

6th Congress of the European Chemical Regions 27th October 2008

Emission Trading Scheme Directive Revision

Peter Botschek, Director Energy & HSE



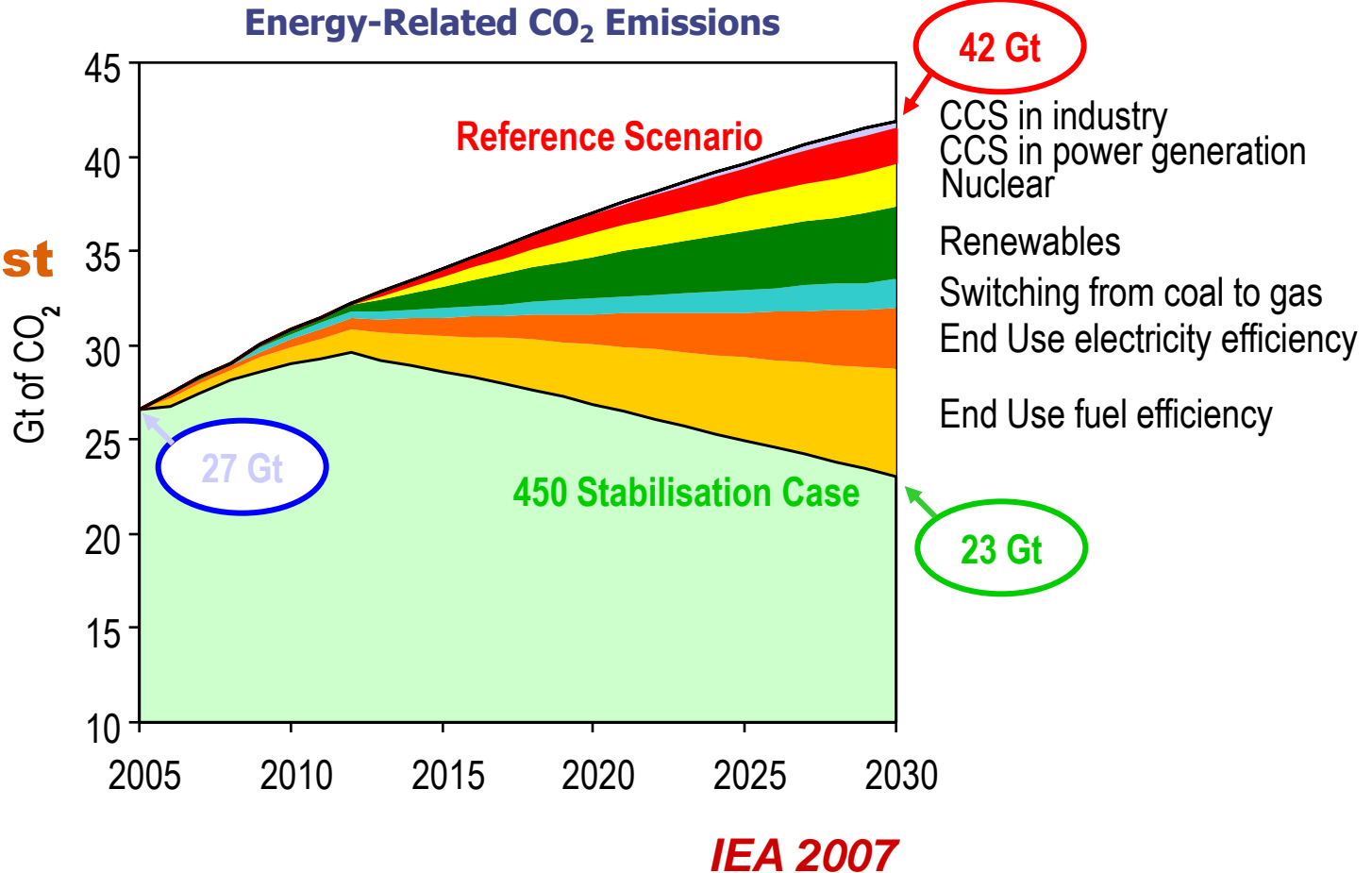


1. The challenge: Climate Change and emission reductions
2. Chemical industry: Carbon footprint and trend
3. Greenhouse gas reduction opportunities: huge opportunities downstream
4. What the industry needs in order to deliver

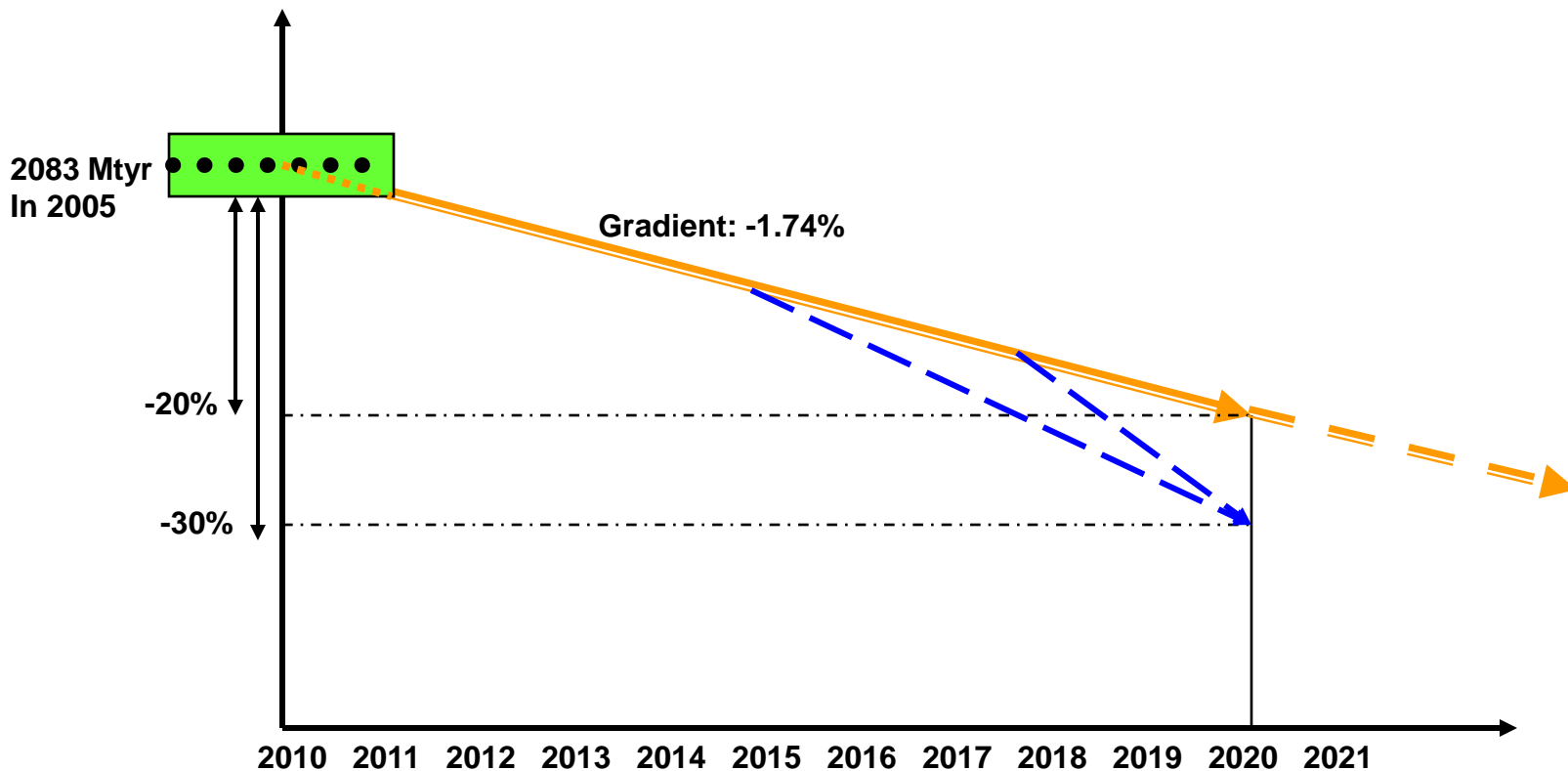
The global picture: CO₂ Emission savings needed Energy generation for 450 ppm “2°C Stabilisation Case”



