' In contrast with past years, we adopted the industry standard to report the number of LTIs per 1,000,000 - rather than 200,000 - hours worked.



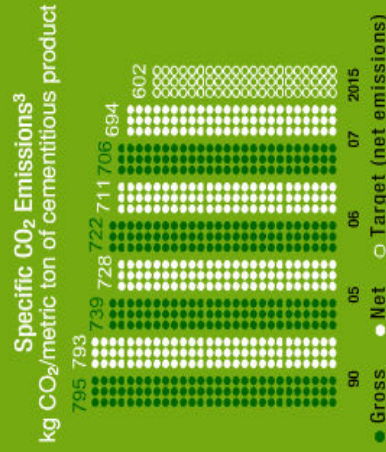
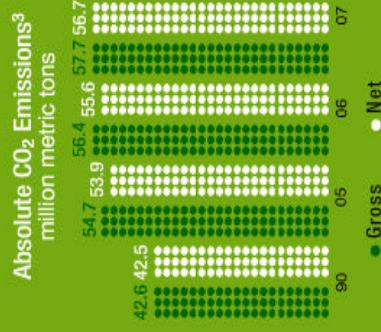
The CO2 challenge: Reduce 92 kg CO₂/metric ton of cementitious product by 2015

Cement Sustainability Initiative (CSI) CO₂ reduction Goal



2007
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INTERIM REPORT

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environmental commitment



We work in partnership with conservation groups to share expertise and improve the way we manage biodiversity. In December, we signed a ten-year agreement with BirdLife International, the largest global network of independent conservation organizations and a leading expert on protecting bird species. The agreement is based on previous work carried out with RMC before it was acquired by CEMEX. It commits us to prioritizing conservation in our quarries, and supporting wider conservation initiatives and awareness-raising among employees and communities.

CLIMATE CHANGE

Cement manufacturing is energy intensive, accounting for about 5% of carbon dioxide (CO₂) emissions globally. Energy is needed at all stages of production, from mining raw materials, crushing and milling, heating kilns, to packing and shipping the finished product.

Our emissions reduction strategy continues to be based on:

- **Reducing our energy use.** We use technology to improve energy efficiency, and use by-products from iron and steel making and coal-fired power stations as substitute materials in our cement. This allows us to save energy per ton of cement clinker we produce. Our use of alternative materials rose 50% to 12.8% of total material use—beating our 2015 target. We continue working to reach our 15% target by 2020
- **Using alternative fuels with lower CO₂ emissions.** Alternative fuels such as chipped tires, household waste, sewage sludge, animal meal, and secondary liquid fuels accounted for 7.0% of total energy use in 2007 up from 6.1% in 2006. Our target is to achieve 15% of alternative fuel substitution by 2015
- **Investing in renewable energy generation.** We continue developing projects under the UN Framework Convention on Climate Change. Among them, is the largest wind farm in Mexico with a capacity of 250 Megawatts, whose first stage will begin production in 2008. Once fully operational, it will supply 25% of our annual electricity needs in Mexico. Under the Kyoto Protocol's Clean Development Mechanism, we will be able to use the resulting carbon savings to offset emissions from operations located within regulated frameworks such as the European Union Emissions Trading Scheme (ETS).

3. The CO₂ emissions inventory was calculated according to the Cement CO₂ Protocol version 2.0 released in June 2005. The reporting perimeter includes our cement division: 63 cement plants and 20 cement grinding plants; 100% of the emissions of those operations over which there is operational control have been consolidated; recent acquisitions from Bunker are excluded. Net emissions are the result of gross emissions minus emissions from waste combustion (alternative fuels). The historical information was recalculated according with the results from the CO₂ verification process conducted in 2007.



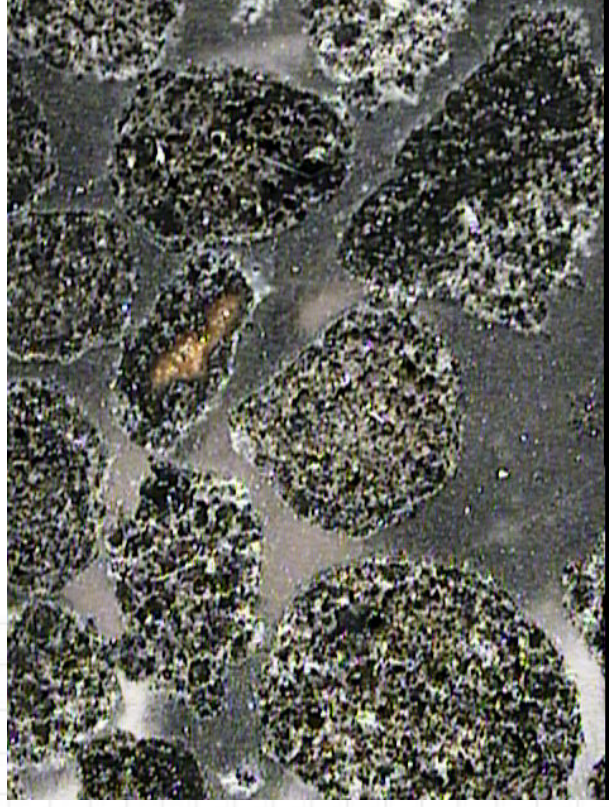
Another trends in the Industry impacting the Quality and performance of the cement

- **Emissions Reduction Battle:** As a result of the battle to reduce NOx, some Plants have been “lengthen their flames”, and the impact in clinker microscopy has been a reduction in alite birefringence (alite reactivity), slower cooling and in some cases the production of reducing conditions.
- **The use of multiple fuels** has presented a challenge to the steady state of the kilns, impacting the clinker quality.

