

EURACOAL

European Association
for Coal and Lignite



Global development of the energy markets: coal perspectives

18th Handelsblatt Annual Conference – Energy Industry 2011

Intercontinental, Berlin – 18-20 January 2011

Brian Ricketts – Secretary General

Overview

- The European Association for Coal and Lignite.
- Types of coal.
- Worldwide availability of coal and other fuels.
- Coal consumption trends around the world.
- Coal price trends, including shipping costs.
- Security of energy supply.
- The climate protection challenge.

EURACOAL – serving the interests of the European coal industry.

EURACOAL: 33 members from 19 countries

- COALPRO - Confederation of UK Coal Producers (GBR)
- DEBRIV - Deutscher Braunkohlen-Industrie-Verein (DEU)
- GVSt - Gesamtverband Steinkohle (DEU)
- Mini Maritza Istok (BGR)
- PPC - Public Power Corporation (GRC)
- PPWB - Confederation of the Polish Lignite Producers (POL)
- ZPWGK - Polish Hard Coal Employer's Association (POL)
- ZSDNP - Czech Confederation of Coal and Oil Producers (CZE)
- APFCR - Coal Producers and Suppliers Association of Romania (ROU)
- BRGM - French Geological Service (FRA)
- CARBUNIÓN - Federation of Spanish Coal Producers (ESP)
- Coallmp - Association of UK Coal Importers (GBR)
- D.TEK (UKR)
- EPS - Electric Power Industry of Serbia (SRB)
- GIG - Central Mining Research Institute (POL)
- HBP - Hornonitrianske bane Prievidza (SVK)
- ISFTA – Institute for Solid Fuels Technology & Applications (GRC)
- Mátrai Kraftwerke (HUN)
- PATROMIN - Federation of the Romanian Mining Industry (ROU)
- Premogovnik Velenje (SVN)
- RMU Banovici D.D. (BIH)
- Swedish Coal Institute (SWE)
- TKI - Turkish Coal Enterprises (TUR)
- Ukrvuglerobotodavtsy - All-Ukrainian Coal Employer's Association (UKR)
- Vagledobiv Bobov dol EOOD (BGR)
- VDKI - Verein der Kohlenimporteure (DEU)
- Coaltrans Conferences Limited (GBR)
- EMAG (POL)
- Finnish Coal Info (FIN)
- Golder Associates (GBR)
- ISSeP - Institut Scientifique de Service Public (BEL)
- KOMAG (POL)
- University of Nottingham (GBR)

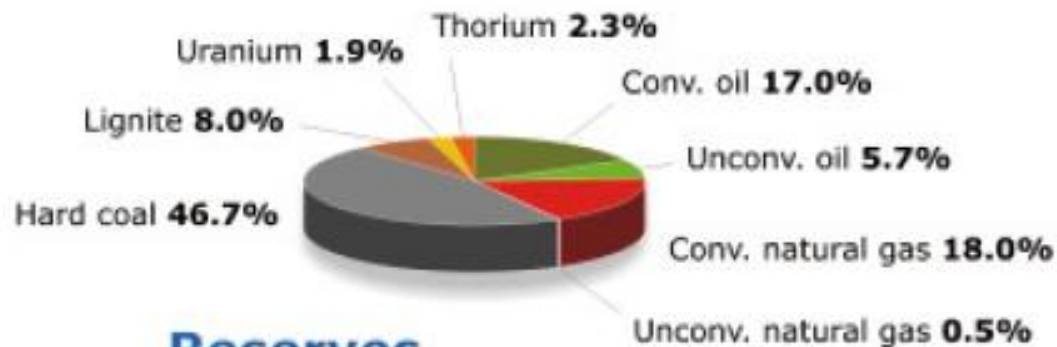


Types of coal and peat

Coal Types and Peat					
UN-ECE	USA (ASTM)	Germany (DIN)			
Peat	Peat	Torf			
Ortho-Lignite	Lignite	WEICHBRAUNKOHLE			
Meta-Lignite		Mattbraunkohle		HARTKOHLE	
Subbitum. Coal	Sub-bituminous Coal	Glanzbraunkohle			
Bituminous Coal	High Volatile Bituminous Coal	Flammkohle	Steinkohle		
		Gasflammkohle			
		Gaskohle			
	Medium Vol. Bitumin. Coal	Fettkohle			
	Low Vol. Bitumin. Coal	Eßkohle			
Anthracite	Semi-Anthracite	Magerkohle			
	Anthracite	Anthrazit			