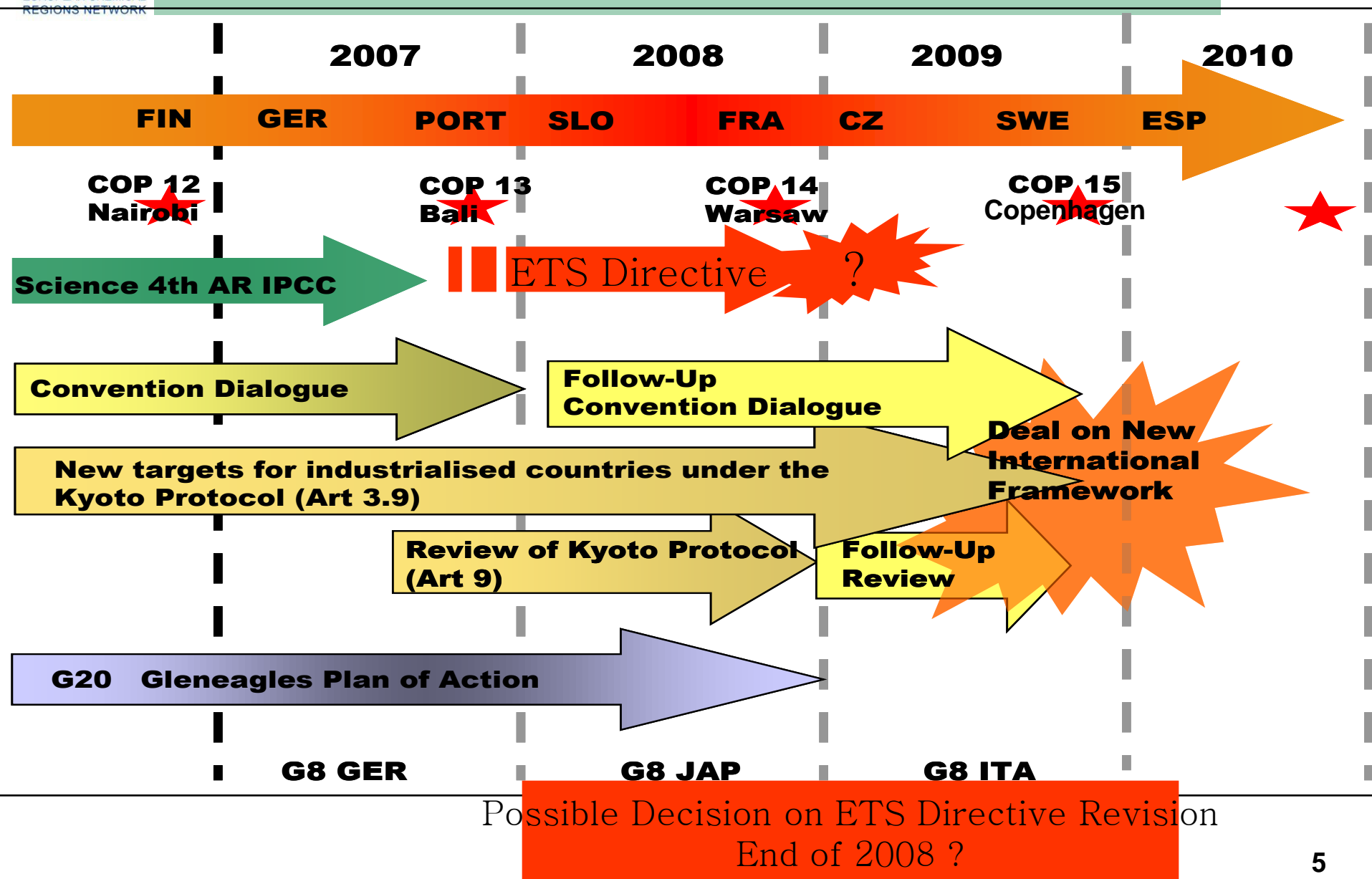
**Increasing
energy
demand must
be met by
low carbon
energy
supply**



EU response: ETS Cap setting



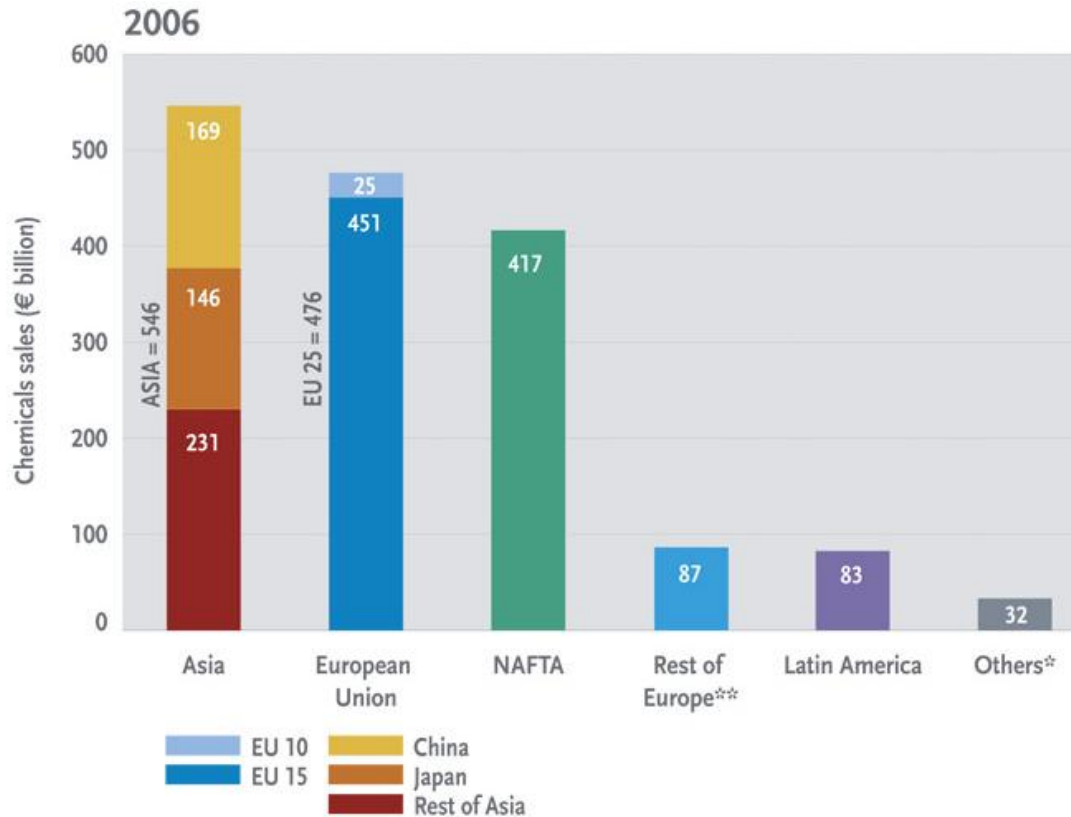
Global scene: Busy negotiations



The European chemical industry is still in a good position and Europe is a good place to do business



Geographic breakdown of world chemical sales



With 29%, Europe is the leading integrated market in the world

Asia has a strong position as a chemical market and is a serious competitor for the EU

Key figures

Around 27,000 companies (96 % have less than 250 employees)

Direct employment of 1.2 million people

Sales of € 476 billion in 2006

Trade surplus of € 40.6 billion in 2006

Source: Cefic Chemdata International

Others* = Oceania and Africa

Rest of Europe** = Switzerland, Norway and other Central & Eastern Europe (excluding the new EU 10 countries)

