

e.on

Sales & Trading

Trading Coal

E.ON Sales & Trading, THW Lars Wlecke

Content

- Demand and Supply in Coal
- Physical Trading
- Financial Trading

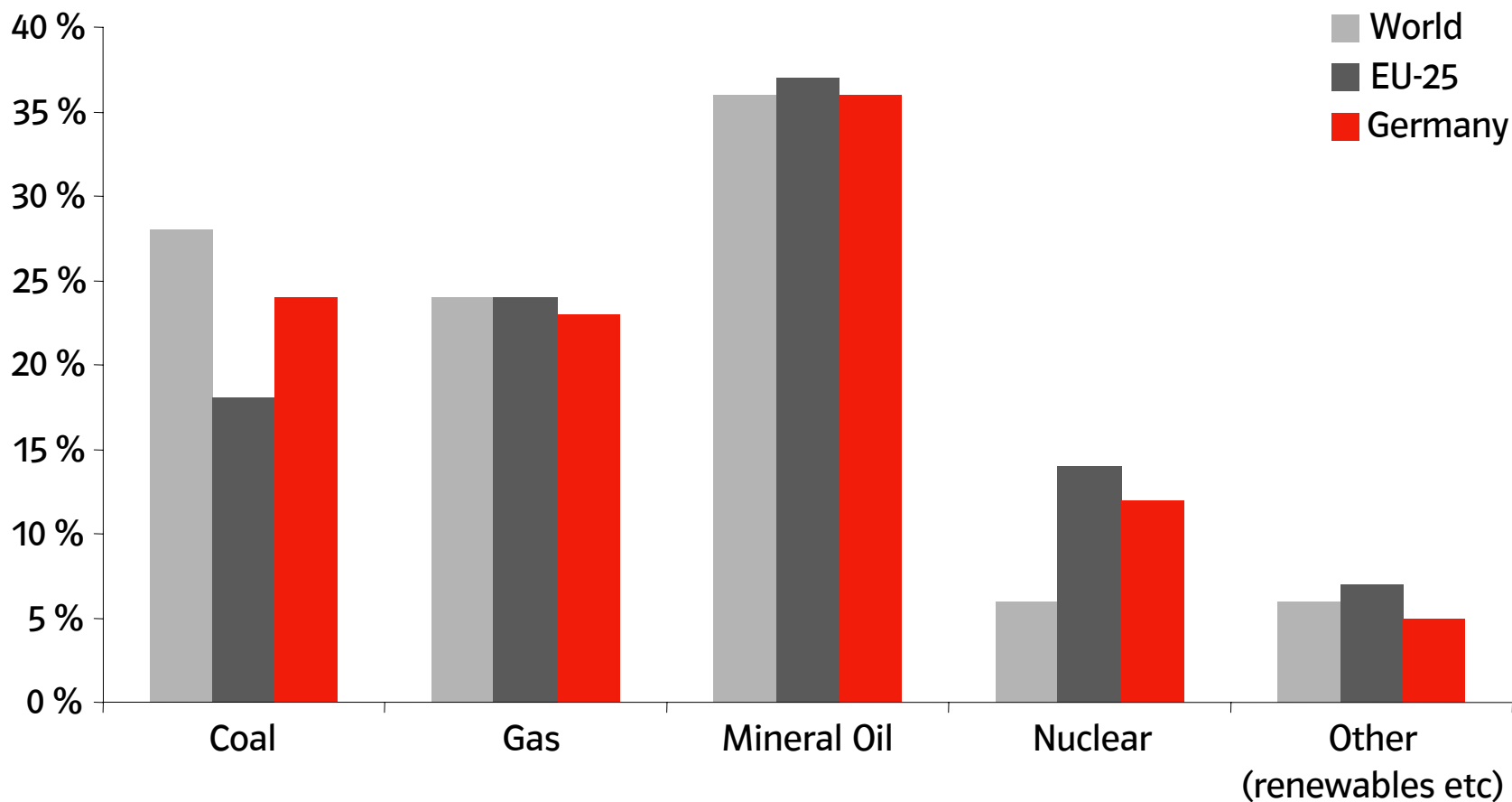


Content

