“ROADMAP TO A LOW-CARBON WORLD”

13th-15th February, 2008 - Tokyo

Group 4: Barriers and opportunities: approaches to sensitive LCS sectors

"REDUCING CO2 IN CARBON-INTENSIVE SECTORS (ESPECIALLY STEEL):

SHORT-TERM COMPETITIVENESS ISSUES/

LONG-TERM PARADIGM CHANGES“

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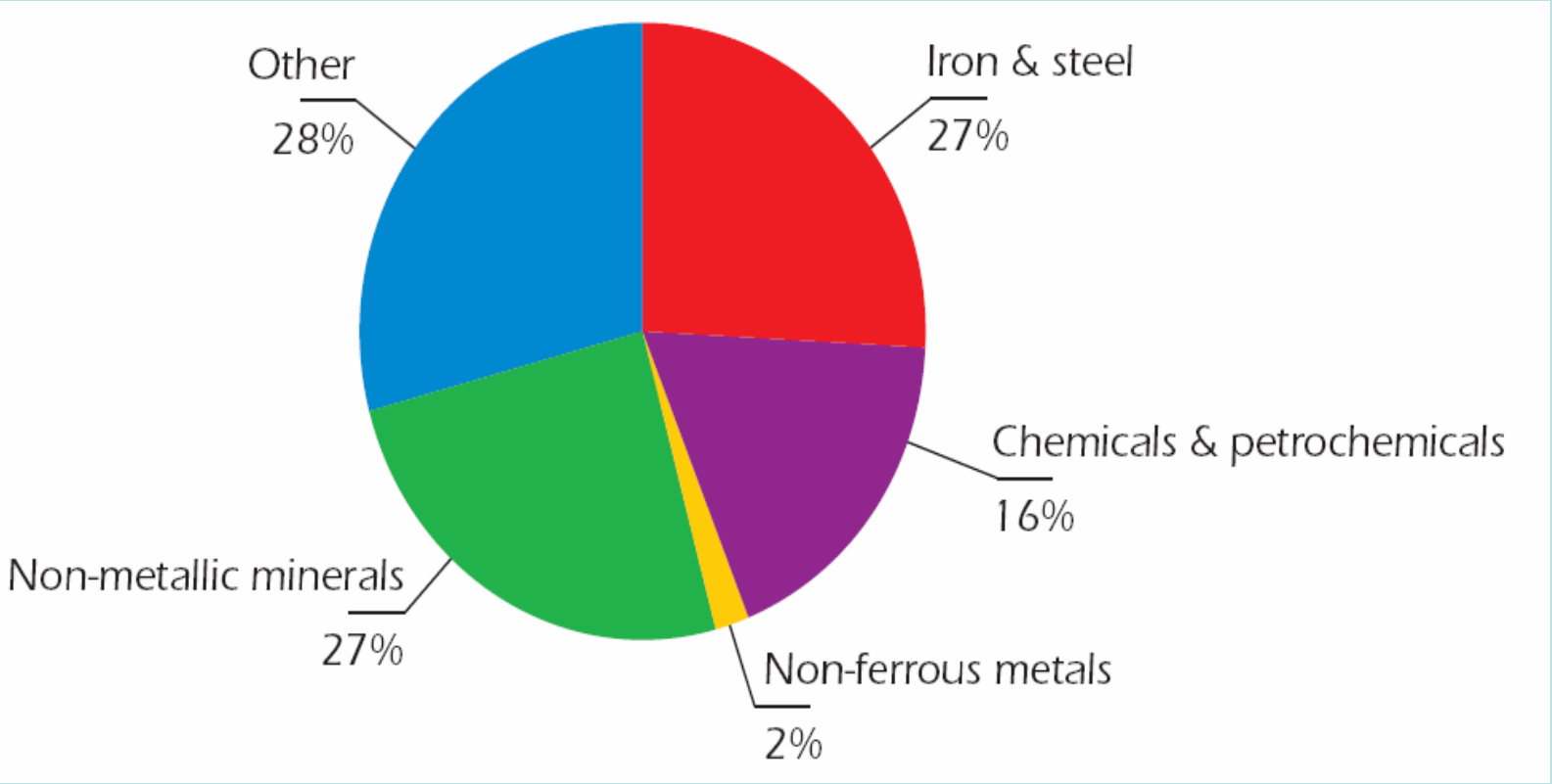
IEA: Tracking Industrial Energy Efficiency and CO_2 Emissions