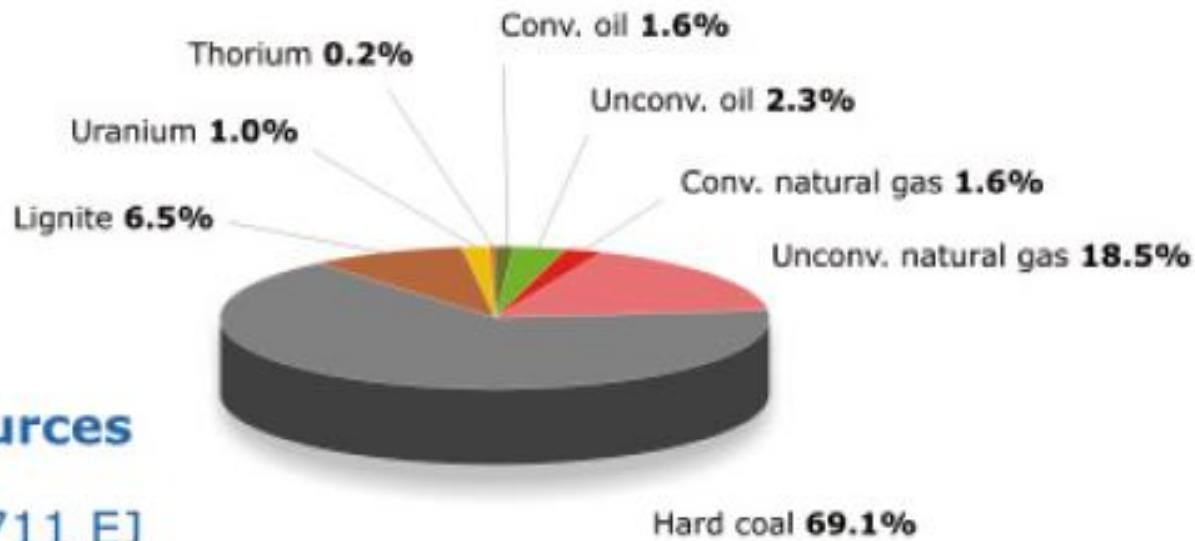


Fuel resources and reserves, 2007



Reserves

38,695 EJ

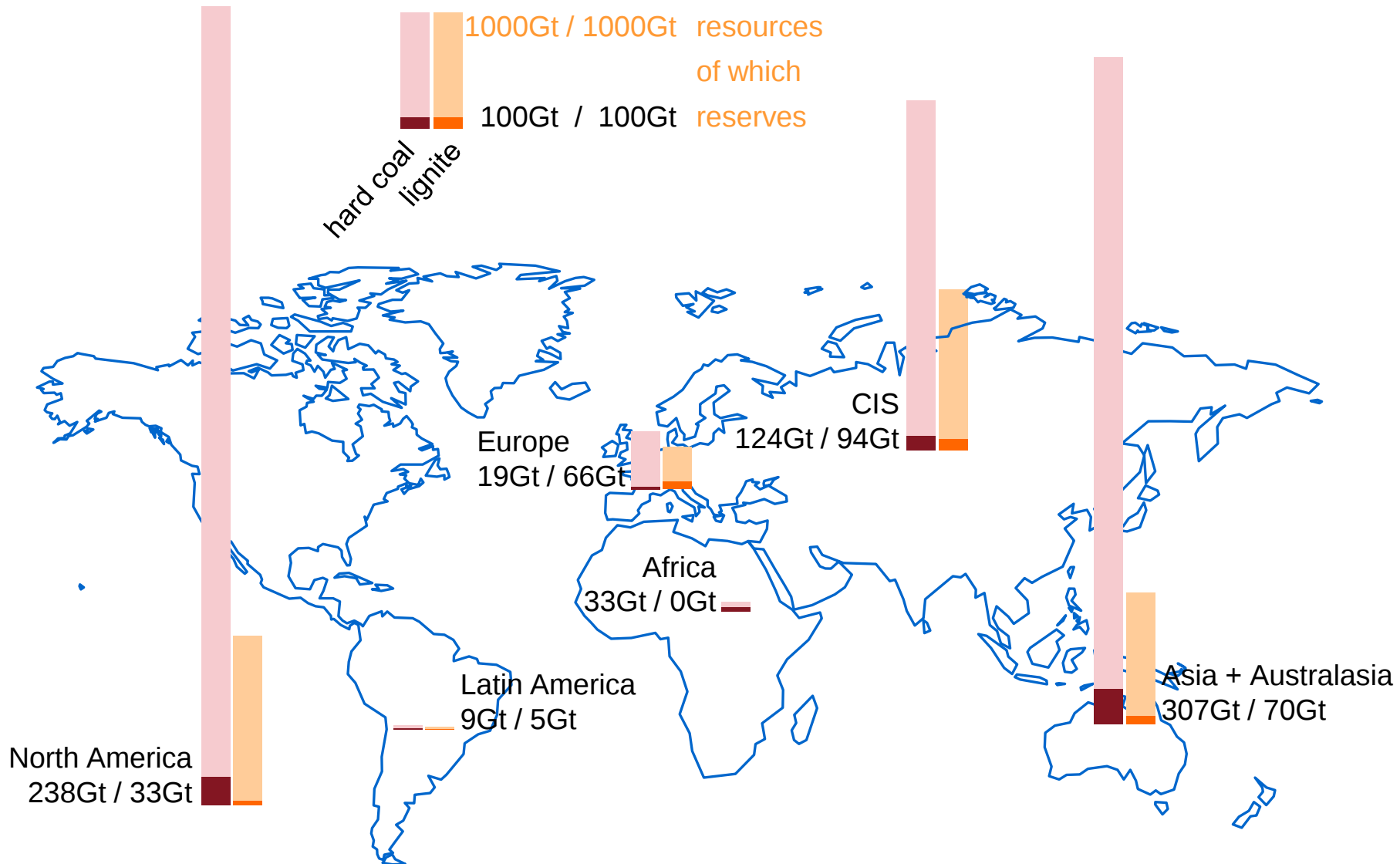


Resources

571,711 EJ

source: *Annual Report 2009 – Reserves, Resources and Availability of Energy Resources*, Bundesanstalt für Geowissenschaften und Rohstoffe

World coal & lignite resources/reserves, 2009



source: Annual Report 2009 – Reserves, Resources and Availability of Energy Resources, Bundesanstalt für Geowissenschaften und Rohstoffe

Coal reserves are super abundant

- 997 billion tonnes or 144 years.
- Distributed in many countries.



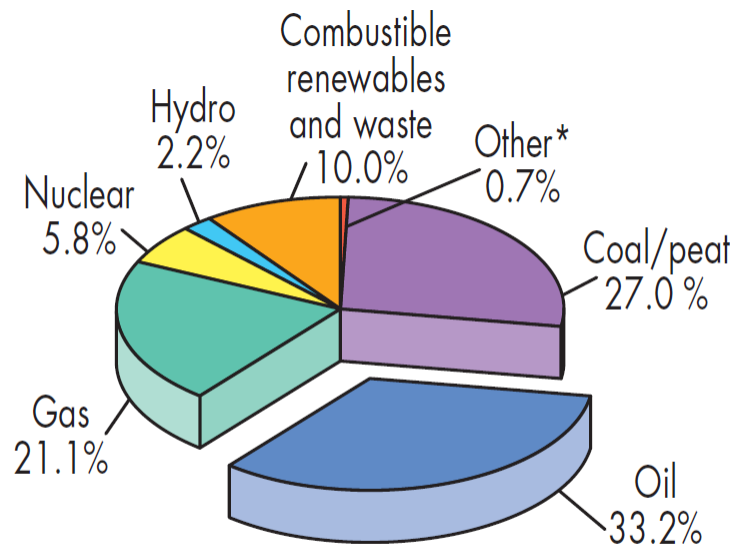
North Antelope Rochelle Mine, Wyoming, USA: 98.3 Mt annual production

source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2010

Developing countries will rely on coal to build their economies.