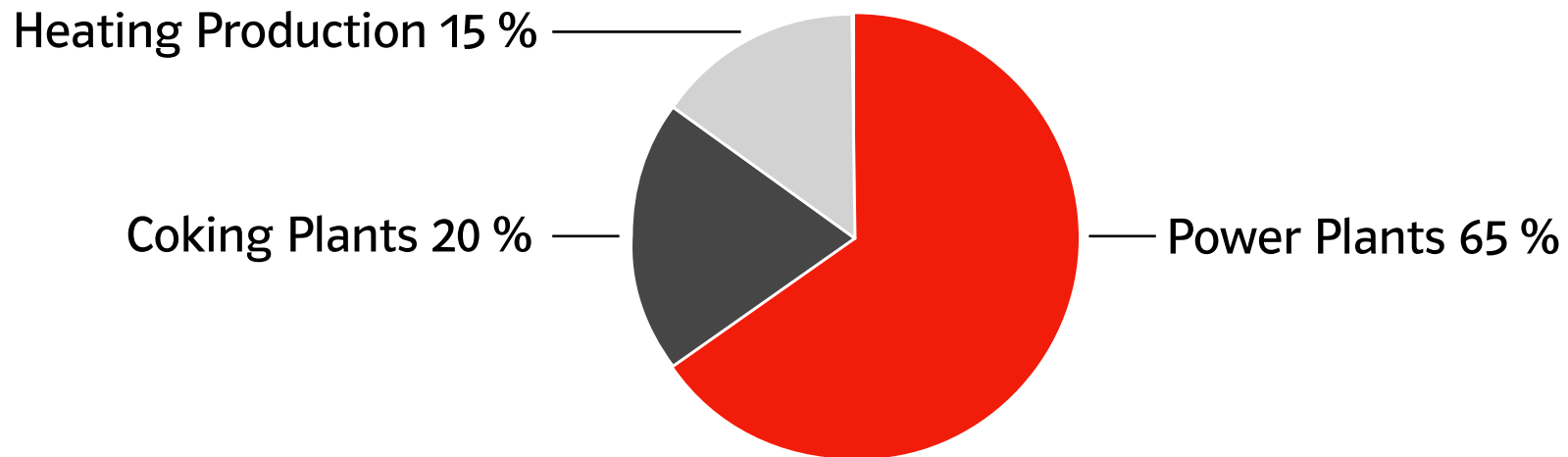
- Demand and Supply in Coal
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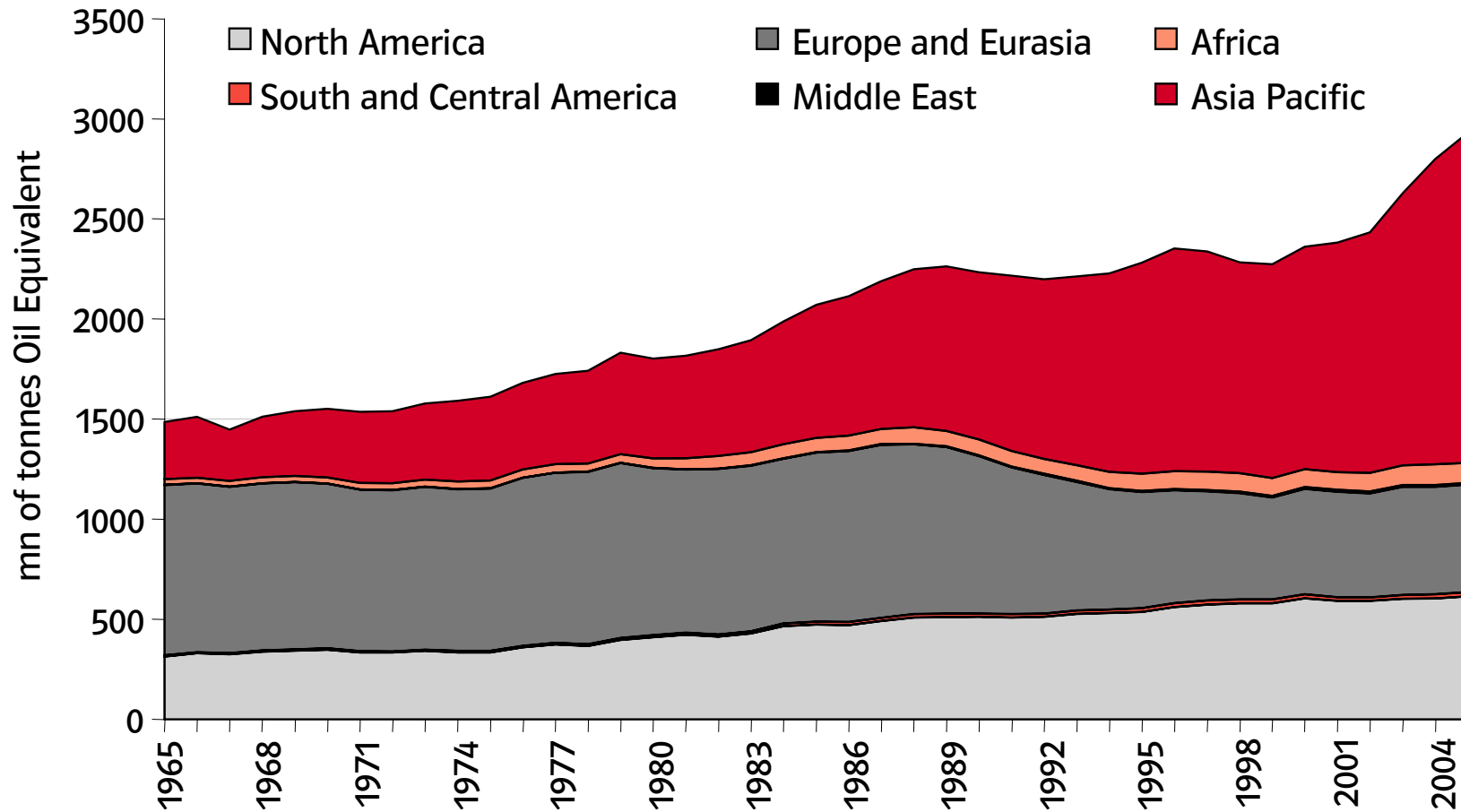
Comparison of Primary Energy Sources in 2005