Industrial Direct CO2 Emissions by Sectors, 2004



Note: Includes coke oven, blast furnaces and process CO2 emissions.
Excludes emissions in power supply; assumes 75% carbon storage for all petrochemical feedstocks.

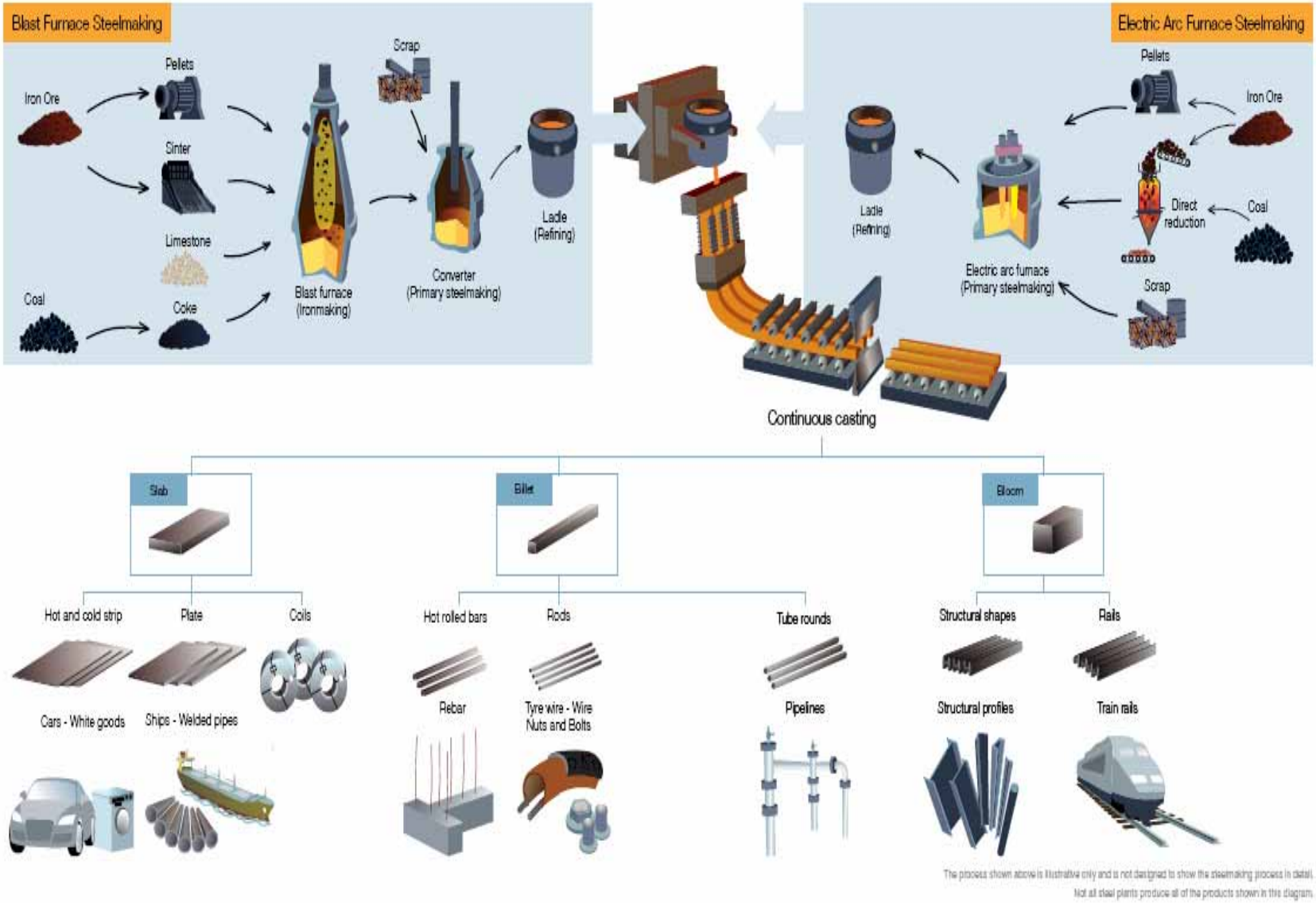
CARBON REDUCTION POLICIES AND COMPETITIVENESS