Coal in world energy supply, 2008

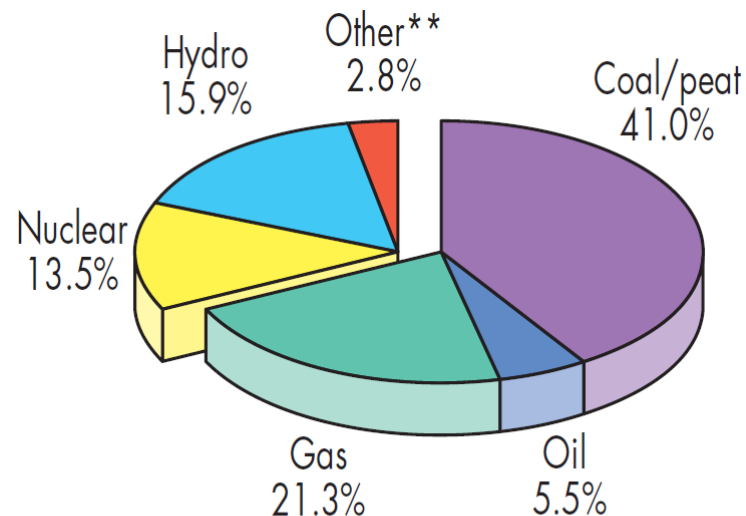
Global Total Primary Energy Supply (TPES)



12 267 Mtoe

	TPES	coal's share
World	12 267 Mtoe	27.0%
EU-27	1 759 Mtoe	18.5%
USA	2 284 Mtoe	23.9%
China***	2 116 Mtoe	66.3%
India	621 Mtoe	42.1%

Global Electricity Generation



20 181 TWh

	elec. gen.	coal's share
World	20 181 TWh	41.0%
EU-27	3 341 TWh	30.5%
USA	4 344 TWh	49.1%
China***	3 457 TWh	78.9%
India	830 TWh	68.6%

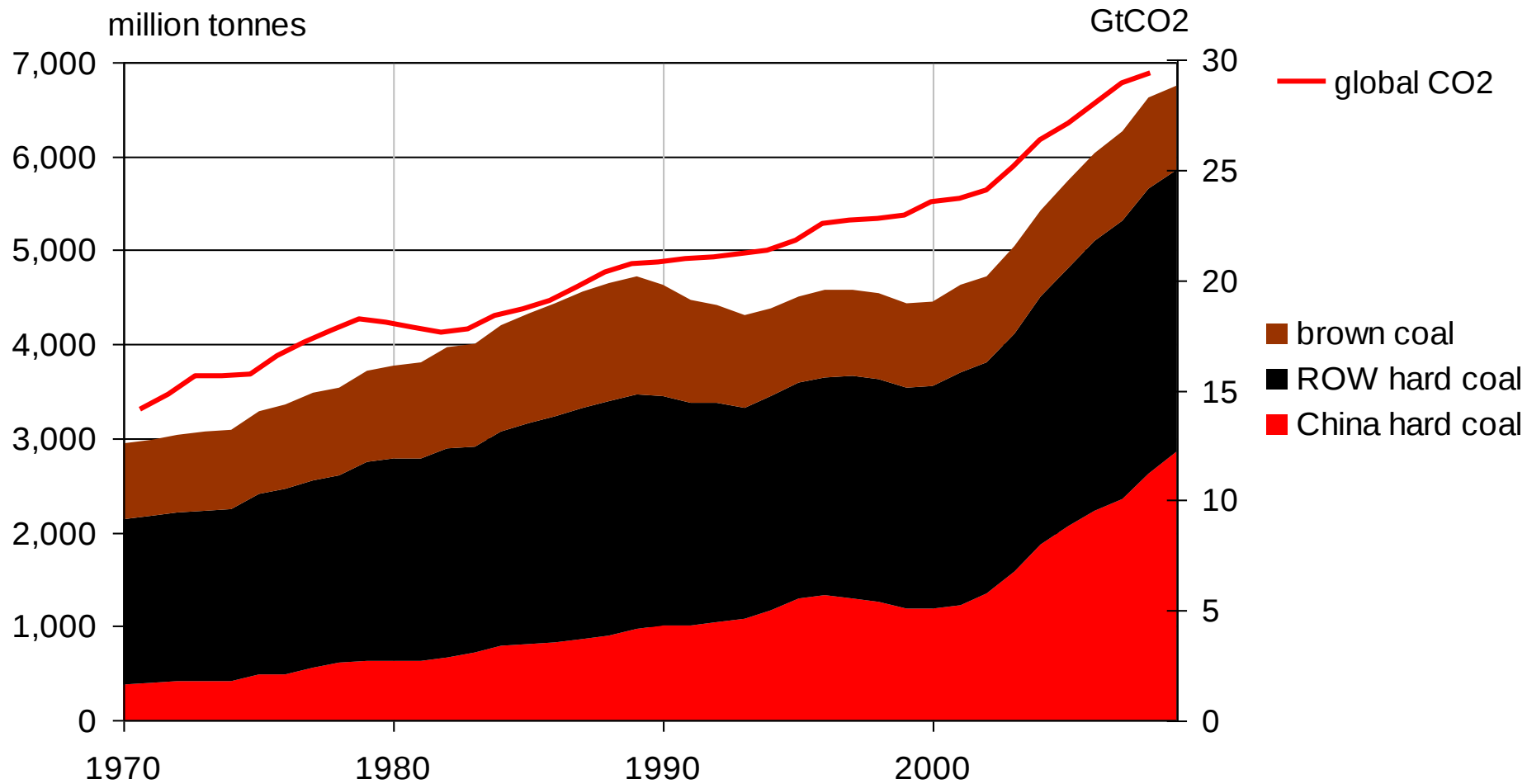
* inc. geothermal, solar, wind and heat.