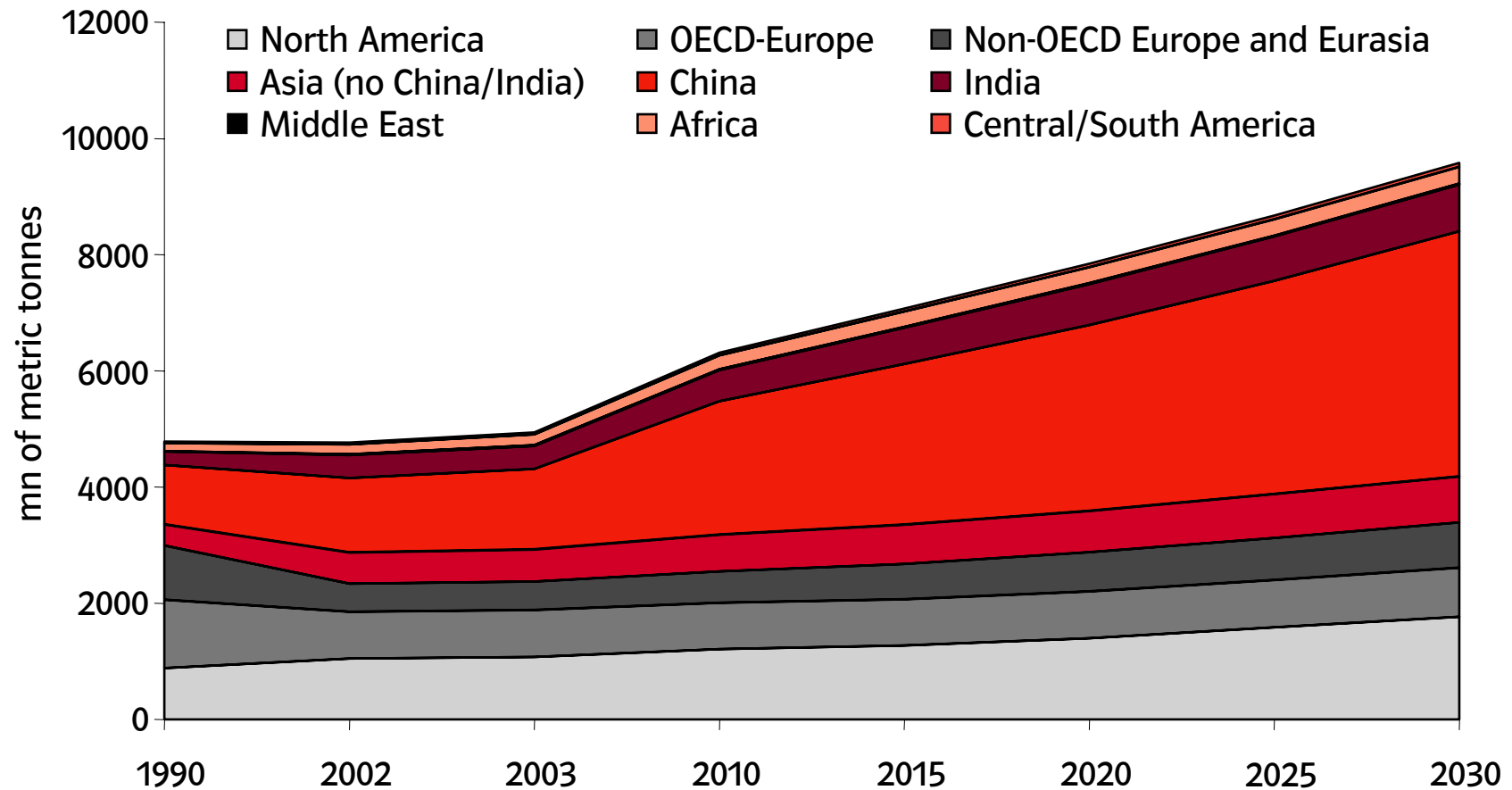
Percentage Hardcoal usage over different Industries in the EU-25 in 2005