Key sectors:	Value at risk	International Competition	Carbon-Intensive	Electricity-Intensive
Aluminium:	High	High	No	High
Iron and Steel-Integrated:	High	High	High	Low
-EAF	High	High	No	High
Cement:	High	Some Threat	High	Medium

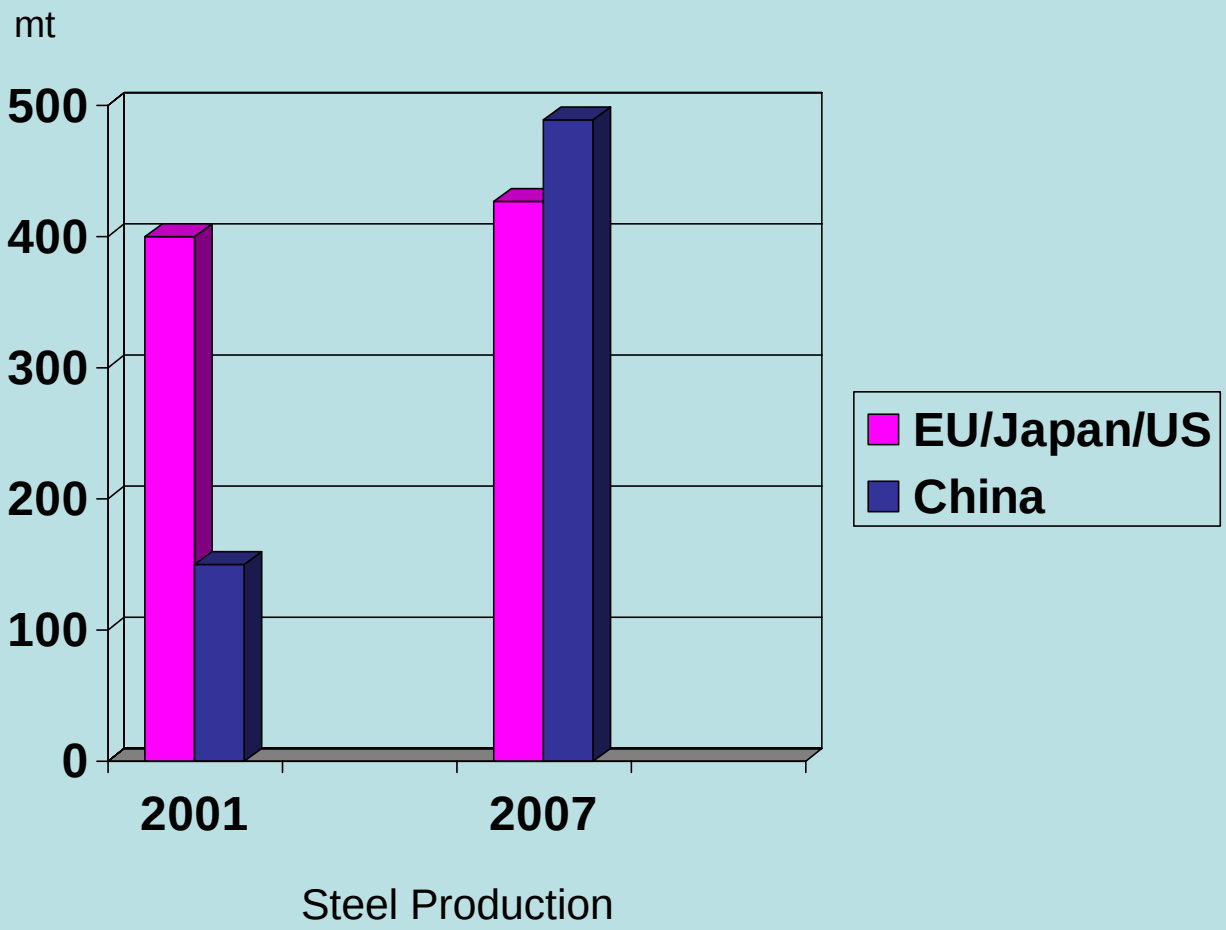
Other vulnerable sectors: lime, fertilisers, organic chemicals, pulp and paper.