** inc. geothermal, solar, wind, combustible renewables and waste, and heat.

*** inc. Hong Kong.

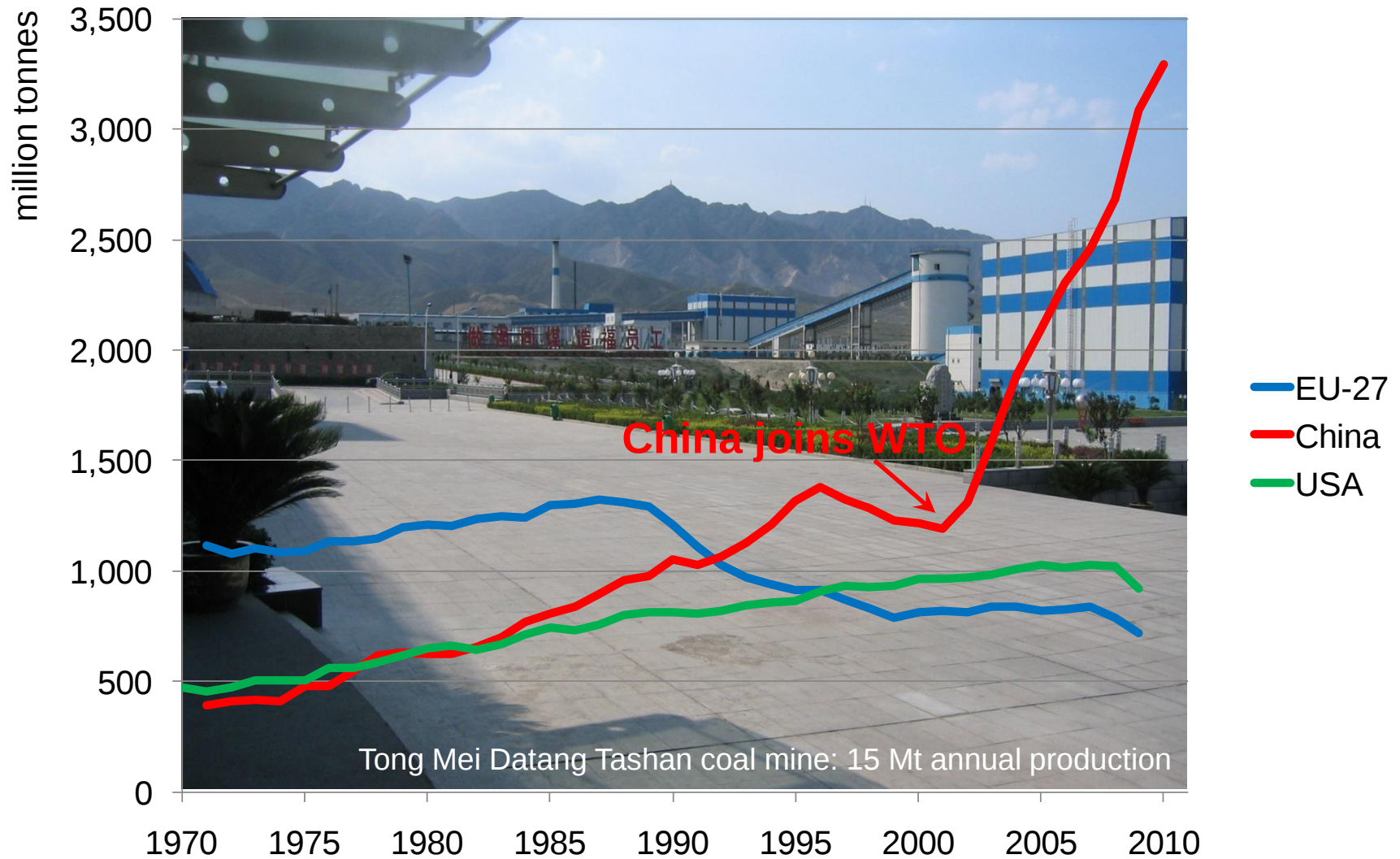
sources: IEA Key World Energy Statistics 2010 and IEA databases (© OECD/IEA, 2010)

World coal production (to 2009) and CO₂ emissions from fossil fuel use (to 2008)



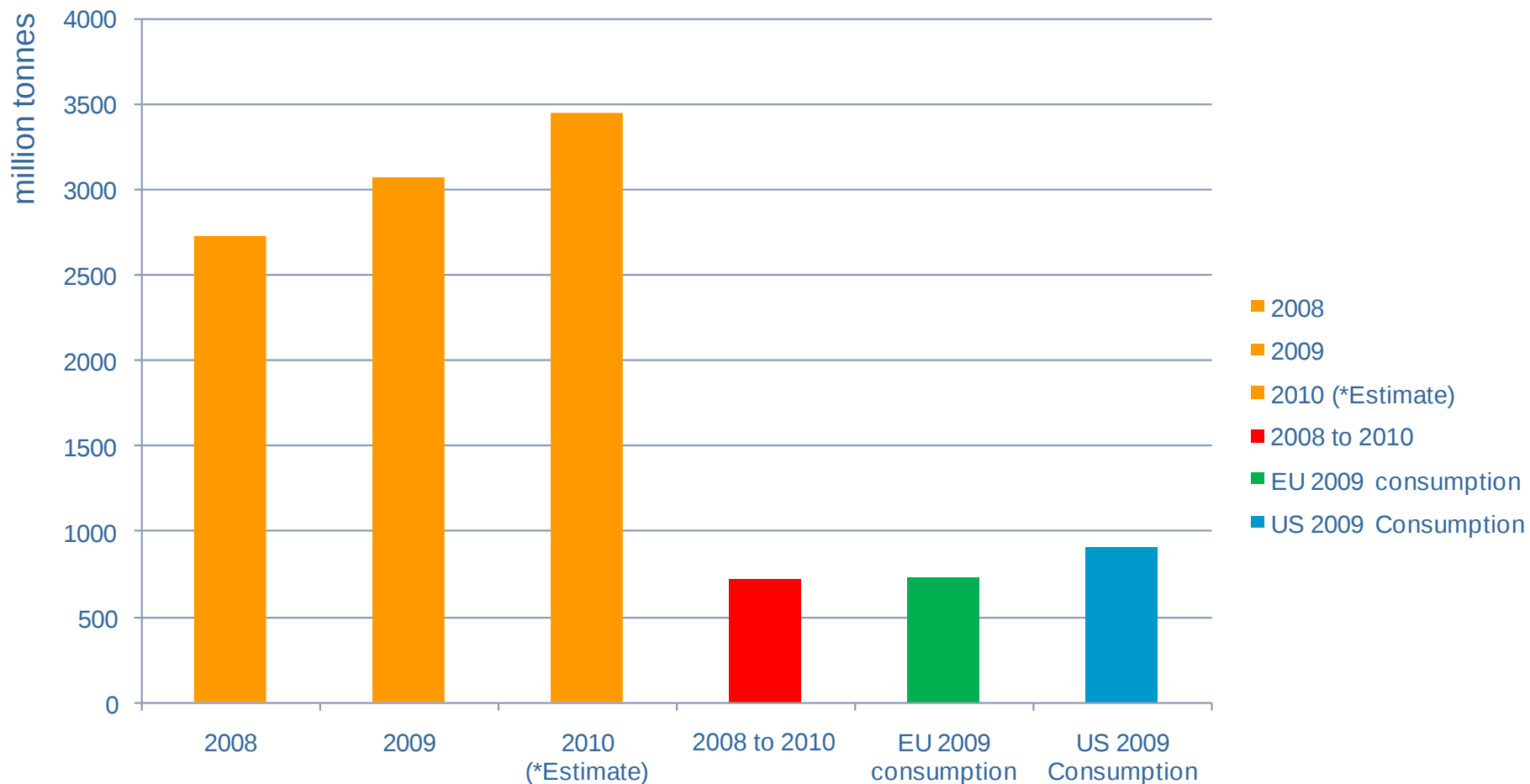
source: Coal Information 2010 and CO₂ Emission from Fossil Fuel Combustion 1971-2008, OECD/IEA