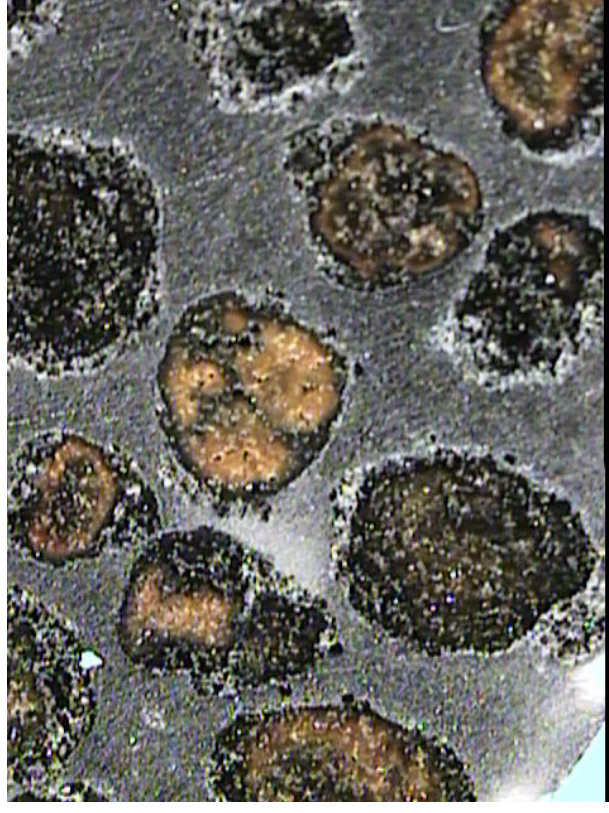


The Alternative fuels challenge: Kiln instability and potential reducing conditions

Kiln instability and significantly drop in cement strengths when they increase the amount of tires burned