Based on Carbon Trust analysis January 2008

An overview of the steelmaking process

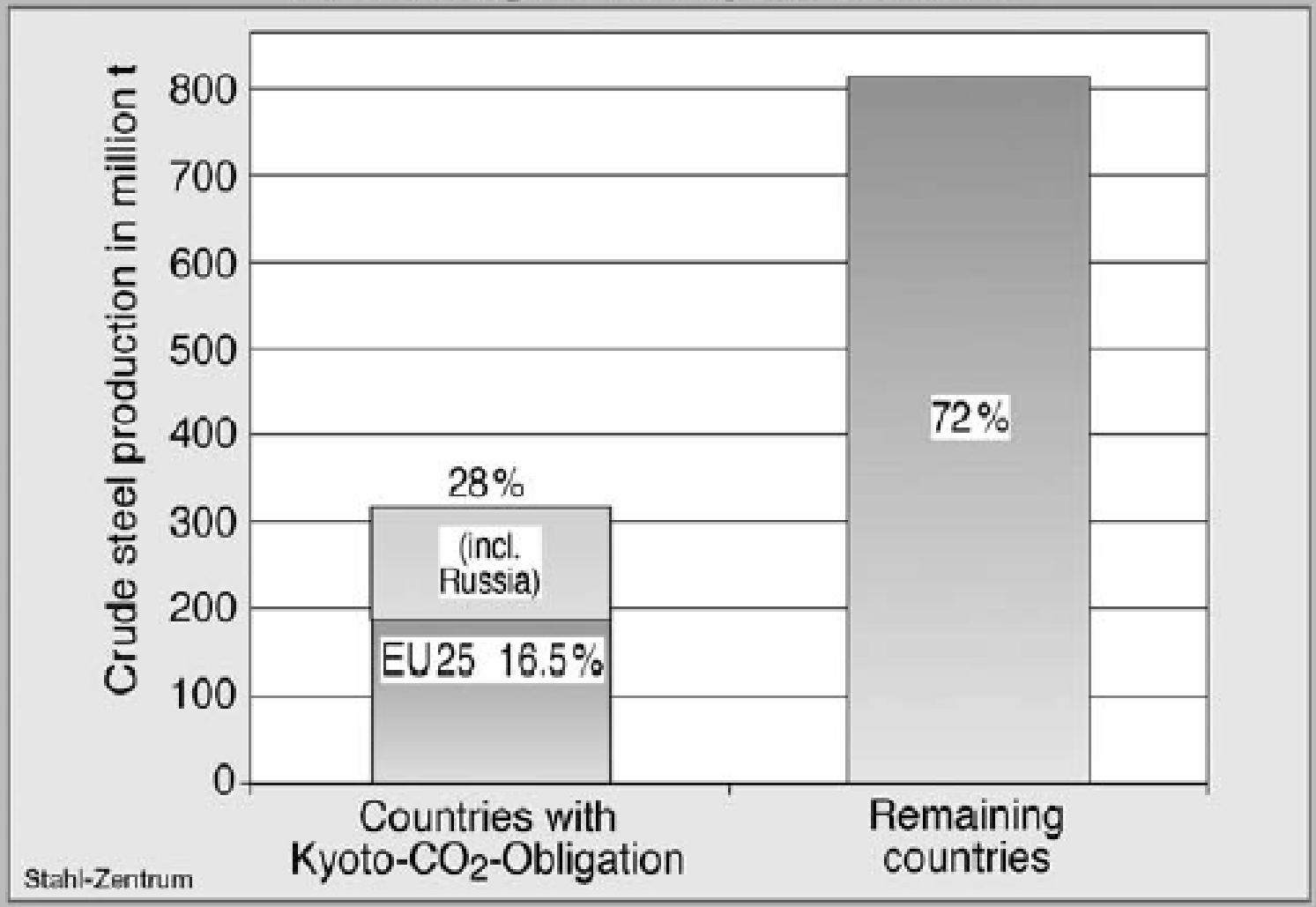


The Rise of China

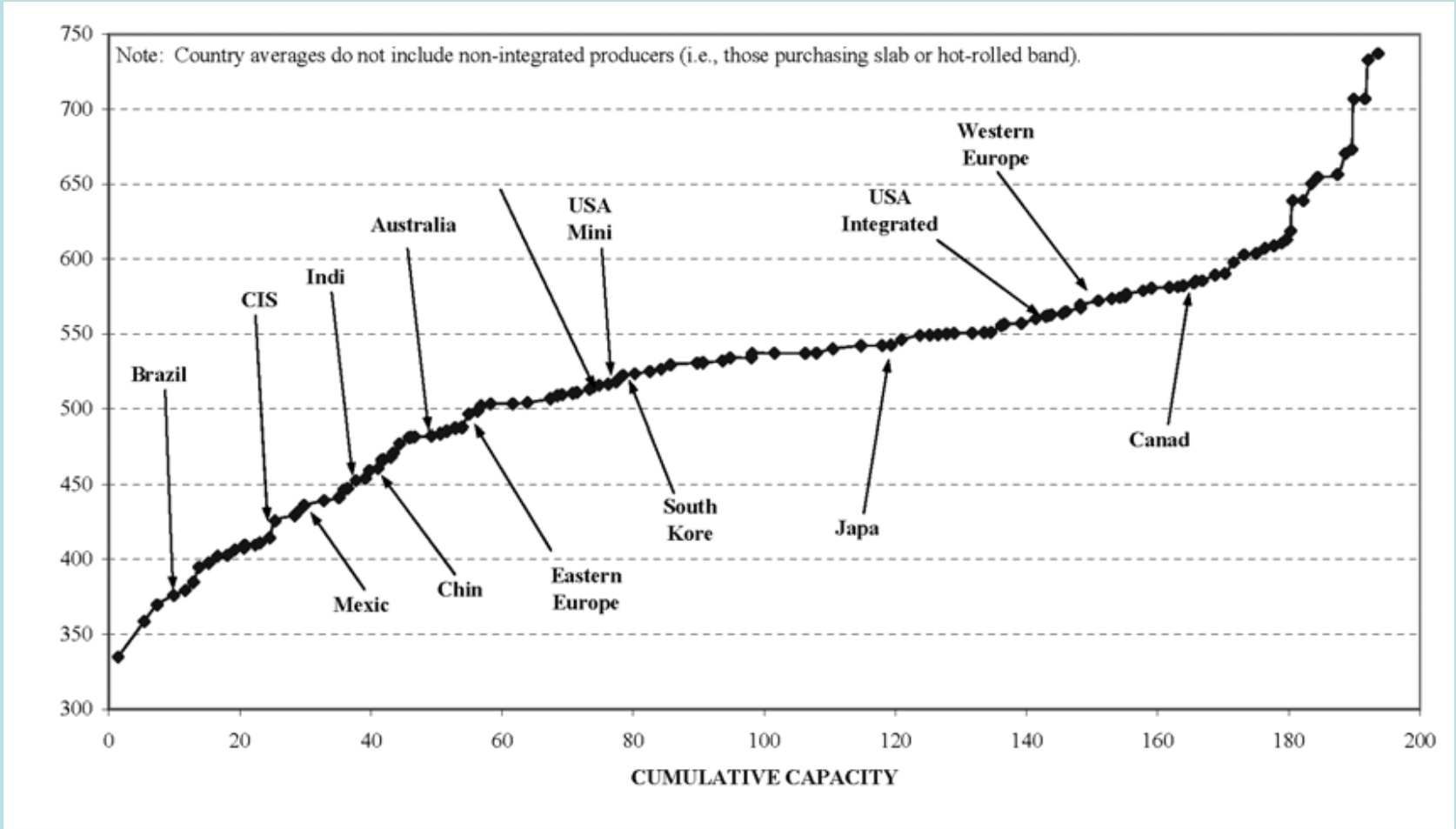


Stahl-Zentrum

Distribution of the Global Crude Steel Production 2005 according to the Kyoto Protocol



WSD 2006 World Cost Curve for sheet producers (cold rolled).



World Steel Dynamics

Keidanren Voluntary Action Plan on the Environment 1997 (Steel - JISF)

Measures to cope with global warming

- Promote energy-saving in the production process (reduce energy consumption in 2010 by about 10% as compared with 1990)
- In coordination with the regional community, make use of plastic waste and unused energy (down equivalent of about 3%)
- Supply of high-grade steel which will make it possible to save energy when using steel material. (Down similarly about 4% in society as a whole.)
- Contribute to energy conservation through international technological cooperation.

EU-Research Programme "Ultra Low CO_2 Steelmaking"

New Technologies for Steelmaking

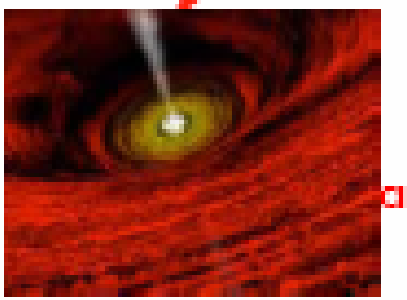
What is possible in the long term?