Development of Global Coal Consumption (1965 - 2005)

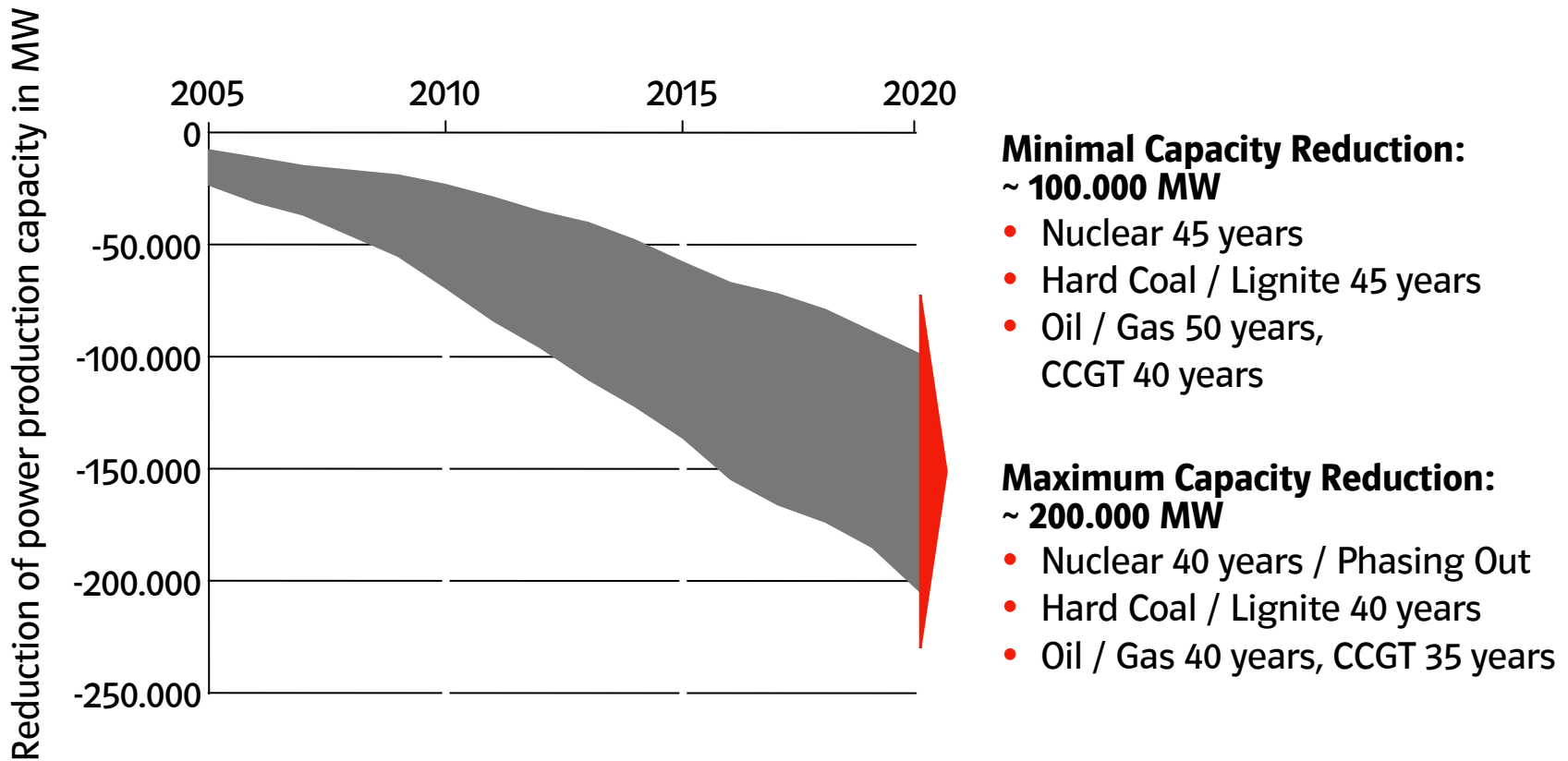


Development of Global