Coal use in EU-27, China and USA, 1970-2010



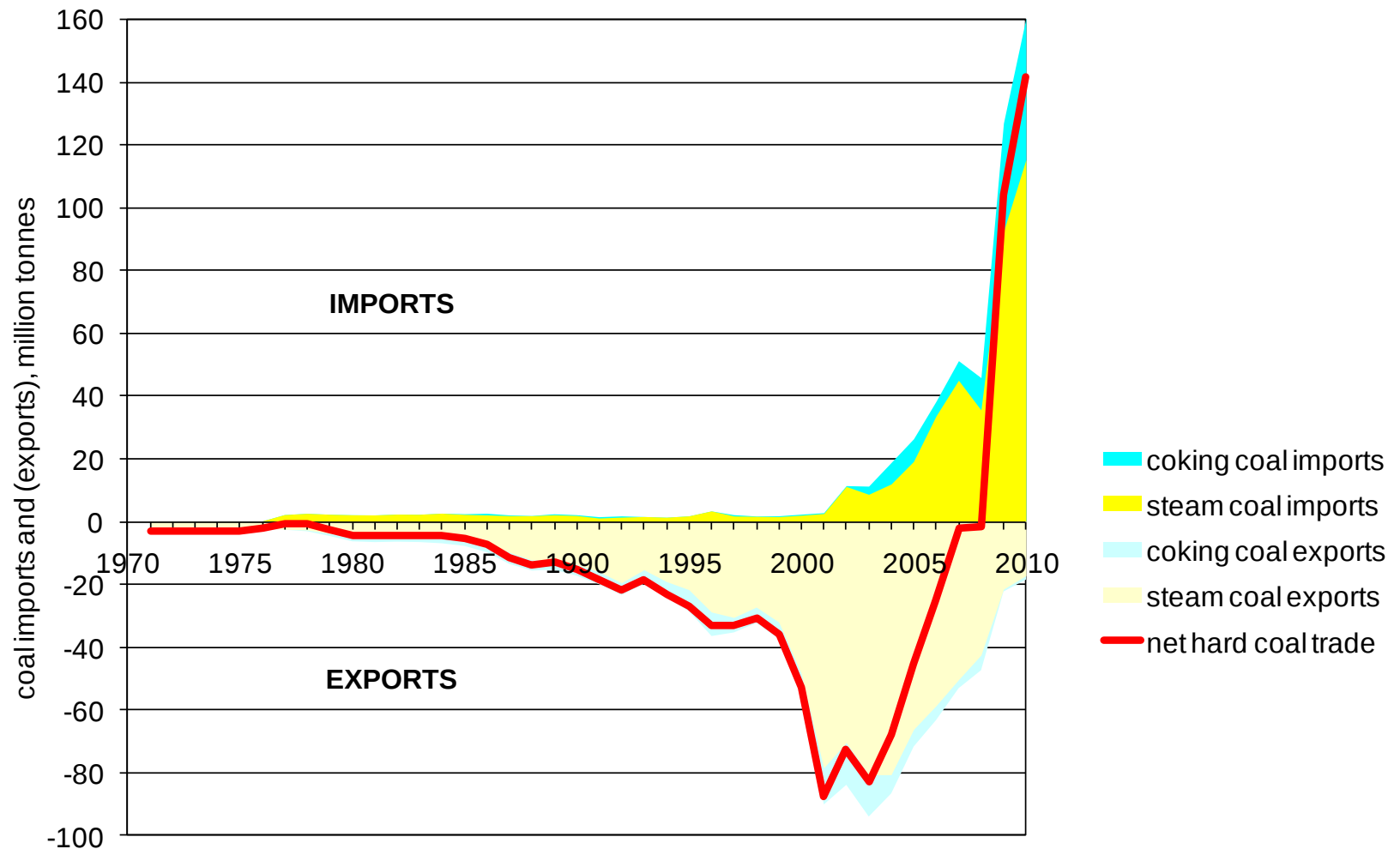
source: *Coal Information 2010*, OECD/IEA (with 2010 estimate for China)

Growth of coal use in China



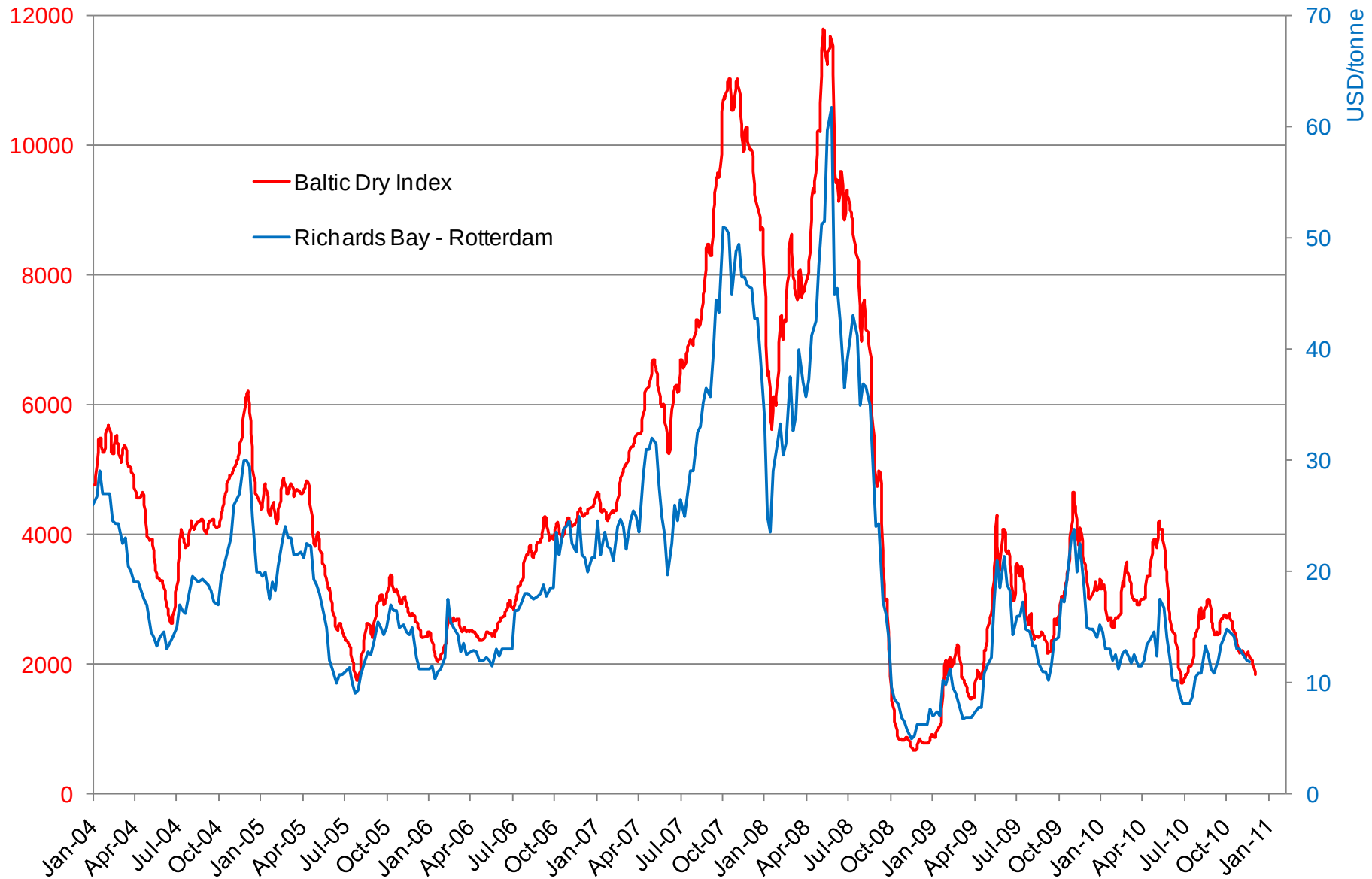
China's incremental demand over the last two years equals TOTAL EU-27 coal use and is not far off TOTAL consumption in the USA.