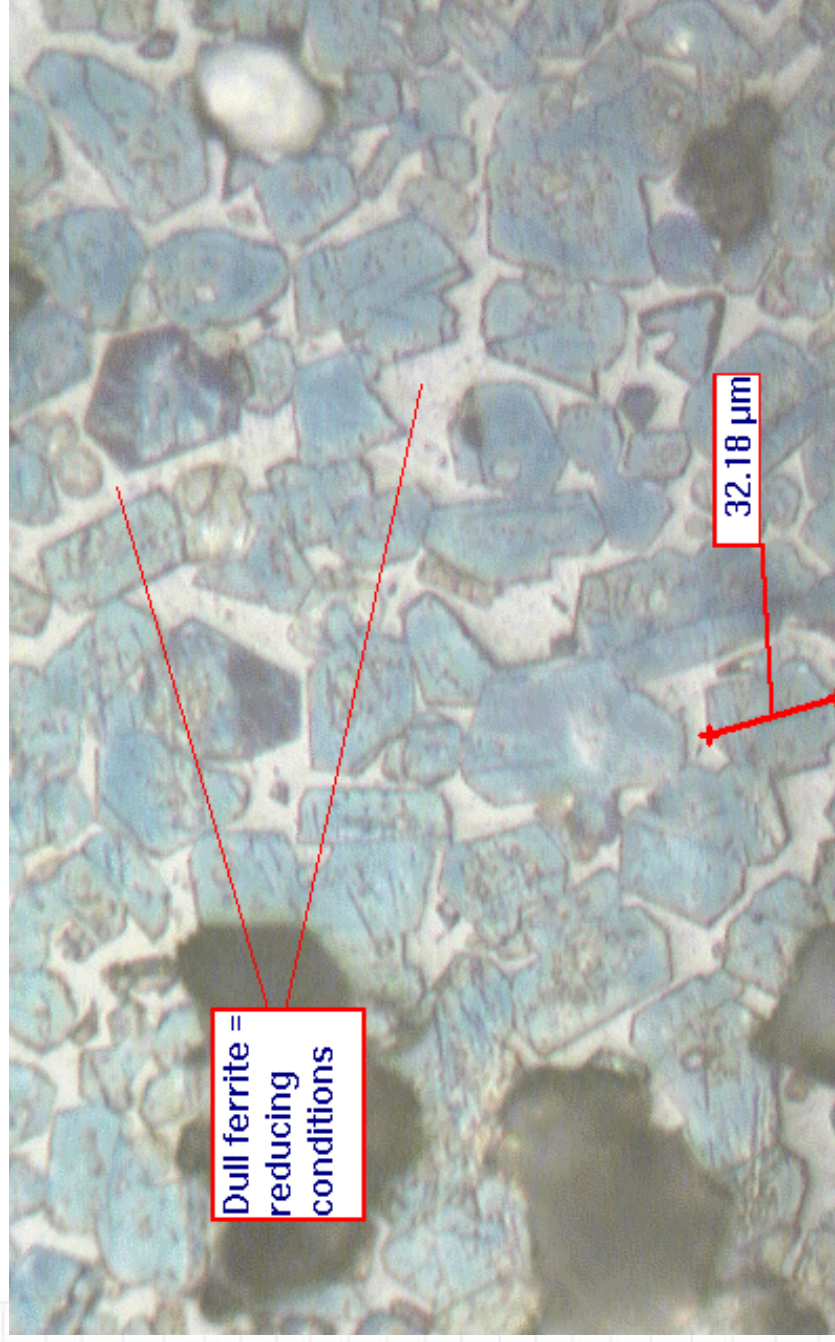
Clinker July 22



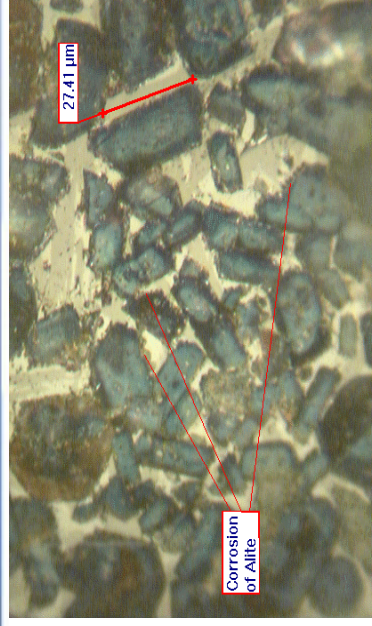
Clinker July 28

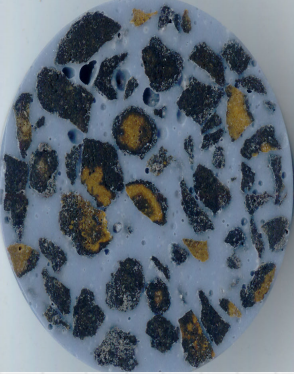
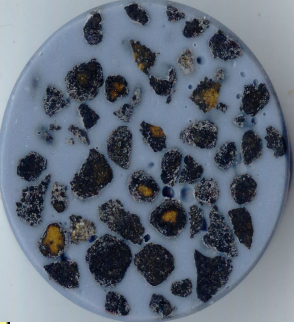
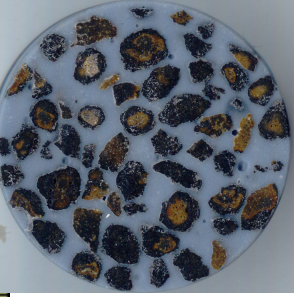
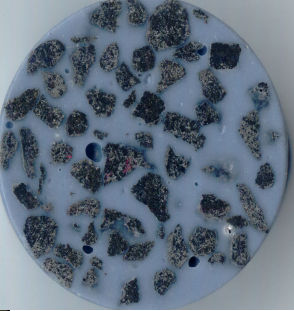
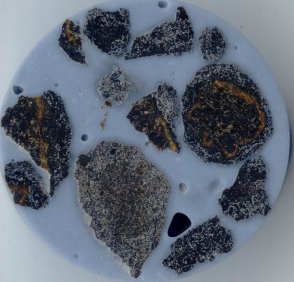