excl pharmaceuticals

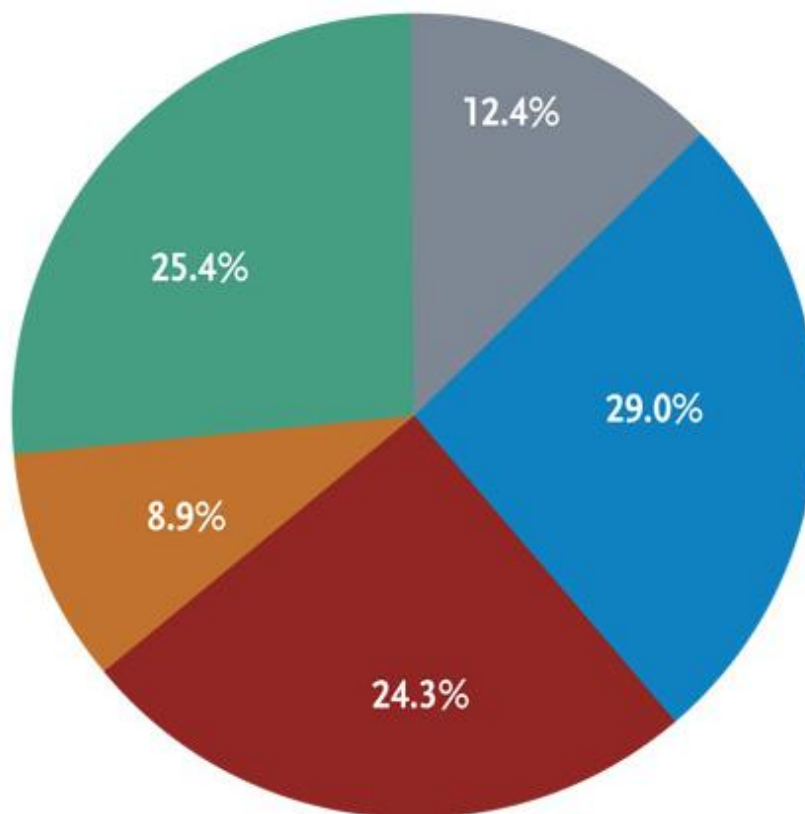
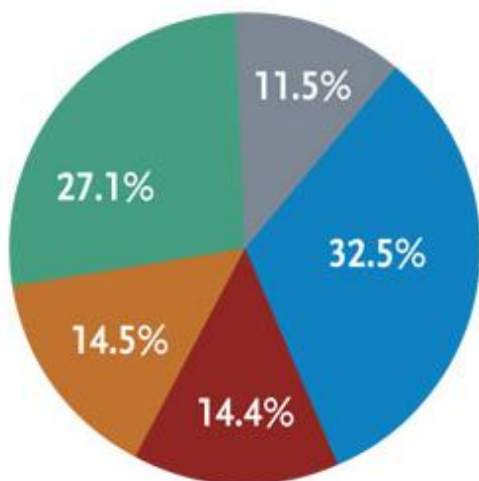
World chemicals sales



1996: € 962 billion

2006: € 1641 billion

Percentage shares

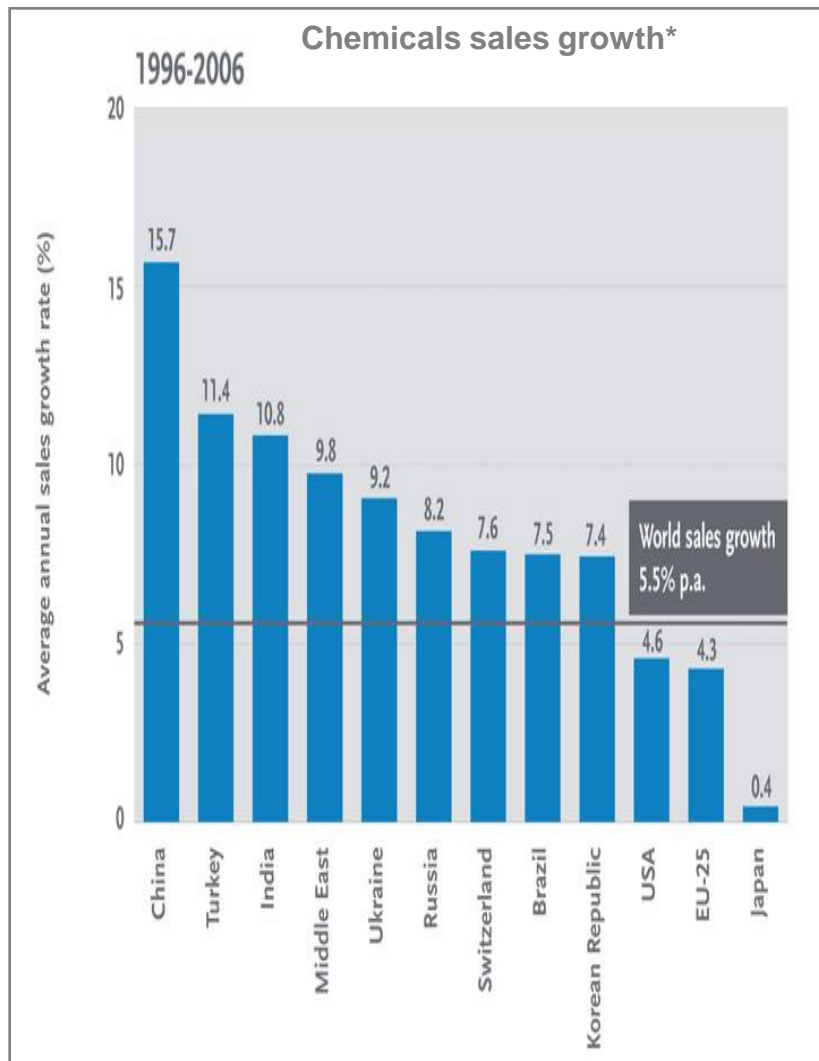


■ EU25
 ■ Asia *
 ■ Japan
 ■ NAFTA
 ■ Others

Source: Cefic Chemdata International

* Excluding Japan

Global competition in the chemical industry is beneficial, if everybody competes on equal and fair terms



Competition in the chemical industry takes place on all levels:

- ✓ Trade – from and to Europe
- ✓ Investment - building up a presence sales and production

High growth markets are mainly in non – OECD countries

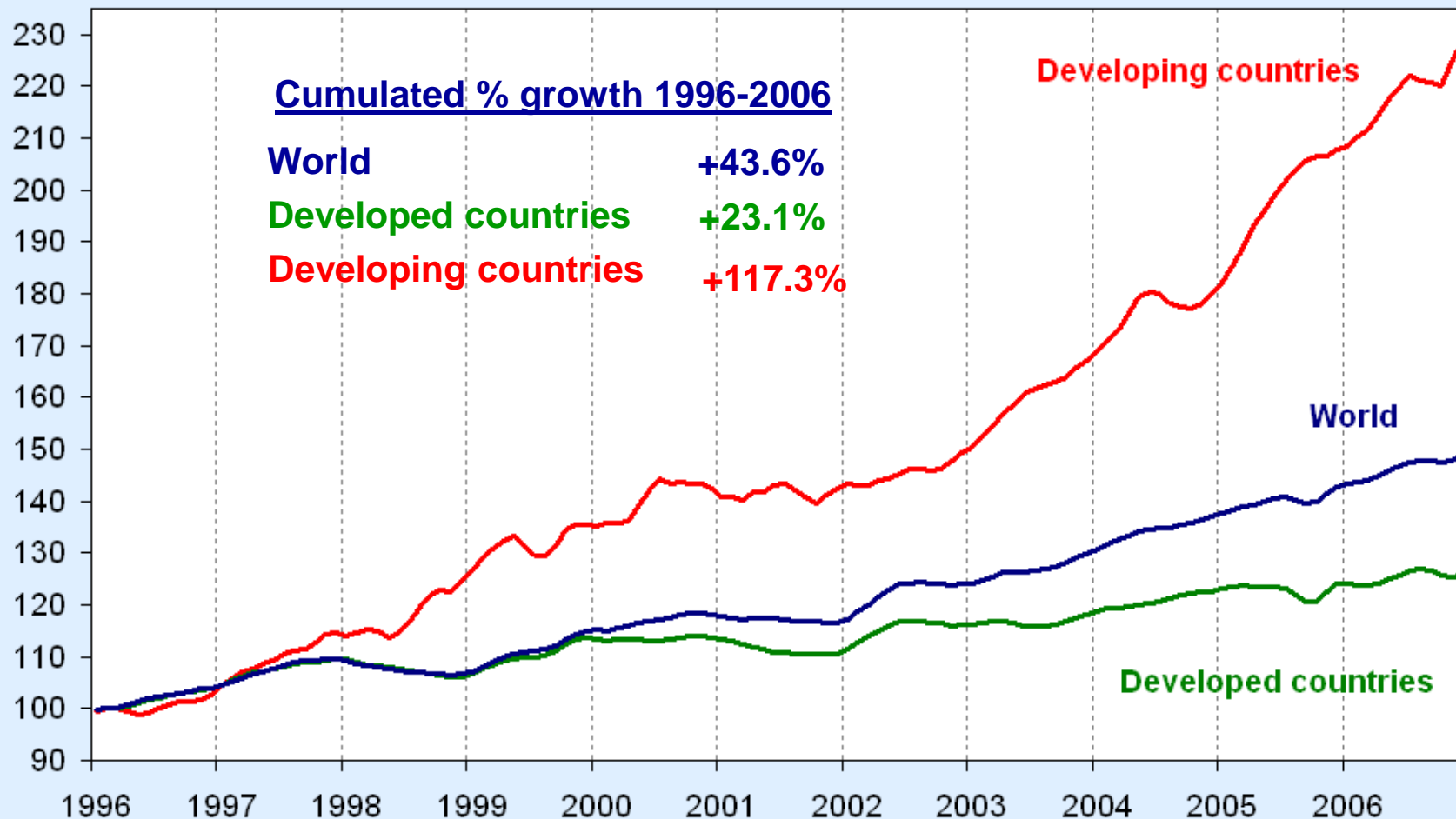
But growth in other parts of the world is not a zero sum game, as long as any player can benefit from it