Chinese coal trade 1971-2010



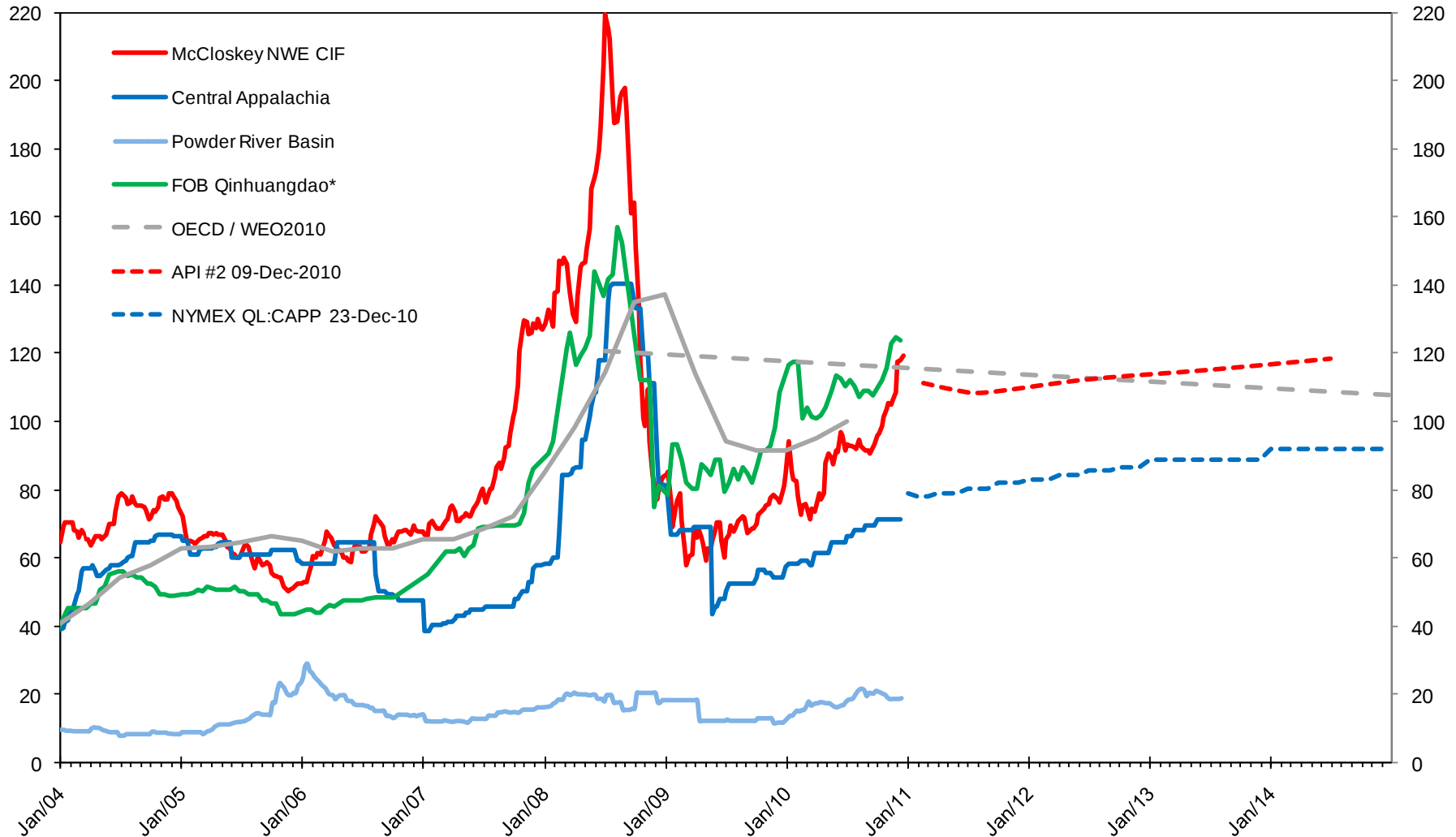
China's coal imports surpassed 126 Mt in 2009 when it became a net importer for the first time. In 2010, imports will reach 160 Mt.

Baltic Dry Index and coal freight rates SA-EU



Global coal prices to Dec 2010 & futures to 2015

USD/tonne (6,000 kcal/kg net)