Dull ferrite, confirming reducing conditions in clinker

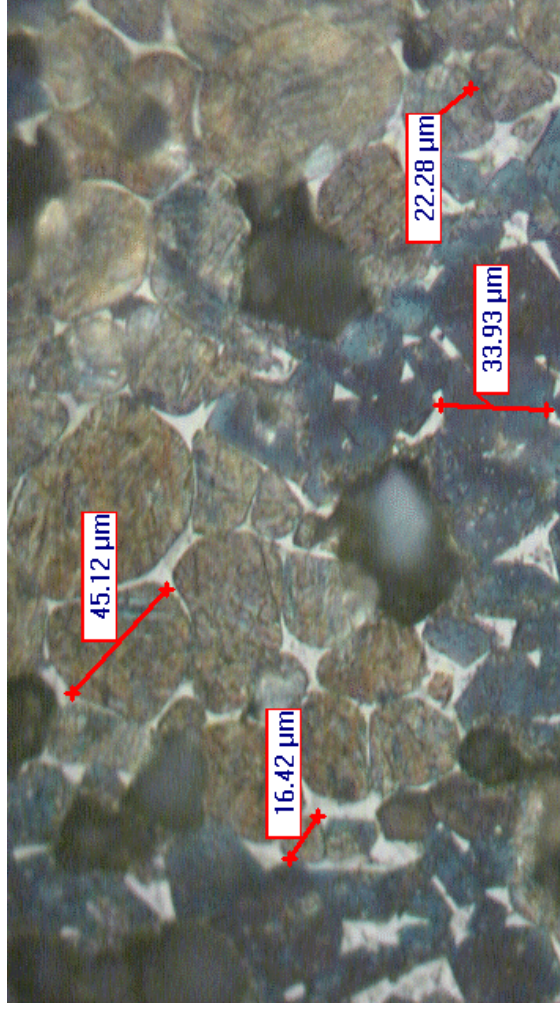
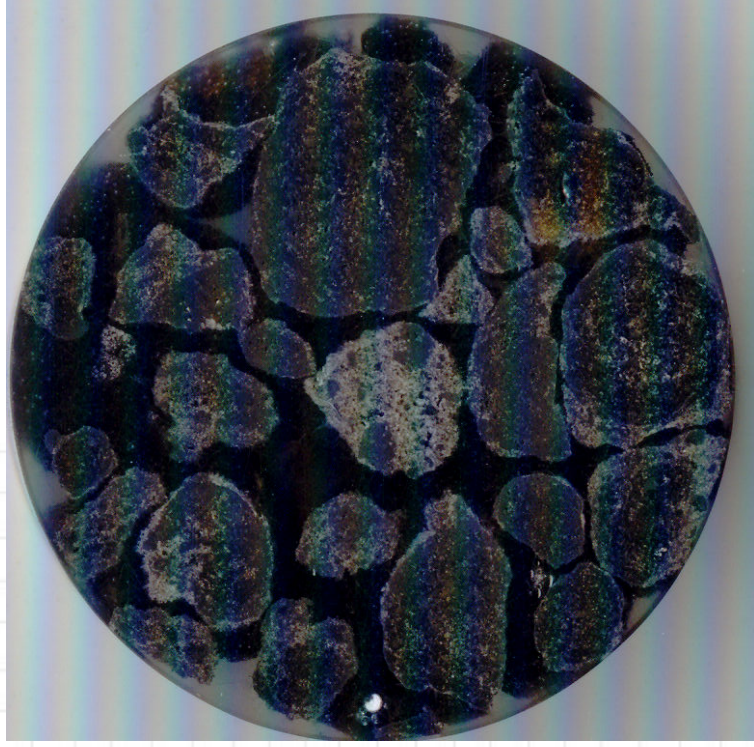


Impact of changes in process on clinker microscopy



Brown centers in clinker	++	
Brown centers in clinker	+	
Brown centers in clinker	+++	
Clinker completely black brown color is gone	none	
Some brown lines in clinker still observed	+	