International Iron and Steel Institute

Existing technology

CO_2 capture & storage

Use of C from sustainable biomass



Carbon

Coke

Blast Furnace

Coal

Plasma in Blast Furnace

Syngas

Natural gas prereduction

H_2 prereduction

H_2

Hydrogen

H_2 by electrolysis of H_2O

Electrons

Decarbonization

Electric Arc Furnace

Electrolysis

New Technology

Sectoral approaches: why?

- Assumption: Searching for means to broaden GHG mitigation activities
  - Enhance scope *and* effectiveness of GHG reduction measures (address competitiveness concerns)
  - Accelerate diffusion of cleaner technologies and practices
  - Address rapid growth in some sectors outside Annex I
  - Take into account common but differentiated responsibilities and address domestic development priorities
- Caution:
  - Technical complexity of a sector-specific discussion in UNFCCC context
    - Feasibility of a meaningful outcome, beyond "*pledge and review*"?
    - Calls for a different negotiation forum
  - Creating sectoral "niches" in global climate policy regime would lead to economic inefficiency
    - Emissions trading and related mechanisms provide means to reflect the prevalent CO2 price

Sectoral Approaches
Different views

- EU industry: a substitute, or complement, to the EU CO_2 emissions trading system
  - Hard to go back on the EU ETS
  - But sectoral insights can help make the ETS more effective
- Japanese industry: a vehicle to enhance efficiency in China, India, etc.
  - Potential in Japan limited at present
- A method to build GHG commitments for Kyoto Parties, based on sectoral potentials (see G8)?
  - Critical question: at what cost?
- UNFCCC: a stepping stone for developing country commitments

THE ROAD TO 2050: DISRUPTION AND "DEEP PARADIGM CHANGES"

- accelerating "breakthrough technologies" - industry coordination/public-private partnerships
- engaging with the steel industries of emerging - and competitor - countries (including China) to accelerate carbon reduction
- cooperating with customer industries on lower-weight products - linked to strong regulatory pressure on customer industries

Conclusion:

reducing 2bnt of CO_2 emissions from today's integrated works will:

- require boldness from both companies and governments

- imply winners and losers among companies and countries