Access to markets and a global level playing field are prerequisites for fair and beneficial competition

Emerging economies have a more chemical intensive pattern of the economy



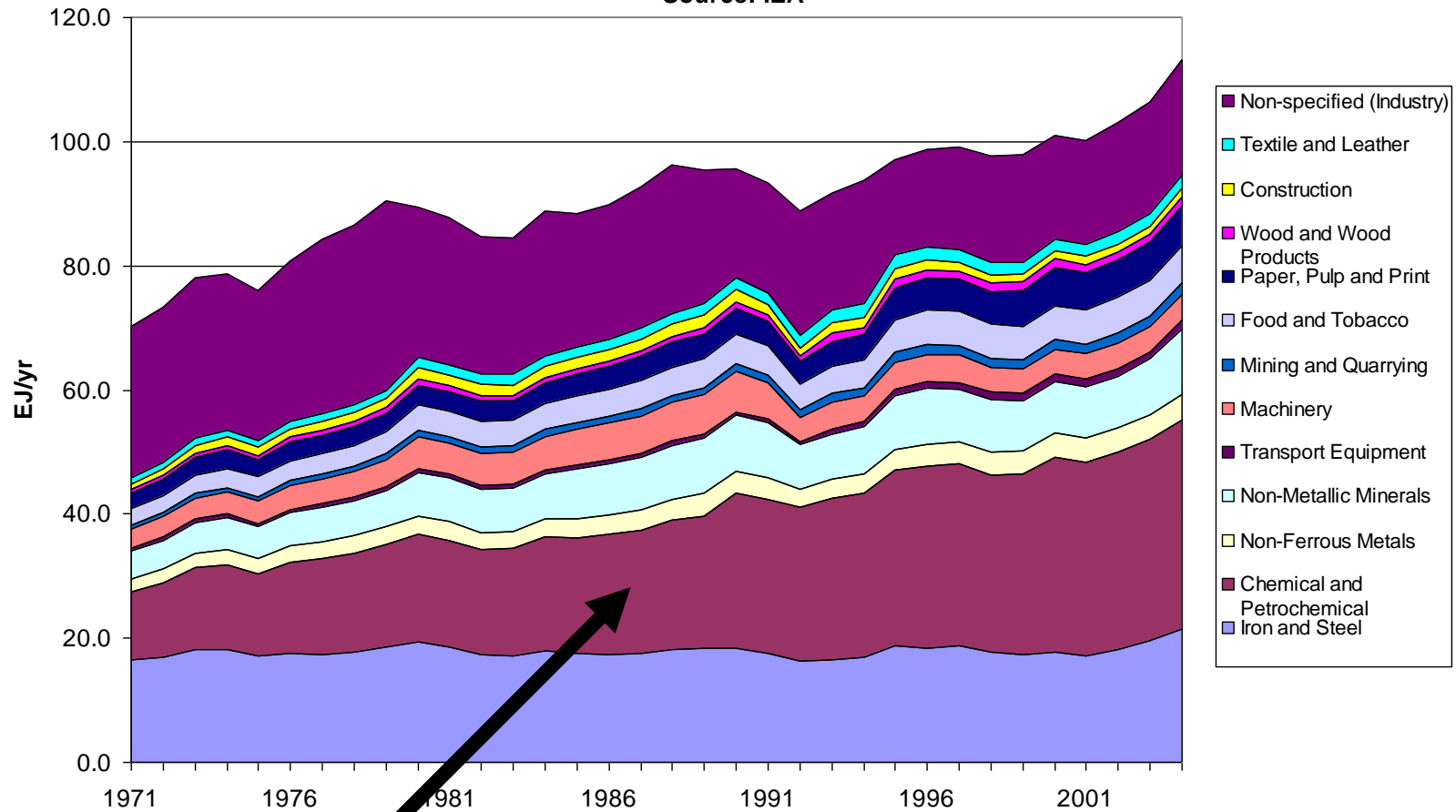
Chemical production growth* by region (index Q1 1996=100)



Global Industrial Manufacturing Energy Use



Industry sectors energy use
incl. Feedstock use
Source: IEA

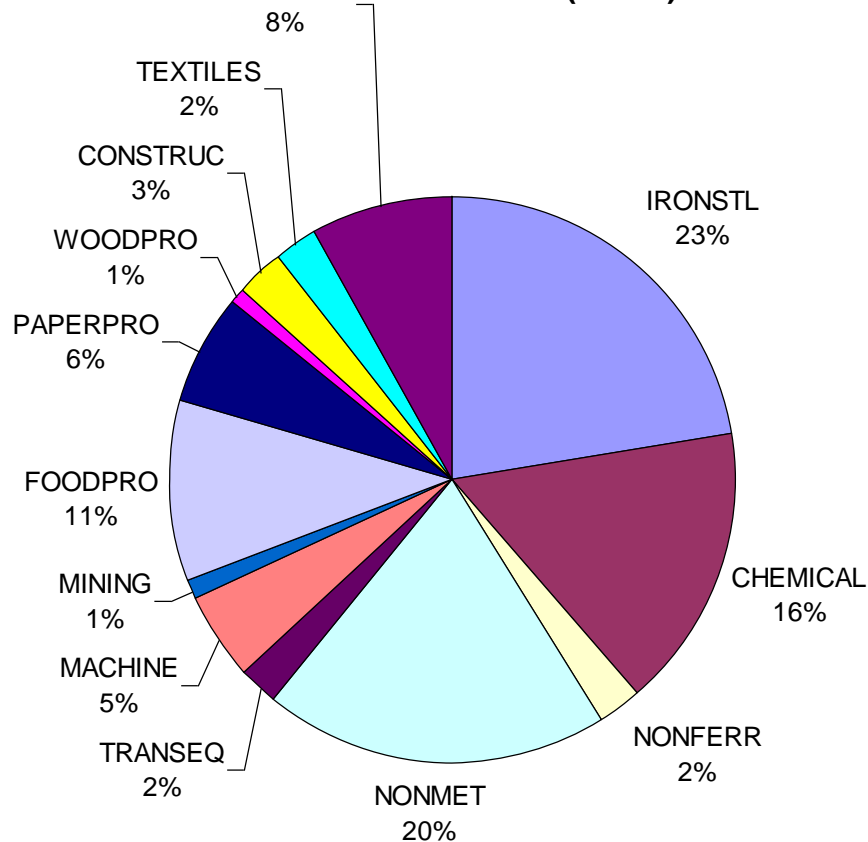


The chemical industry is a big, growing energy user

EU Industrial Manufacturing CO₂ emissions (IEA 2007)