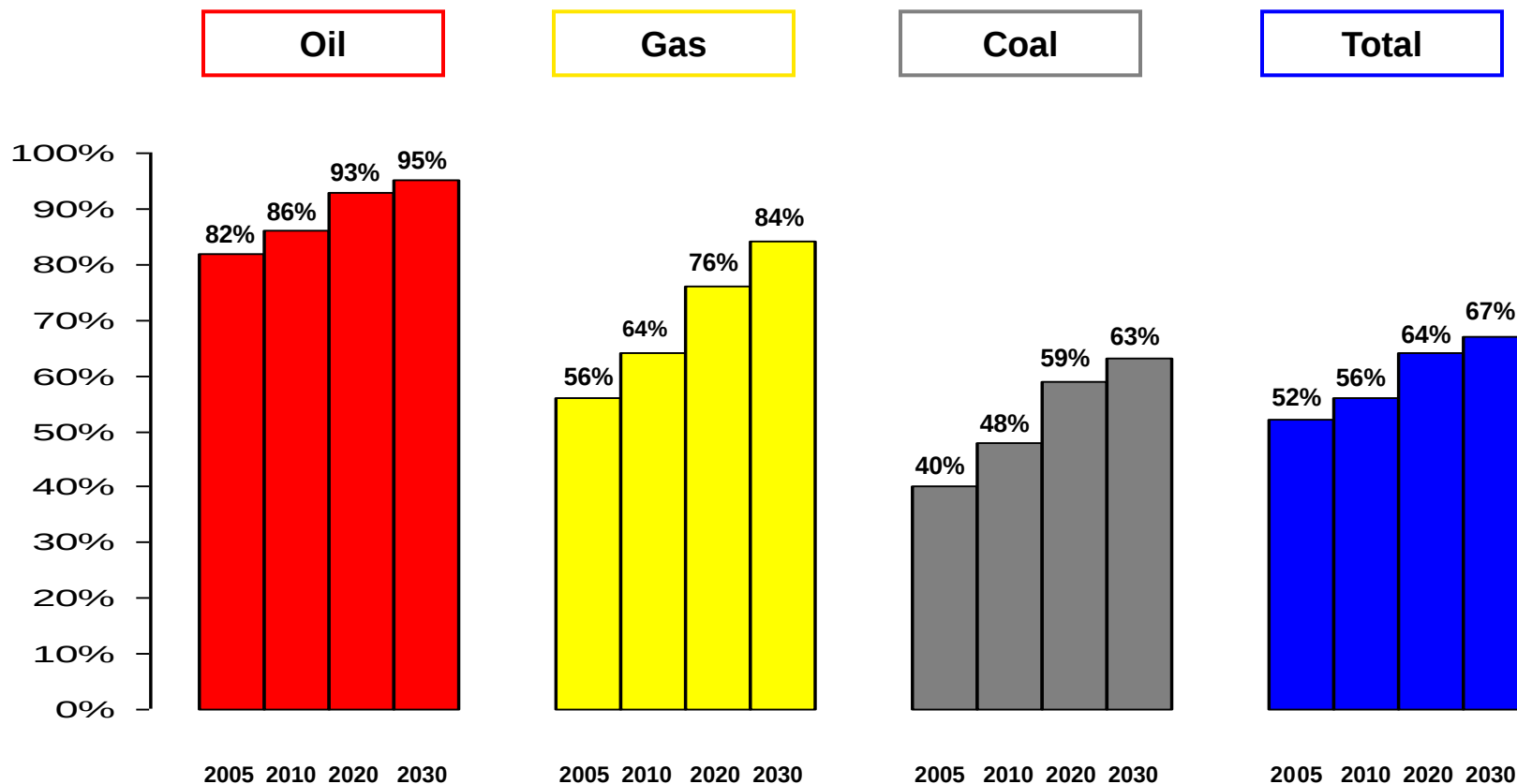


Primary energy sources

- Coal: relatively high emissions, but readily available and inexpensive.
- Oil: easy to handle, but resources are limited and concentrated. Transport and offshore extraction carry risks.
- Gas: less emissions, but rather expensive in the long term. Supply security is a concern given the EU's dependence on imports.
- Nuclear: cheap and reliable, but waste issue.
- Wind/sun: “sexy”, but expensive and intermittent.

All primary energy sources have their pros and cons.

Projected EU energy import dependence



source: *EU Trends to 2030*, 2007 update, European Commission

The use of coal helps to reduce import dependence.

Major advantages of coal

- Almost **80% of EU-27 domestic fossil fuel reserves**.
- Hard coal and/or lignite are **available in most EU Member States**.
- Coal balances the EU energy mix and **avoids security of supply and price risks**.
- **Coal mining and value chain create wealth** in the EU, particularly in a number of disadvantaged regions.
- The EU coal industry **employs around 280,000 people**.

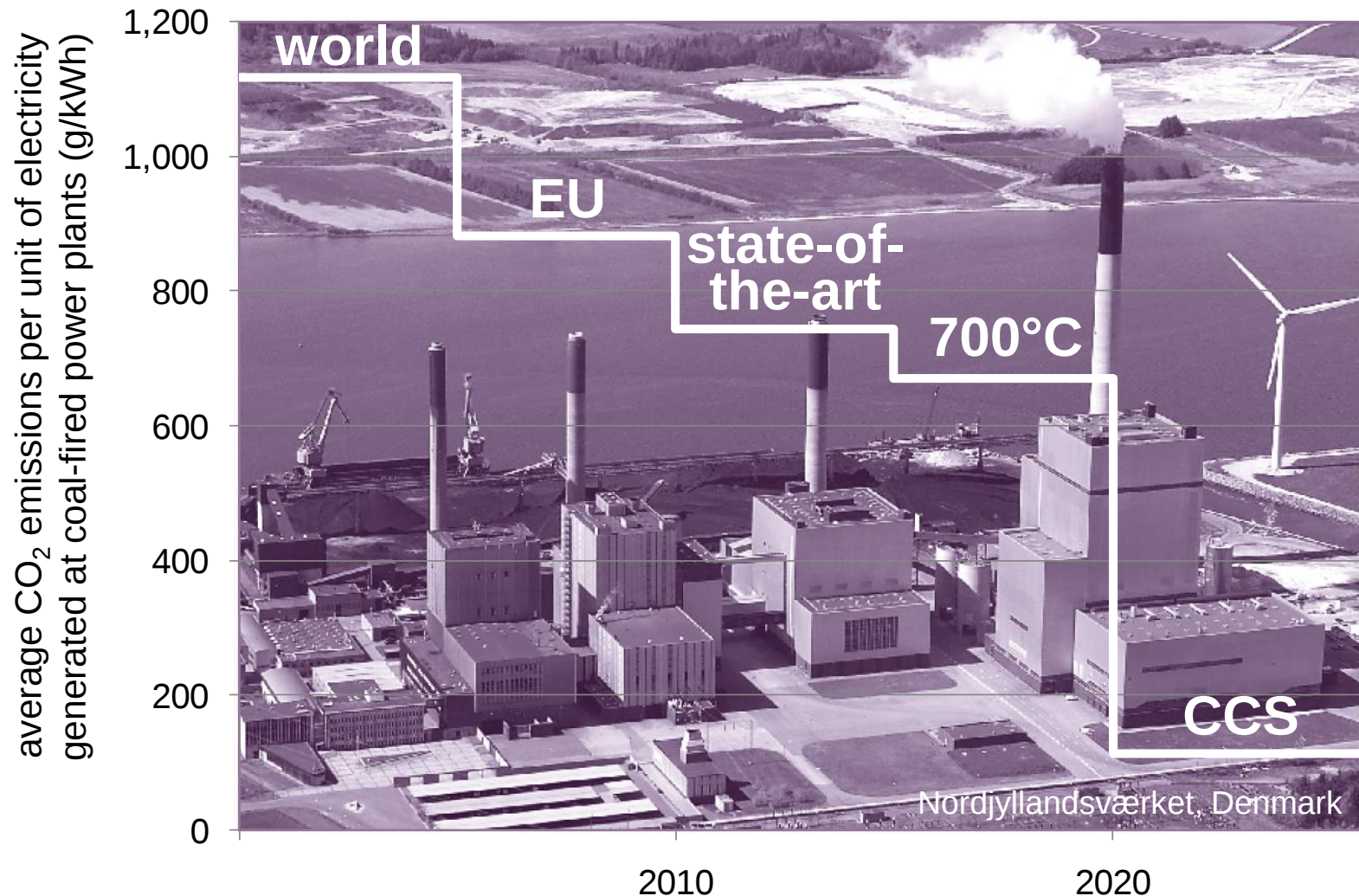
The use of coal helps EU competitiveness.