Coal Consumption (1990 - 2030)



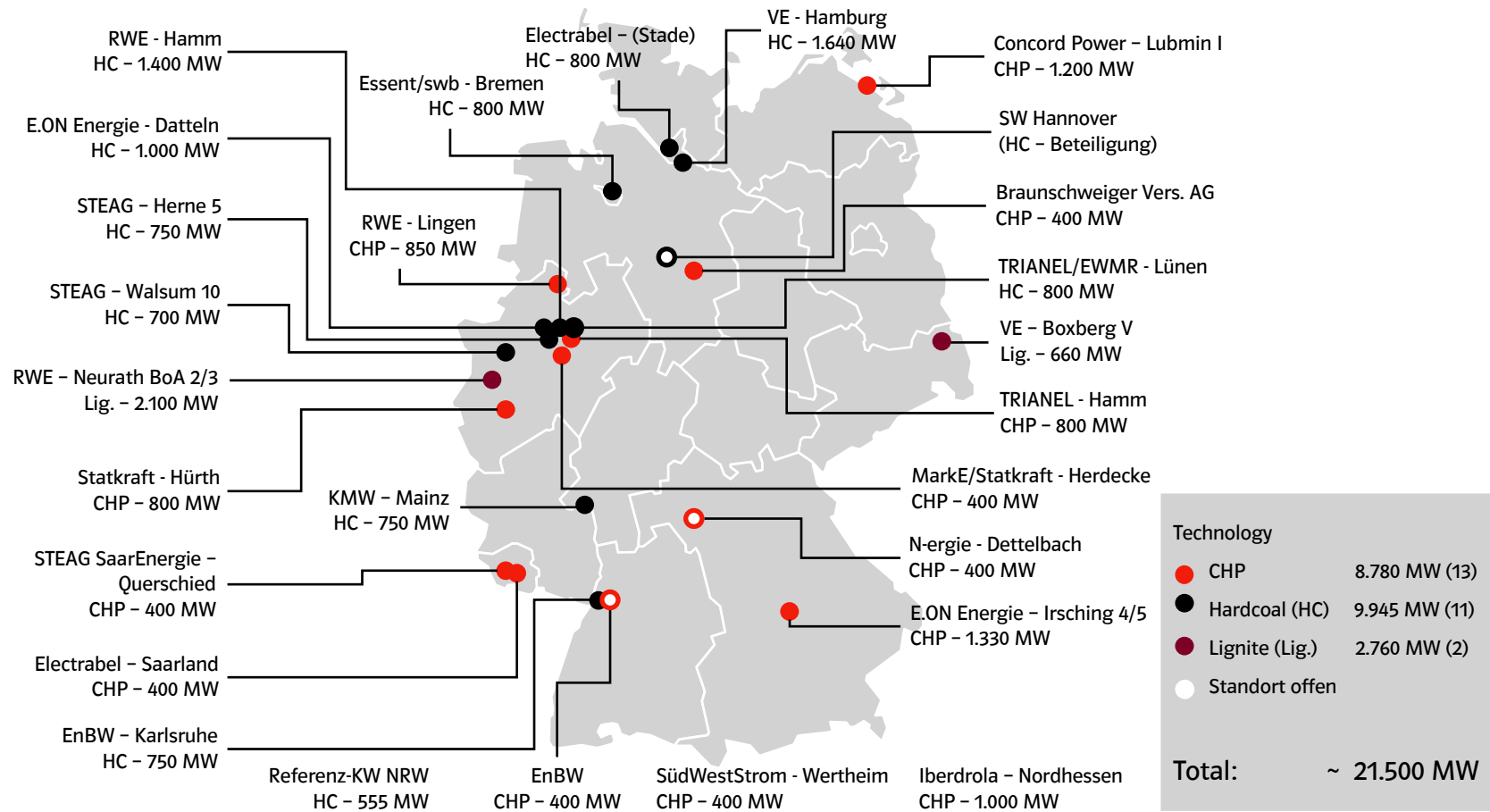
Development in Europa: loss of 100.000 MW