After process adjustments reducing conditions are gone

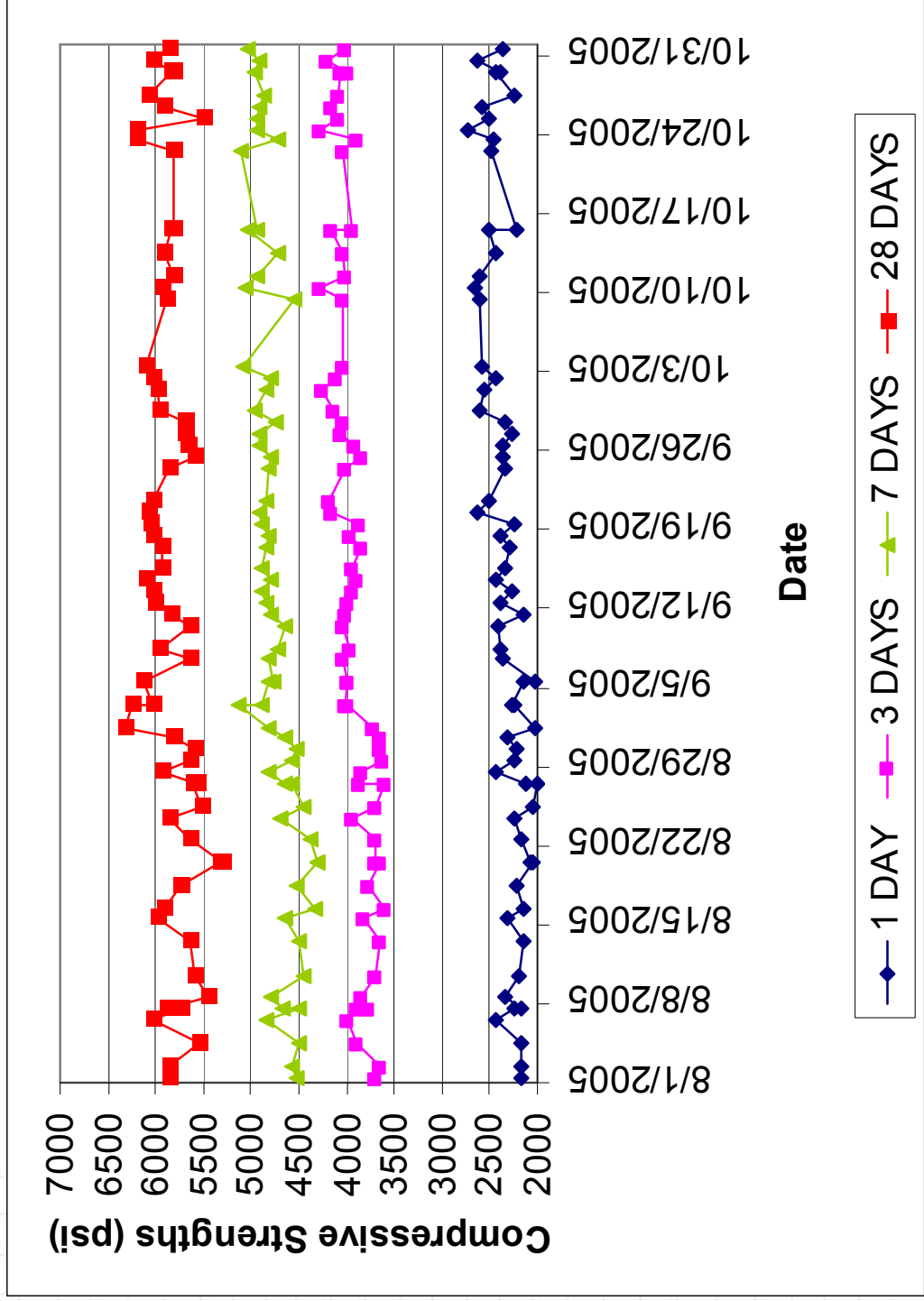


September 29 clinker

Alite corrosion and dull ferrite are gone



An compressive strengths improved



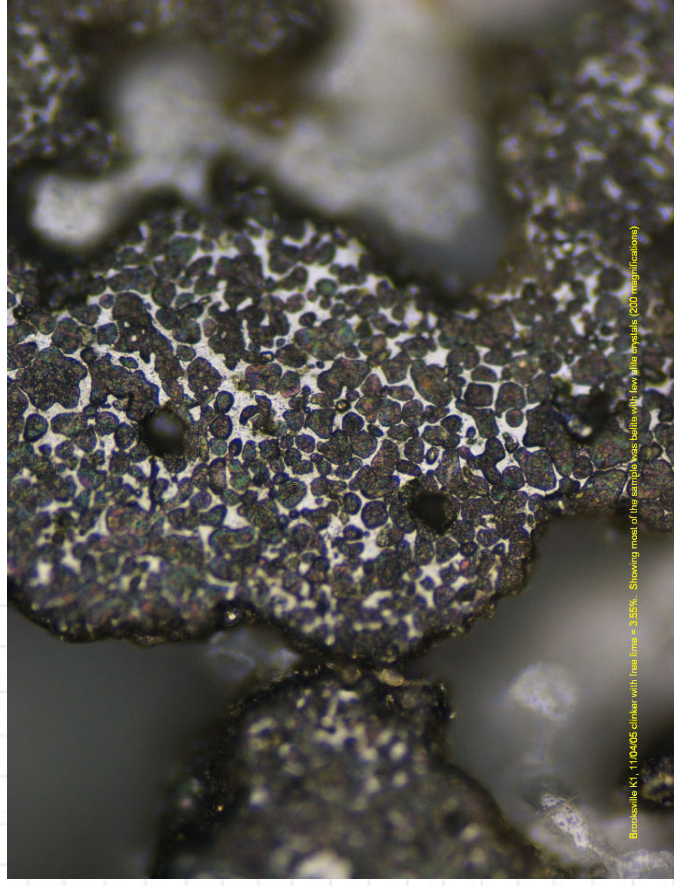


The cost of kiln instability: Effect of free lime in clinker microscopy

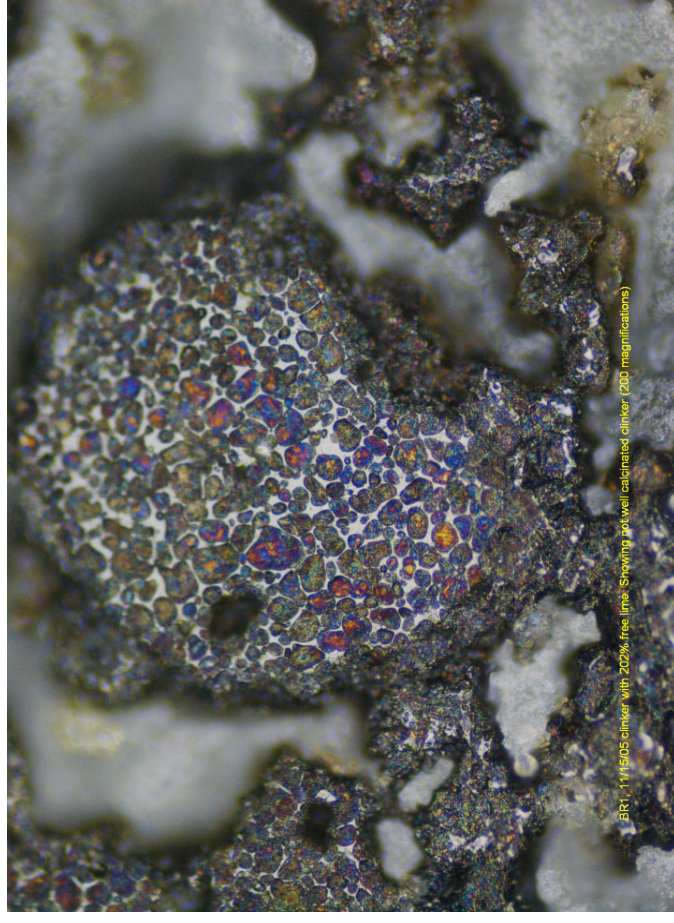
Sample	K1 clinker, 11-14 @ 10:00 hrs	K1 clinker, 11-15 @ 14:00 hrs	clinker, 11-15 @ 10:00 hrs	clinker, 11-18 @ 10:00 hrs
SiO ₂	21.93	22.67	22.91	20.63
Al ₂ O ₃	5.92	5.40	5.37	5.87
Fe ₂ O ₃	3.79	3.95	3.95	4.57
CaO	65.22	64.77	64.97	67.33
MgO	0.69	0.82	0.83	0.59
SO ₃	0.97	0.63	0.56	0.79
Na ₂ O	0.10	0.08	0.08	0.10
K ₂ O	0.49	0.41	0.39	0.12
Total alkali	0.42	0.35	0.34	0.18
Free-lime	3.55	2.02	0.97	0.31
C ₃ S	50.82	47.61	47.03	68.99
C ₂ S	24.51	29.04	30.17	7.08
C ₃ A	9.28	7.63	7.54	7.82
C ₄ AF	11.53	12.02	12.02	13.91
Liquid Phase	27.56	26.40	26.29	28.71