To 2020 – how to achieve lower emissions

- Coal-fired power plant technology still has substantial potential for development.
- Cost-efficient climate protection is already possible today by replacing old, less efficient coal-fired power plants built in the 60s by new highly efficient installations based on BAT which can save one third of the emitted CO₂.
- Decision-makers should increase the potential for new coal-fired power plants by creating a stable, long-term framework.

The use of coal can be compatible with EU environmental targets.

Modernisation and CO₂ capture & storage (CCS)



source: VGB PowerTech e.V.

photo courtesy of Vattenfall.

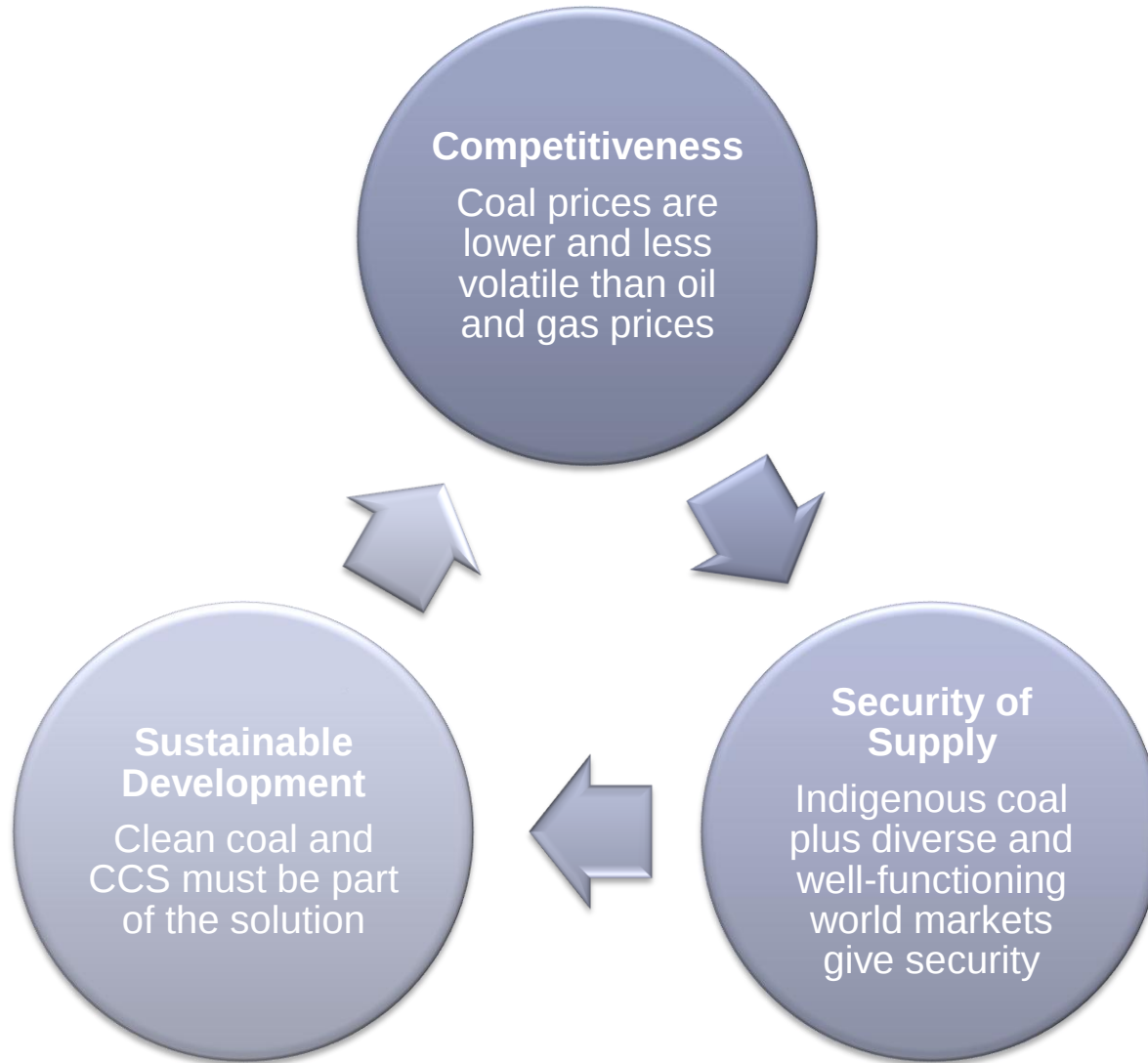
Continuous power plant modernisation and new CCS-ready plants.

After 2020 – commercial CCS expected

- **Carbon dioxide capture and storage (CCS) is important for international climate protection policies;** it is expected to deliver one-fifth of very ambitious GHG reductions by 2050.
- For CCS to become commercial in the next decades, an **EU CCS demonstration network has to be created** in the current decade.
- The **demonstration network does not need high CO₂ prices** – it has to be financed by other means.

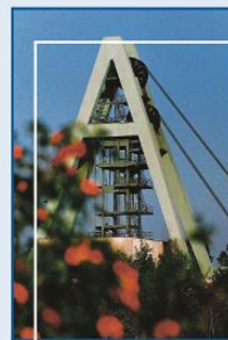
CCS is needed for all fossil fuels: oil, natural gas and coal.

The way forward



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Thank you!



Brian RICKETTS
European Association for Coal and Lignite AISBL
168 avenue de Tervueren, Bte 11
BE-1150 Brussels
Belgium
ricketts@euracoal.org
www.euracoal.org