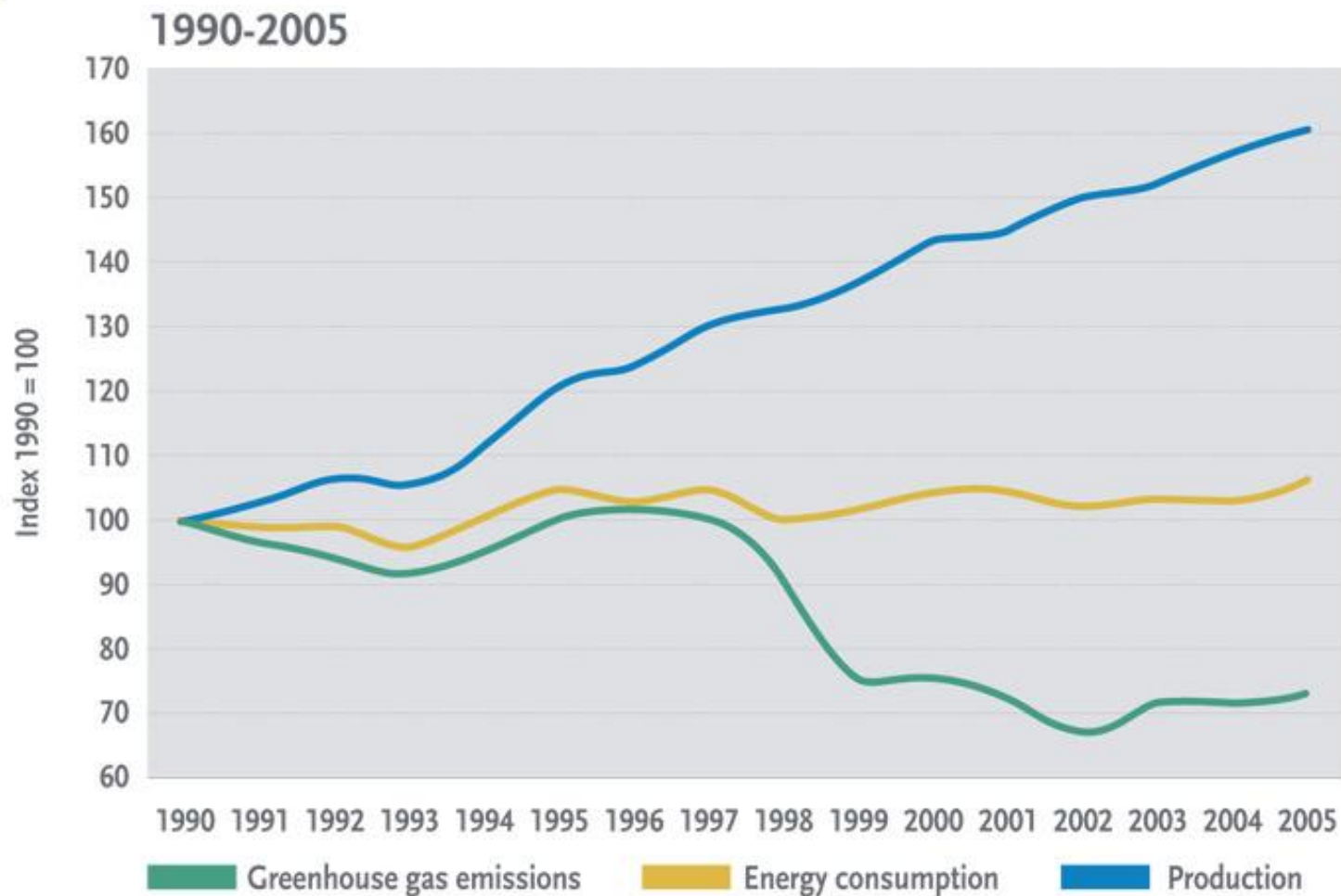


CO₂ emissions from sectors (EU 25) in 2004





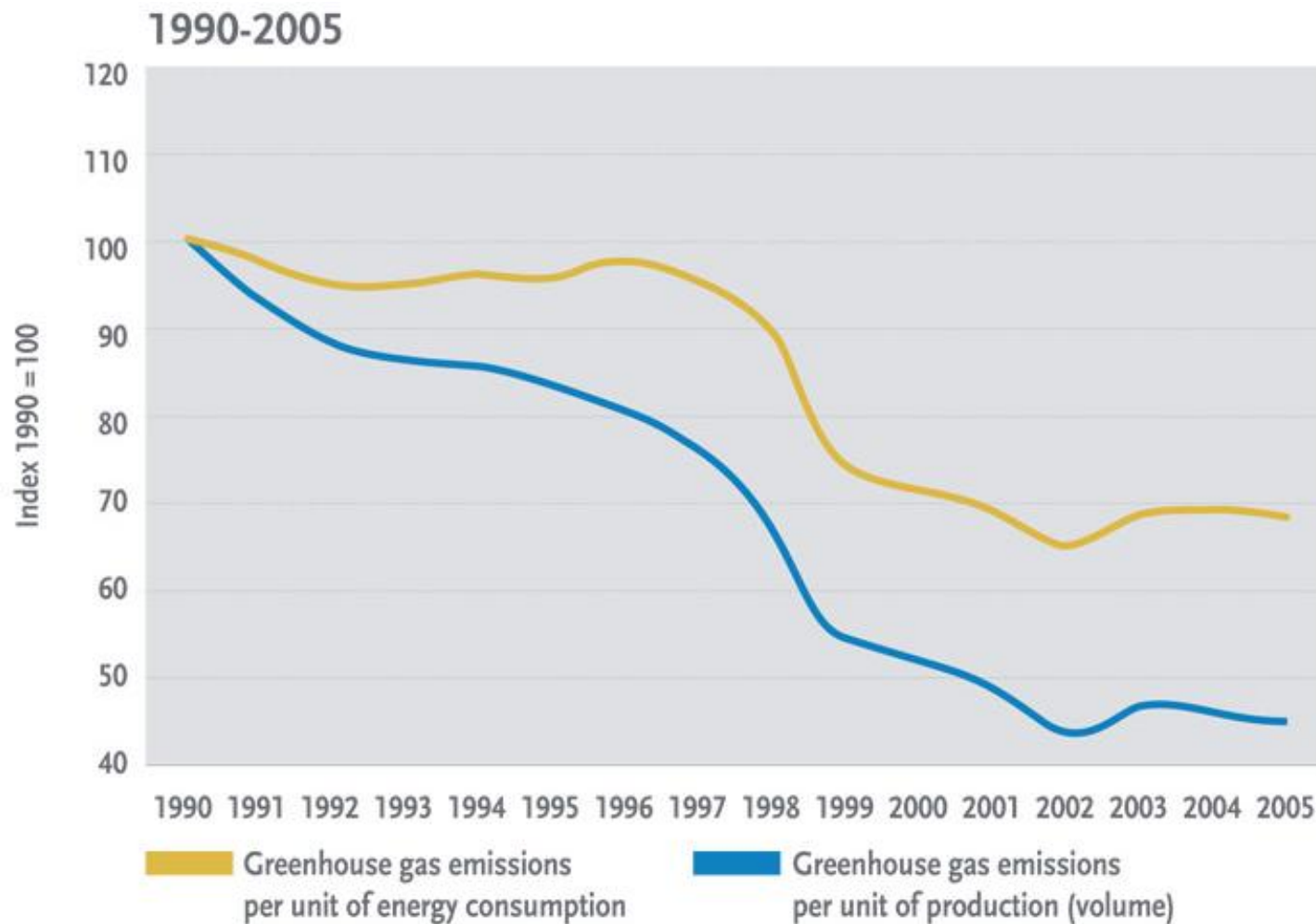
EU chemical* industry reduces carbon footprint



Sources: Cefic Chemdata International and European Environment Agency (EEA)

* Including pharmaceuticals

EU chemical* industry emissions performance



Shift to low-carbon economy is under way

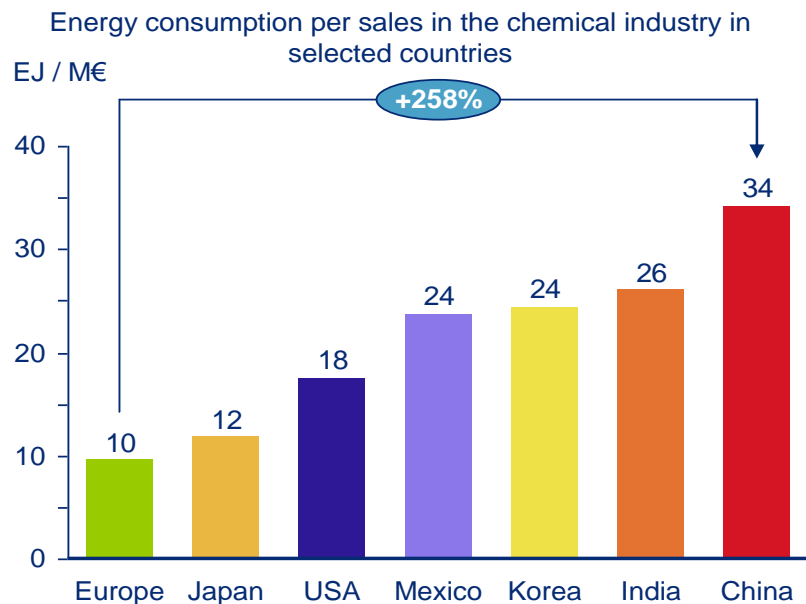
Sources: Cefic Chemdata International, European Environment Agency (EEA) and Eurostat