The cost of kiln instability: Effect of free lime in clinker microscopy



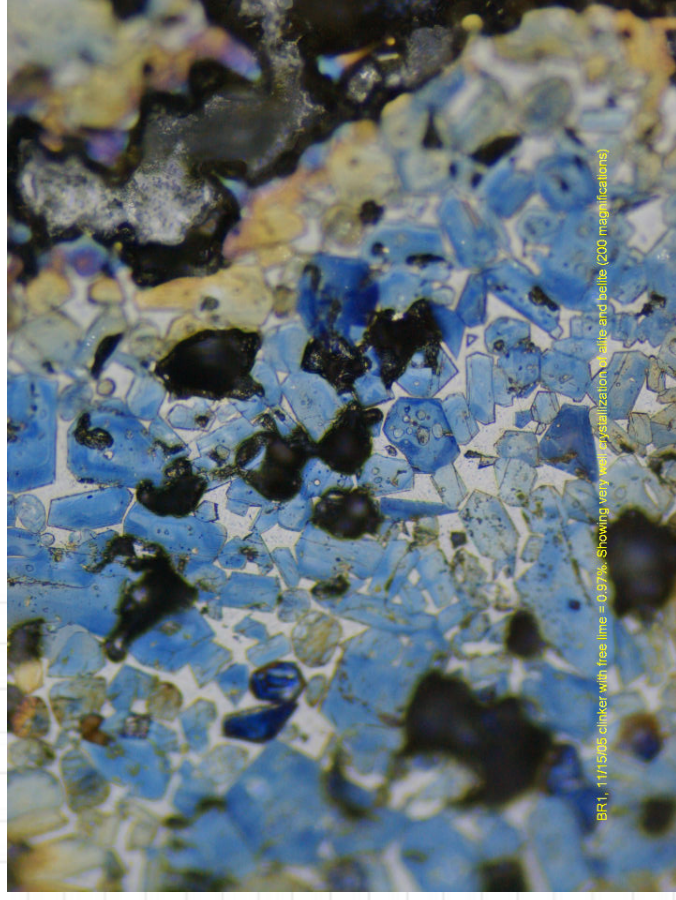
Clinker K1, 11-14 @ 10:00, FL = 3.55%



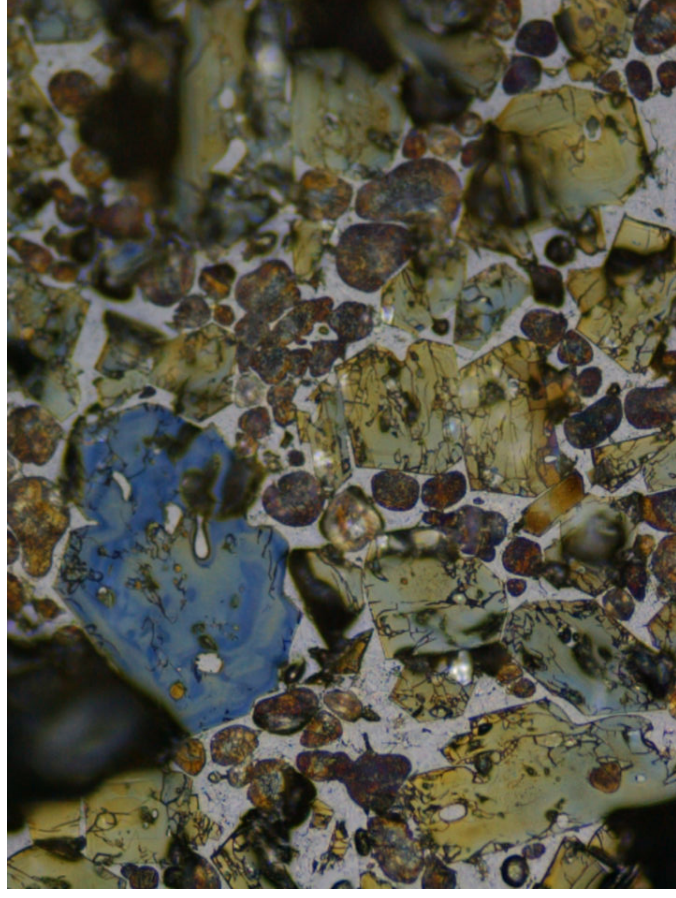
Clinker K1, 11-15 @ 14:00, FL = 2.02%



The cost of kiln instability: Effect of free lime in clinker microscopy



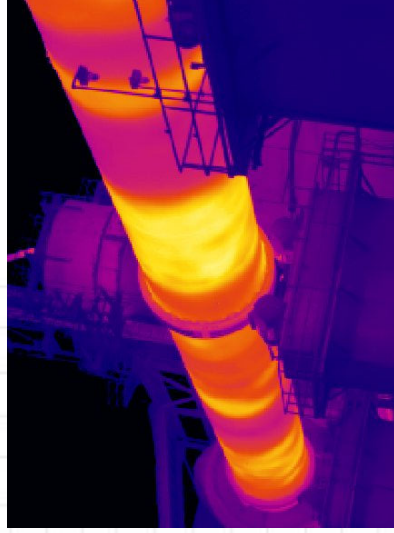
Clinker K1, 11-15 @ 10:00, FL = 0.97%



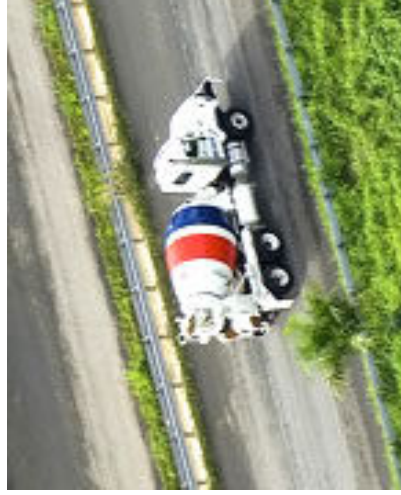
Clinker K1, 11-18 @ 10:00, FL = 0.31%



Sustainability Challenge for the Construction Industry: ≥ Performance and ↑ Sustainability:



+



=



Cement technology
already proven in other CX markets

Concrete Expertise

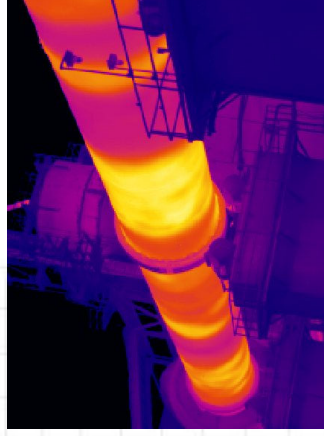
≥ Performance and
+ Sustainability



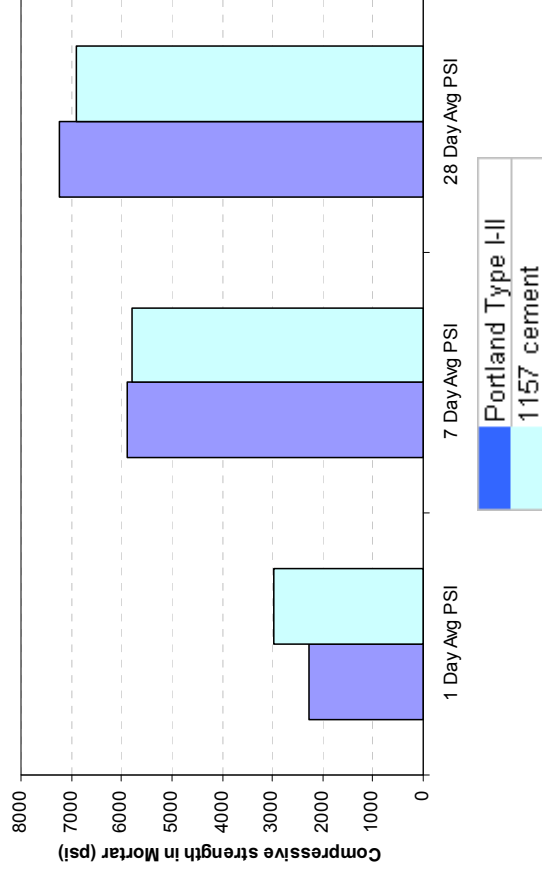
1157 cements with limestone

Cement Characteristics:

- Strength development in the typical range of a type I-II cement
- Certify as a 1157 cement
- Blaine in the 5000 range with no negative impact on the water demand
- Initial Vicat in the 80-100 minutes range.
- Color is lighter compared to type I-II cement
- Reduces the CO2 footprint compared to type I-II cement
- Complies with ASTM C-1038



Cement technology
already proven in other CX markets

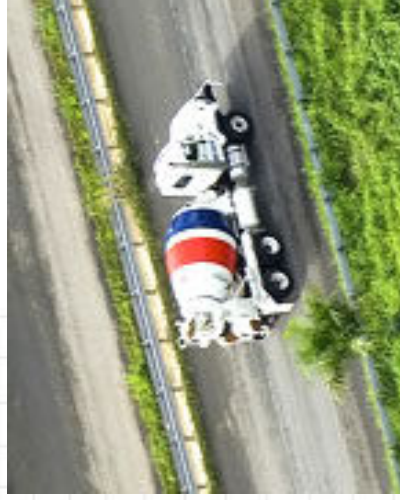




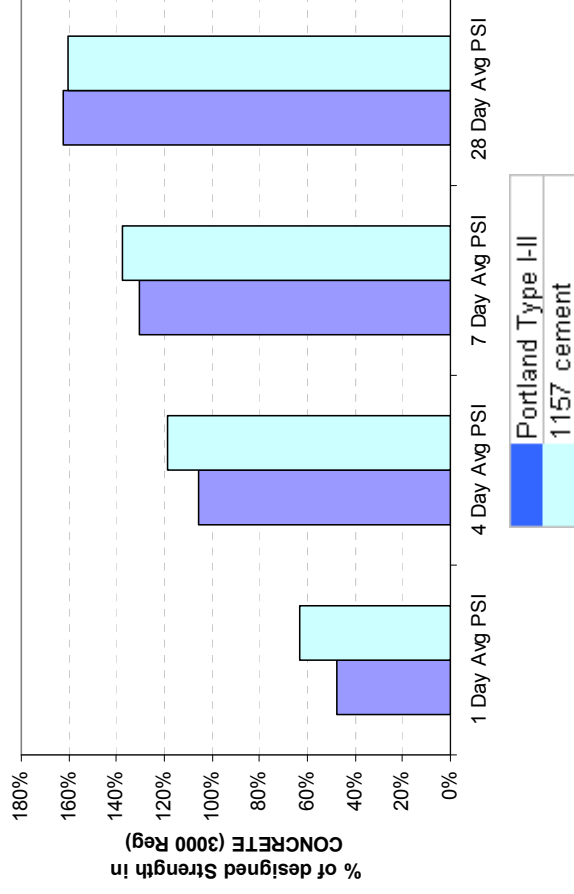
Concrete Performance using 1157 cement

Concrete Characteristics:

- Strength development, water demand, bleed, and initial setting are comparable to a concrete made using a typical I-II cement
- Better workability than a typical type I-II concrete

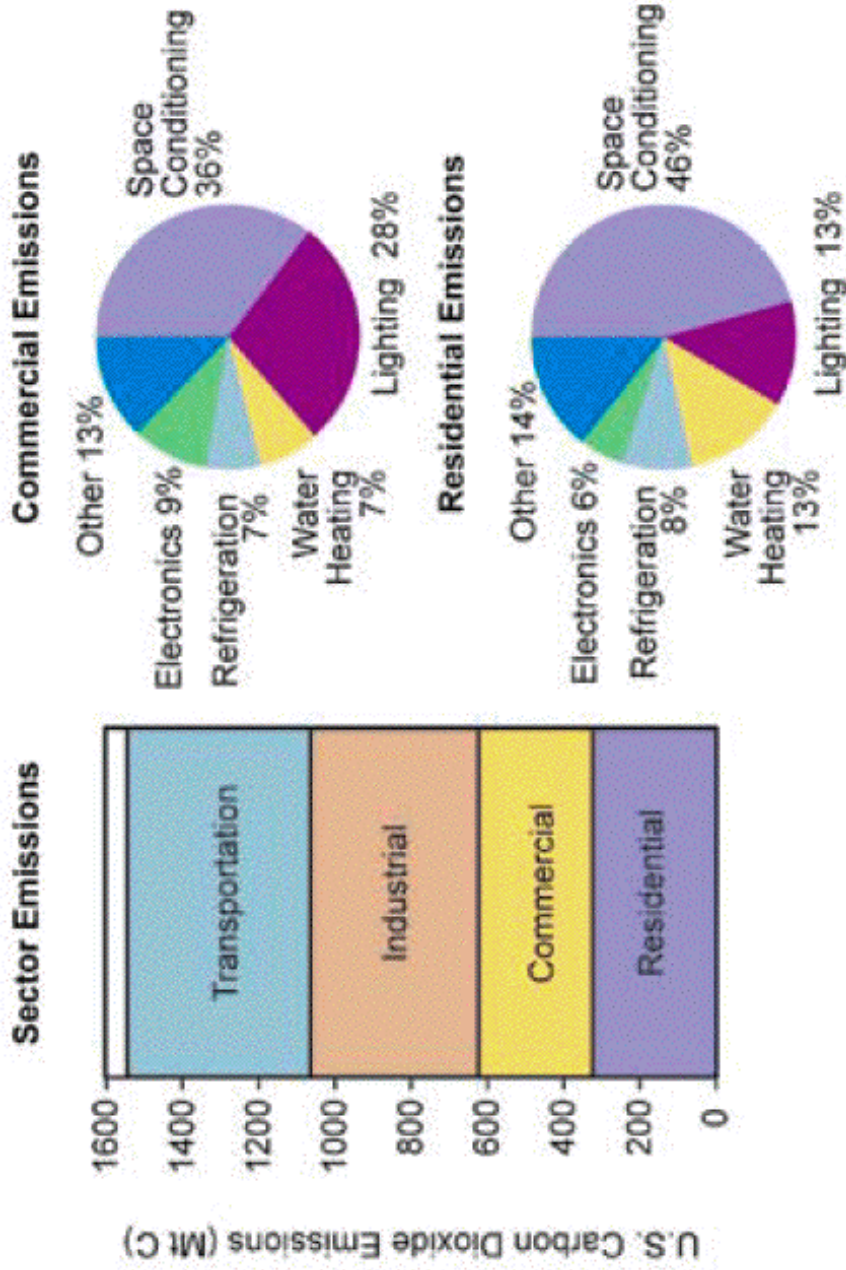


Concrete Expertise





Most of the CO2 emissions of buildings are related to the space conditioning.



Source: DOE EERE Buildings Energy Data Book 2005

United States' carbon emissions by sector and (for commercial and residential buildings) by end use.



**Another trend:
Architects are thinking outside the box...**

***Architects are creating virtually the new buildings and
factories of the future***

The New York Times **Science** **2 of 8** **MORE SLIDE SHOWS**

Towers of Food

Dickson Despommier, a professor at Columbia University, created the vertical farm concept with 62 graduate students. He says that the skyscrapers could protect a city's food supply from floods and droughts, and from pathogens that attack crops.