* Including pharmaceuticals

Carbon leakage

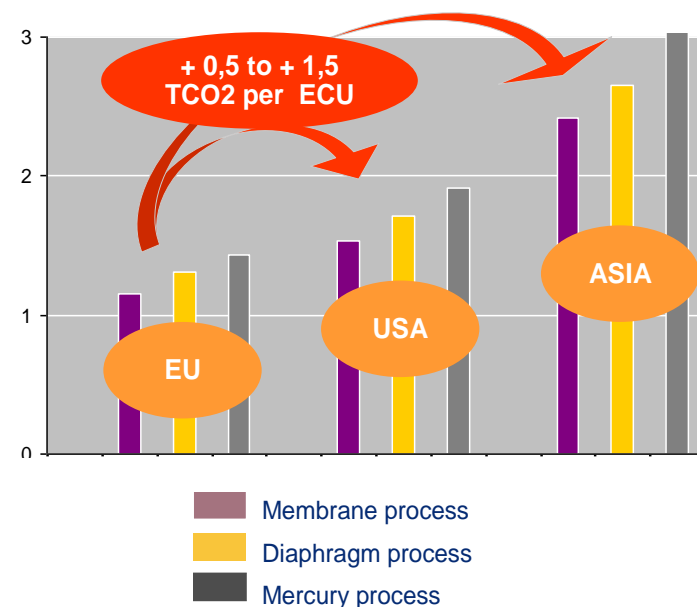


The energy intensity of chemicals production is lowest in Europe



The CO₂ intensity of power generation is better in Europe

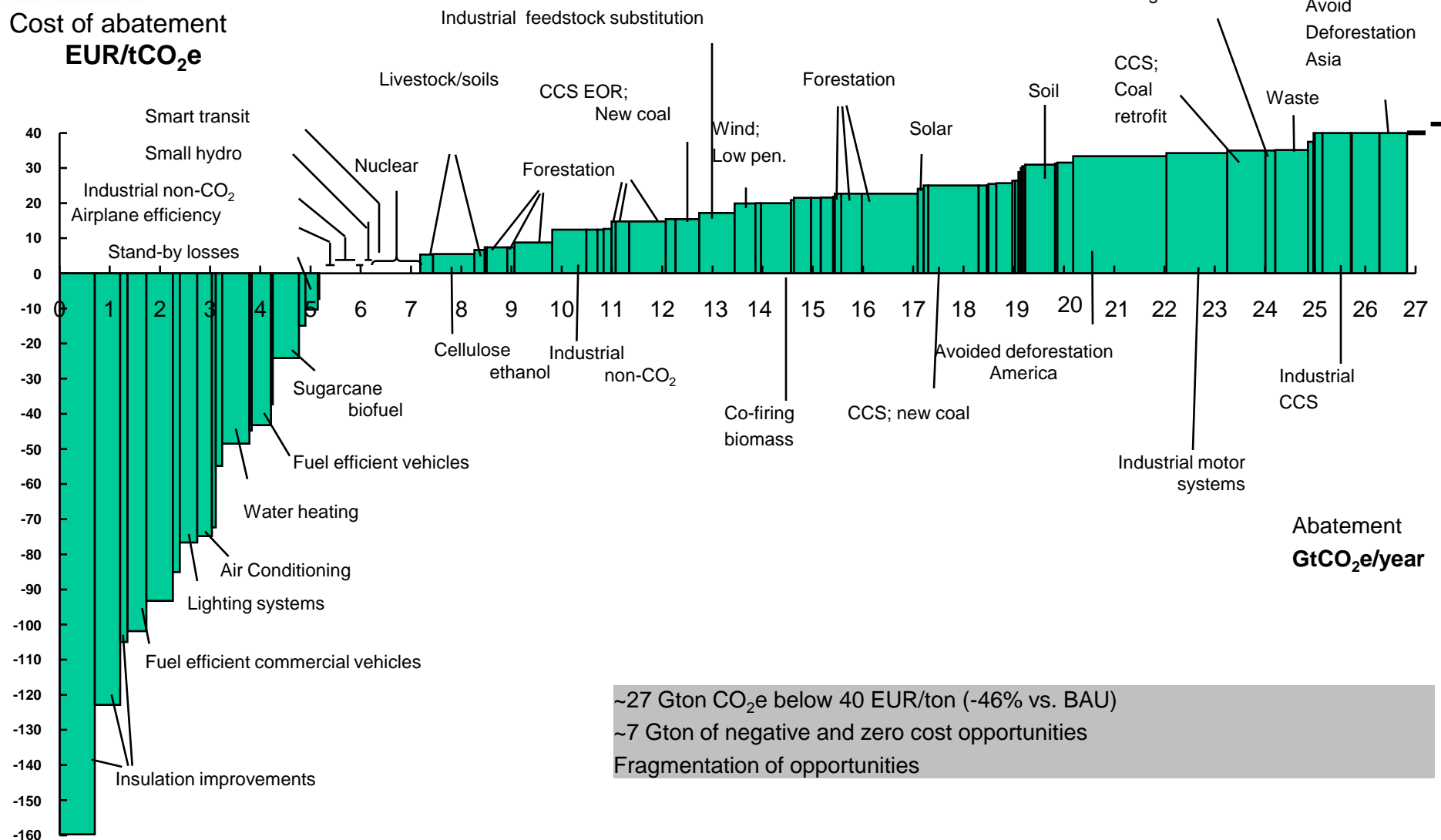
Indirect (power related) CO₂ emissions from chlorine production (t/ECU)



**If chemical production is relocated to countries outside the EU, carbon leakage will occur as a result of less efficient processes AND higher indirect CO₂ emissions from electricity production
- > Increase in worldwide emissions !**

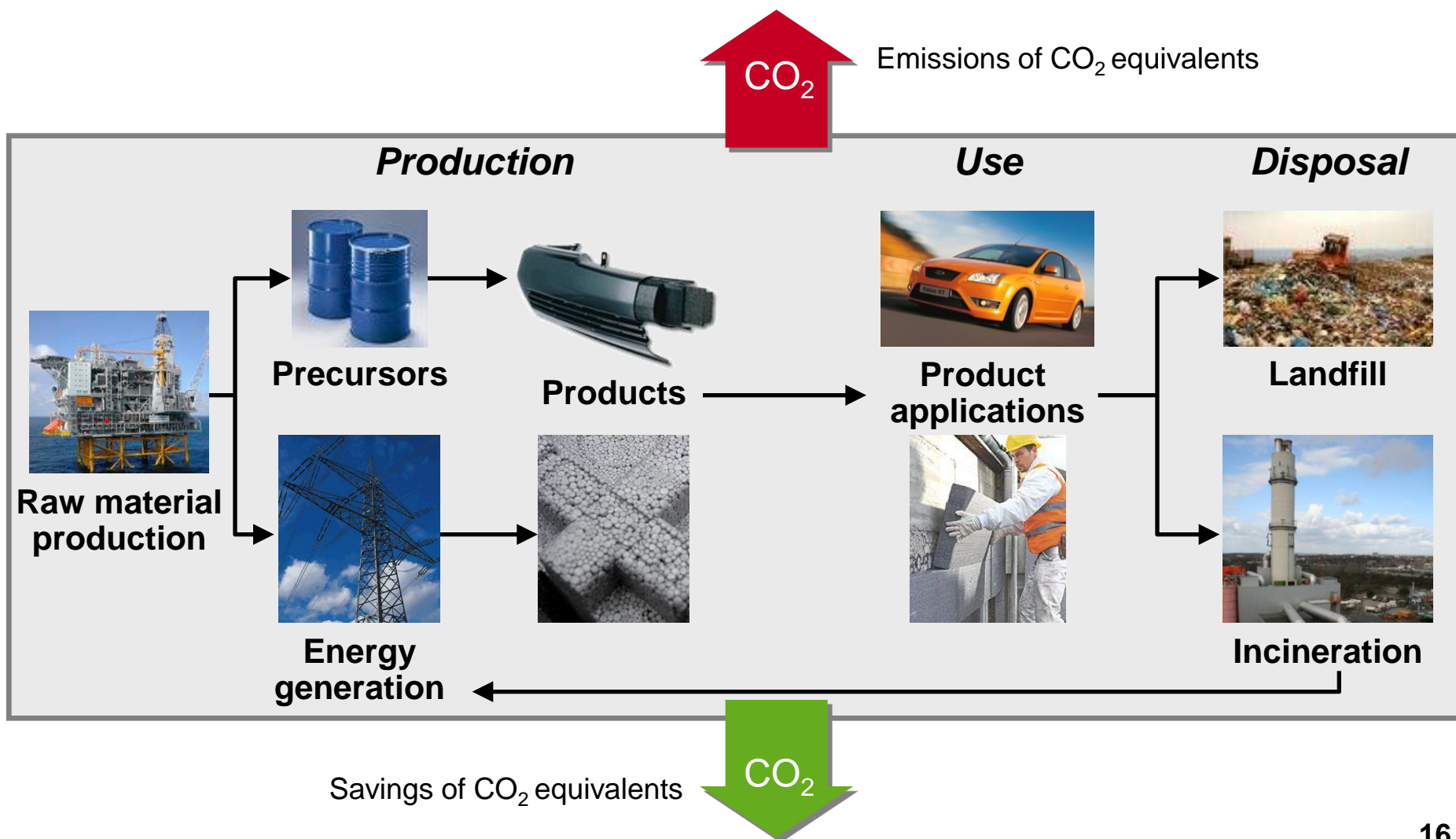
Going beyond own manufacturing efficiency: Chemicals are essential for many abatement technologies!

Cost of abatement
EUR/tCO₂e



www.vattenfall.com/climateap

Greenhouse gas (GHG) emissions over the entire product lifecycle: The BASF example



BASF: Greenhouse gas balance

Comprehensive view of the product lifecycle



Production

Raw materials,
precursors



**Raw material
suppliers**



Production
incl. energy
generation



BASF



Use

Use,
applications



Customers



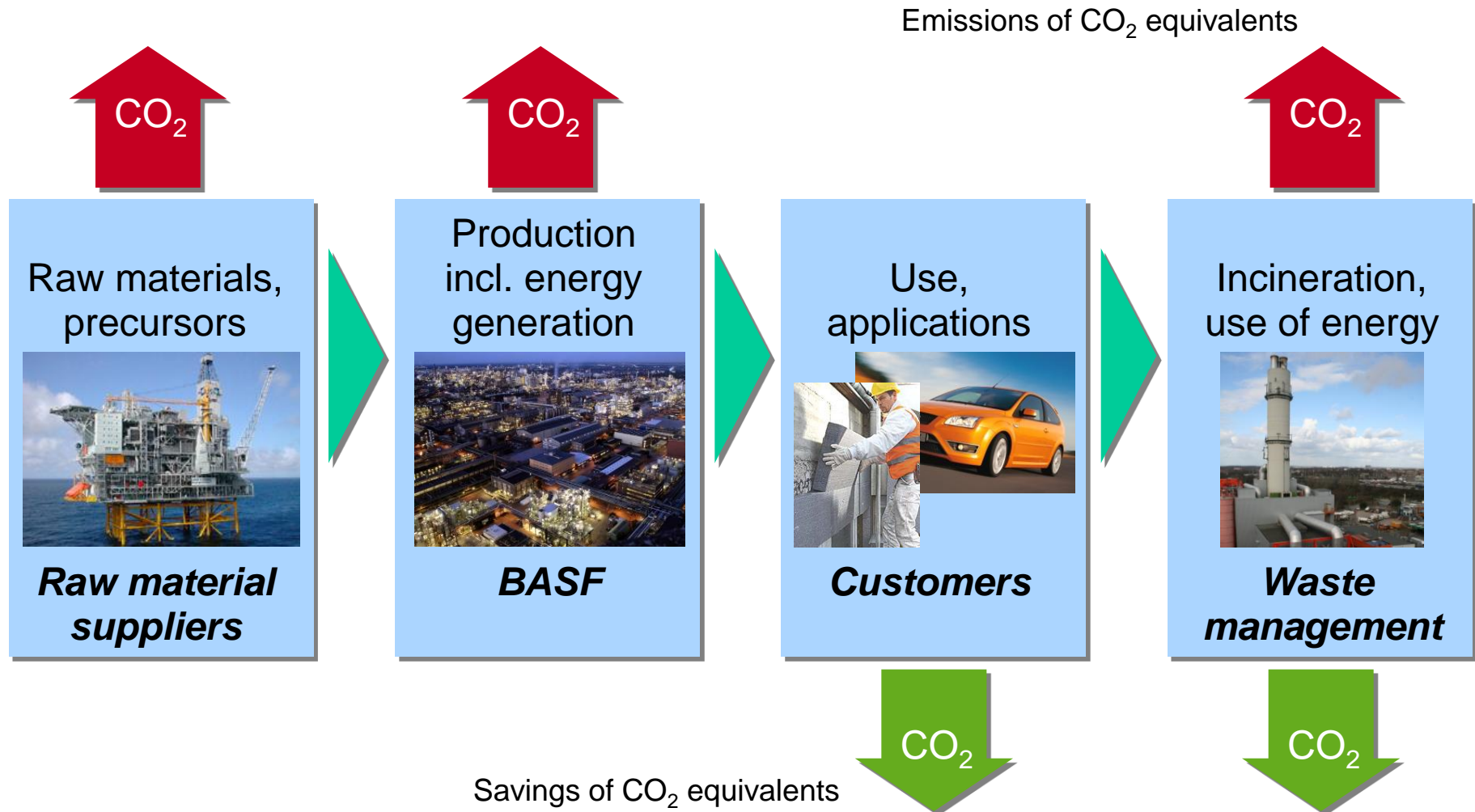
Disposal

Incineration,
use of energy



**Waste
management**

BASF: Greenhouse gas balance over the product lifecycle



Summary

Savings through product use



Global savings
through BASF products 2006
(million t/a)

Total savings
from product use
over the lifecycle:
-252 million t/a
CO₂ equivalents

- 140

Housing

- 30

Automobiles

- 48

Industry

- 34

Additional products

Summary

Emissions and savings





**87 m
t/a**

Emissions for raw materials,
production and disposal
of all BASF products

Savings
of CO₂ emissions
through BASF products

**-252
Mio. t/a**

 Emissions of CO₂ equivalents
 Savings of CO₂ equivalents

„Factor 3“



3

:

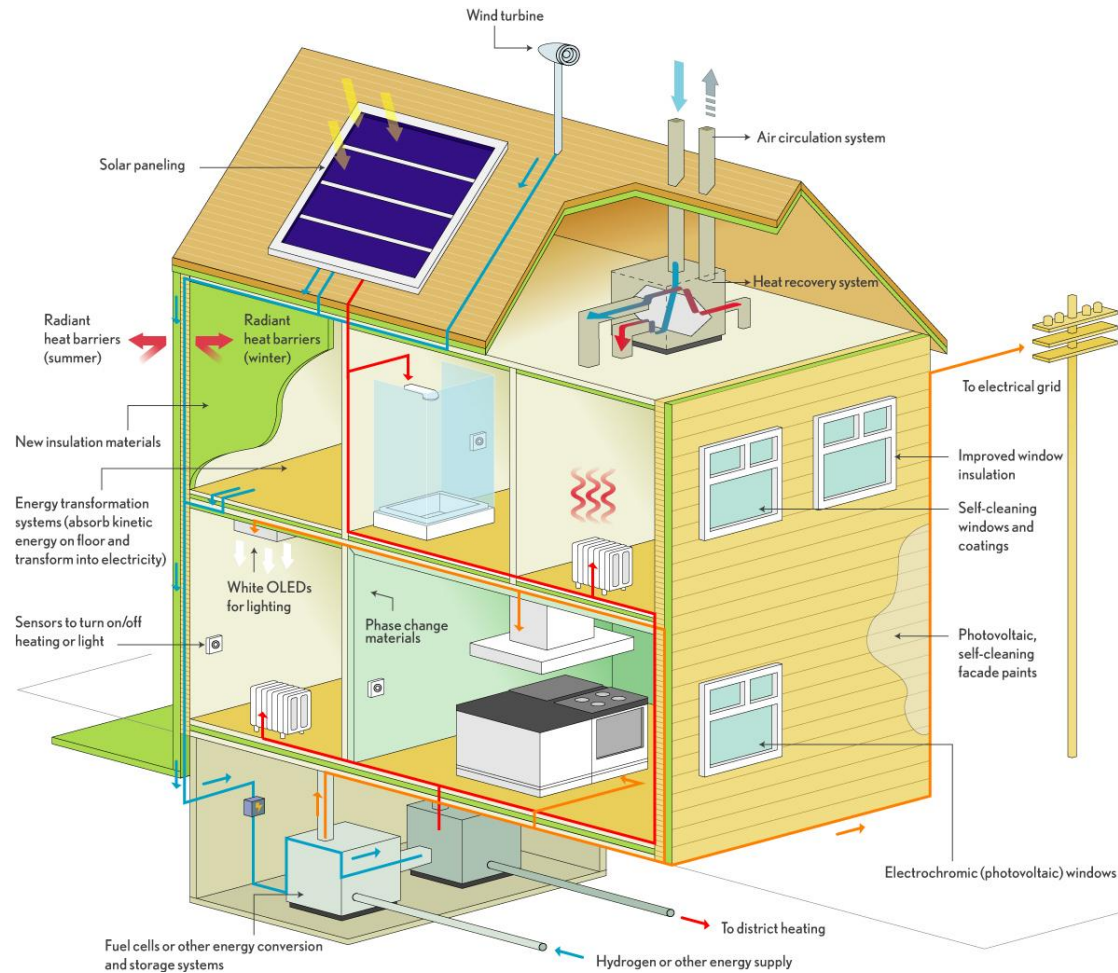
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Build a long-term policy framework so that...