Photo: University of Illinois at Urbana-Champaign

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- **Article:** Country, the City Version: Farms in the Sky Gain New Interest



**.....and acting Globally (Generation Green)
With whom they are going to partner with?**

***The green building movement is showcasing their 10 creations in the
FUTURE HOUSE Competence hosted by the Chinese Housing and
Construction Ministry during the 2008 Olympics in Beijing***

FIU GREEN
Sustainable Green Living Program
FLORIDA INTERNATIONAL UNIVERSITY

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FIU Sustainable Green Living Program

Who We Are:
Florida International University's FIU Sustainable Green Living Program is run by the multidisciplinary student organization, FIU Emerging Green Builders, with a coalition of students and young professionals from engineering, construction management, architecture, business and others, to promote the integration of technology, entrepreneurship, economic and political leadership into the green building movement.

Vision:
Our vision is to provide a unique educational and outreach opportunity to FIU students and professionals to enhance their education and training through involvement in real-world sustainable green building projects.

Mission of FIU EGB:
Our mission is to create a cohort of emerging green building leaders and to develop opportunities for networking through the United States Green

click here and join now
FIU Green Blog

FUTURE HOUSE
USA
BEIJING 2008

FIU Solar Decathlon House

EGB
Emerging Green Builders



**.....and acting Globally (Generation Green)
With whom they are going to partner with?**

***This is the team representing the USA in FUTURE HOUSE
during the 2008 Olympics in Beijing***

FUTURE HOUSE
★ USA ★
BEIJING 2008

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- » Welcome Letters
- » Support Letters
- » Key Players
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Key Players

a collaboration of the right people, backed by their solid experience, success and understanding of compliance

	George Bialecki, Jr. Project Director Design, Construction and Public Relations Founder/Director-Alternative Energy Living Foundation President - Alternative Energy Builders, Inc.
	Yong X. Tao, Ph. D Project Director Professor and Undergraduate Program Director Dept. of Mechanical and Materials Engineering Florida International University
	Vish Prasad, Ph. D Project Advisor Vice President of Research University of North Texas
	Yimin Zhu, Ph.D, CCE Project Manager Assistant Professor - Department of Construction Management College of Engineering and Computing Florida International University
	The Late Milton Copulos Energy Advisor Director - Alternative Energy Living Foundation President - National Defense Council-Educator

陶永心

中文信息

***Their idea is
not offering
only
products or
services but
a whole
practical
and
beautiful
SOLUTION***



Where we stand in Sustainable Technologies Know How? Green-Mix for Caltrans



- “Caltrans learned that ‘green’ concrete might be tough for this type of project, but they also felt that this was the way things were going into the future”.
- “For ready mixed companies with large enough technical and service departments, the prospects are great”.



Where we stand in Sustainable Technologies Know How? CX's Orange Wanne® Constructive Solution in Germany

orange wanne®

Das Betonabdichtungssystem für Keller



Beratung und Konzept, Produktlieferung, Abdichtungstechnik und Qualitätskontrolle



orange wanne® – das Optimum für Wohnbaukeller

Planung

Grundlagen für die gesamte Planung sind die objektbezogenen Ausgangsdaten des Auftraggebers:

- Boden- und Wasserverhältnisse (Bodengutachten)
- bilden die Basis für die Bestimmung des Bemessungswasserstands und der Beanspruchungsklasse
- Geplante Nutzung bestimmt die Nutzungsklasse
- Grundriss, Aufriss und Statik des Gebäudes sind Grundlage für die Abdichtungsplanung und Umbemessung

Unter Berücksichtigung dieser Daten wird die orange wanne® evaluiert. Das hierfür von CEMEX speziell entwickelte Bemessungskonzept wurde vom IBMB der TU Braunschweig begutachtet und die Konformität mit der WU-Richtlinie bestätigt.

Ein weiteres Gutachten von Prof. Hegger (RWTH Aachen) weist nach, dass die orange wanne® unter praktischen Randbedingungen mit Stahlfaserbetonwänden ohne zusätzliche Bewehrung zur Begrenzung der Rissbreite aus frühem Zwing hergestellt werden kann – und das für Wandlängen von bis zu 10 m!

Gemäß der DAfStb-WU-Richtlinie sind bei jedem Bauvorhaben unbedingt zu beachten:

- der Bemessungswasserstand
- die Beanspruchungsklasse und
- die Nutzungsklasse

Es werden die Beanspruchungsklassen 1 und 2 und die Nutzungsklassen A und B unterschieden.



CX is offering Innovative Constructive Solutions in Europe



Where we stand in Sustainable Technologies Know How? CX's success with SCC in the UK market



2007
annual report

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teamwork and continuous improvement



CONTINUAL
knowledge-sharing
improvement

↑

ONGOING
teamwork
knowledge-sharing
improvement

Our post-merger integration (PMI) of Rinker exemplifies our teamwork and knowledge-sharing. The success of the process depends on the combined effort of everyone in both organizations; not only the joint PMI teams – 390 people, working full time and part time, from both companies and 20 different nationalities – but also those who continue to work full-time to run the business and maintain our high level of performance. Through our teams' and our companies' collaboration and shared learning, we identify and capitalize on best practices and synergies, retain talented people, ensure business continuity, and ultimately build one CEMEX.

Likewise, in Europe, our regional coordination teams facilitate communication, knowledge-sharing, and new initiatives among our operations. For example, our special projects team shares expertise about new specialty products such as self-compacting concrete. This product is easier to work with than other types of concrete because it requires no labor to compress the concrete, increases efficiency, and cuts the cost of construction. Until we introduced self-compacting concrete in the UK, there was almost no market for that product; it now accounts for approximately 1.2 percent of our ready-mix concrete volumes in the UK.

The British Ready Mix Concrete Association (BRMCA) has indicated some positive market trends:

- 10% year on year growth in SCC inquires
- Growth in volume from near zero in 2000 to a projected 523,000 cy in 2008
- Further grow potential for SCC is said to be massive for concrete frame applications





Thank you / Questions?