**Consumers create the markets
for more sustainable
technologies**

**Existing know how can deliver
bulk of the medium term
resource reductions required.
Intelligent public private
initiatives can help speed and
integrate this process.**



Political agreement can foster performance roadmap



Auctioning for all sectors by 2020 ?

100% Auctioning
From 2013

Power Sector

Partial Auctioning
Increasing share from 20%
to 100% or flat rate of
20% until 2020 ?

Manufacturing Industry
“non-exposed”

100% Free Allocation
Benchmark-based until
2020 ?

«Exposed» Sectors

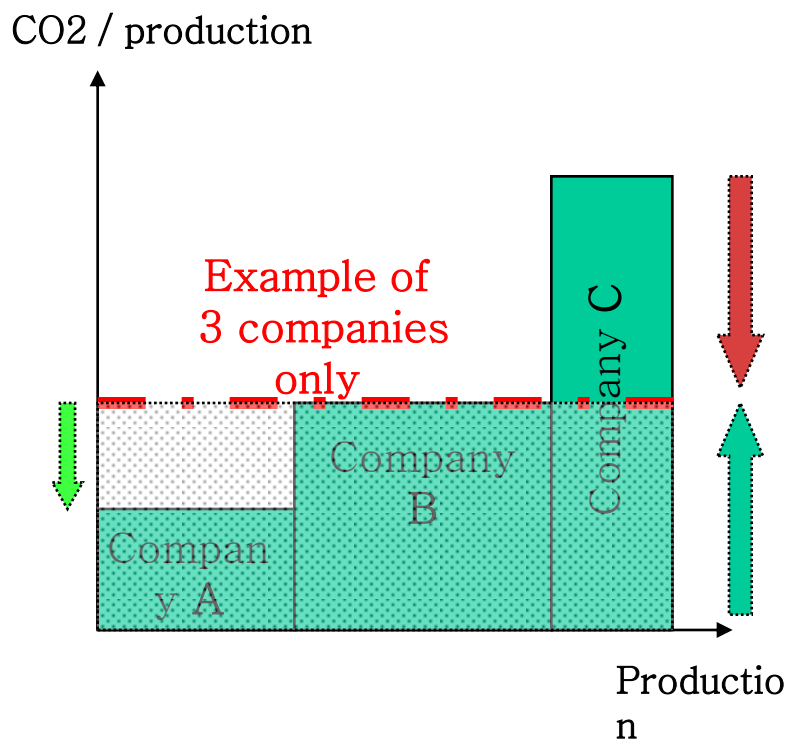
Clarity for the chemical industry: only by 2010?!



Cefic key demands

- **Certainty:** Recognition for our industry being an “**exposed sector**” and energy intensive
- Performance based, free allocation of CO₂ certificates (8 major processes)
- Inclusion of “**indirect emissions**” (electro-intensive processes such as chloralkali)
- Support for global agreements with equal rules and carbon price
- No need for Border Tax Adjustments

Maintain Industry Competitiveness
Make Progress on CO₂ Intensity Reduction



How it works

- Establish companies' CO₂ performance
- Establish CO₂ benchmark
- Allocate CO₂ allowances free according to benchmark

Result

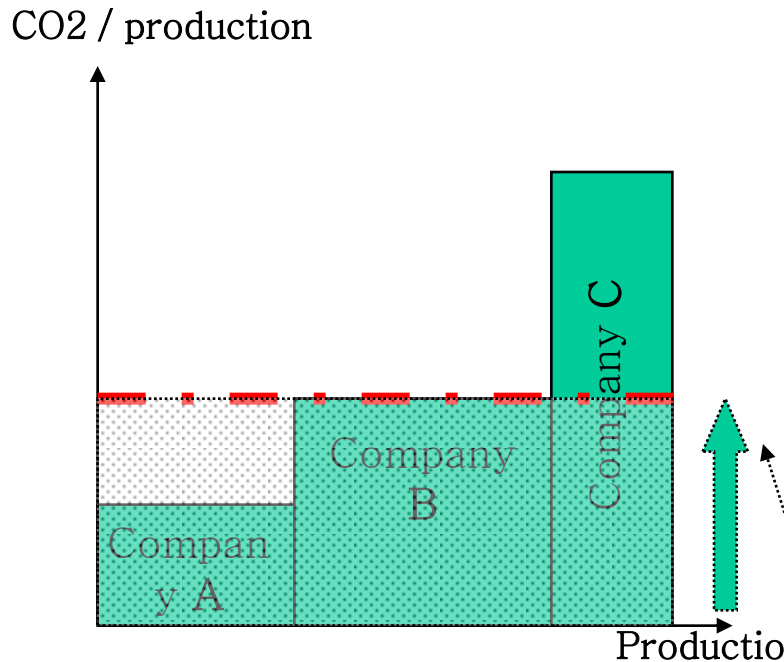
- All companies have the same incentive to reduce emissions
- Company A&B: incentive to reduce emissions to increase profits
- Company C: incentive to reduce emissions to avoid costs

➔ Overall improvement of sector's CO₂ performance

Benchmarking vs. Auctioning



Benchmarking



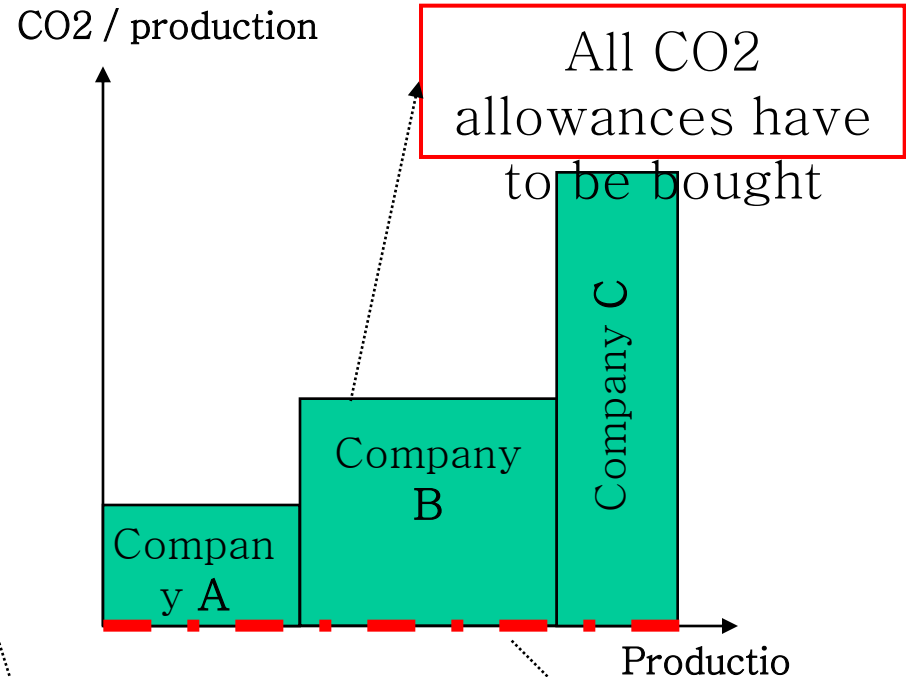
Cost difference between benchmarking and

auctioning

Benchmarking allows good performing companies to keep monies for investments and innovation instead

of financing the public domain

Auctioning



8 Sub-Sectors for Benchmarks



- 1. Crackers (HVC)**
- 2. Ammonia**
- 3. Chlor-Alkali**
- 4. Soda Ash**
- 5. Carbon Black**
- 6. Nitric Acid**
- 7. Adipic Acid**
- 8. Utilities (Boilers and CHP)**