Decommissioning of Capacity in Europe* (2005 - 2020)

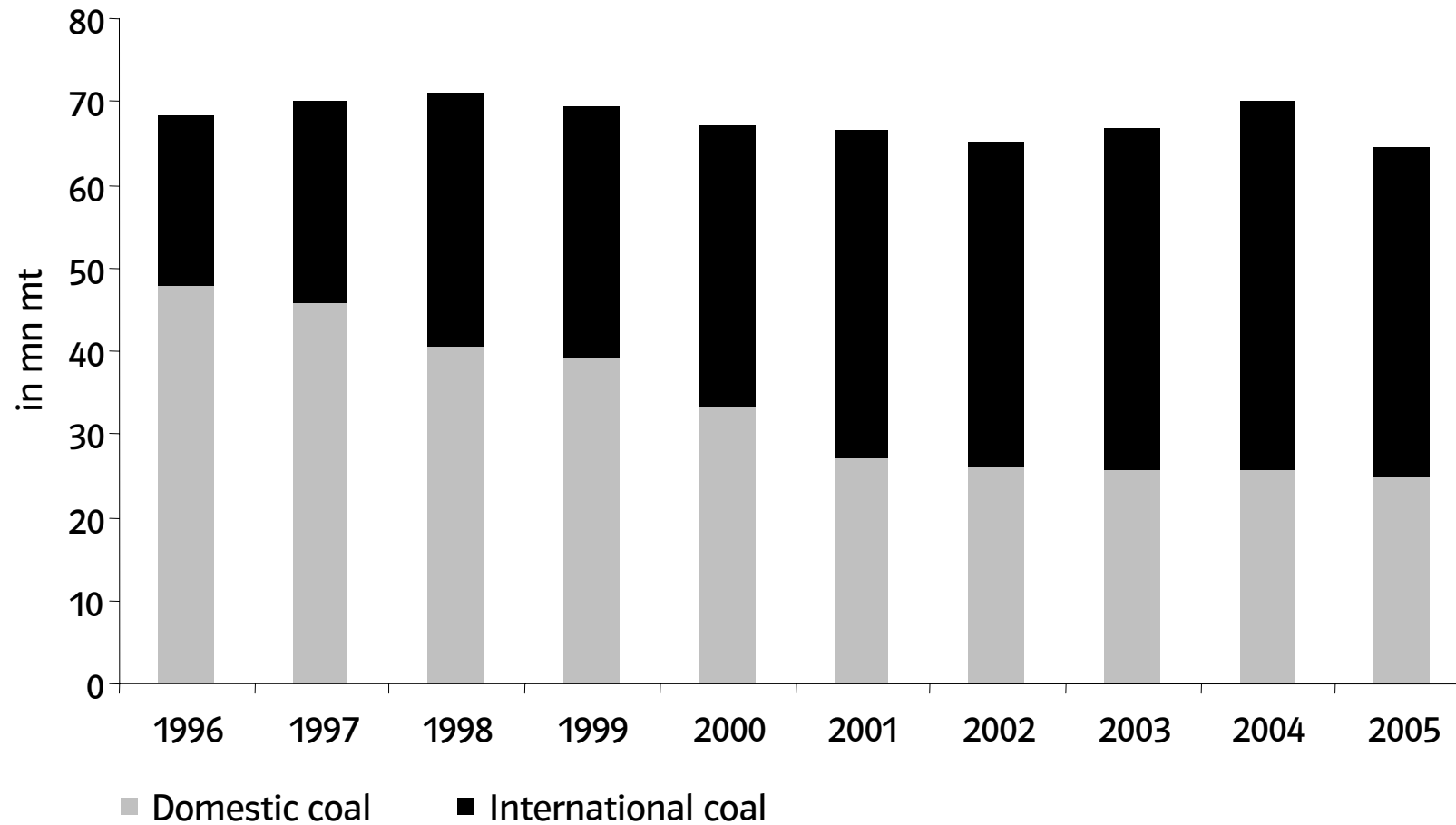


*EU-25 without GB, GR, IRL, SLO, CY, M + BG, RO, N, CH

New Powerplants in Germany

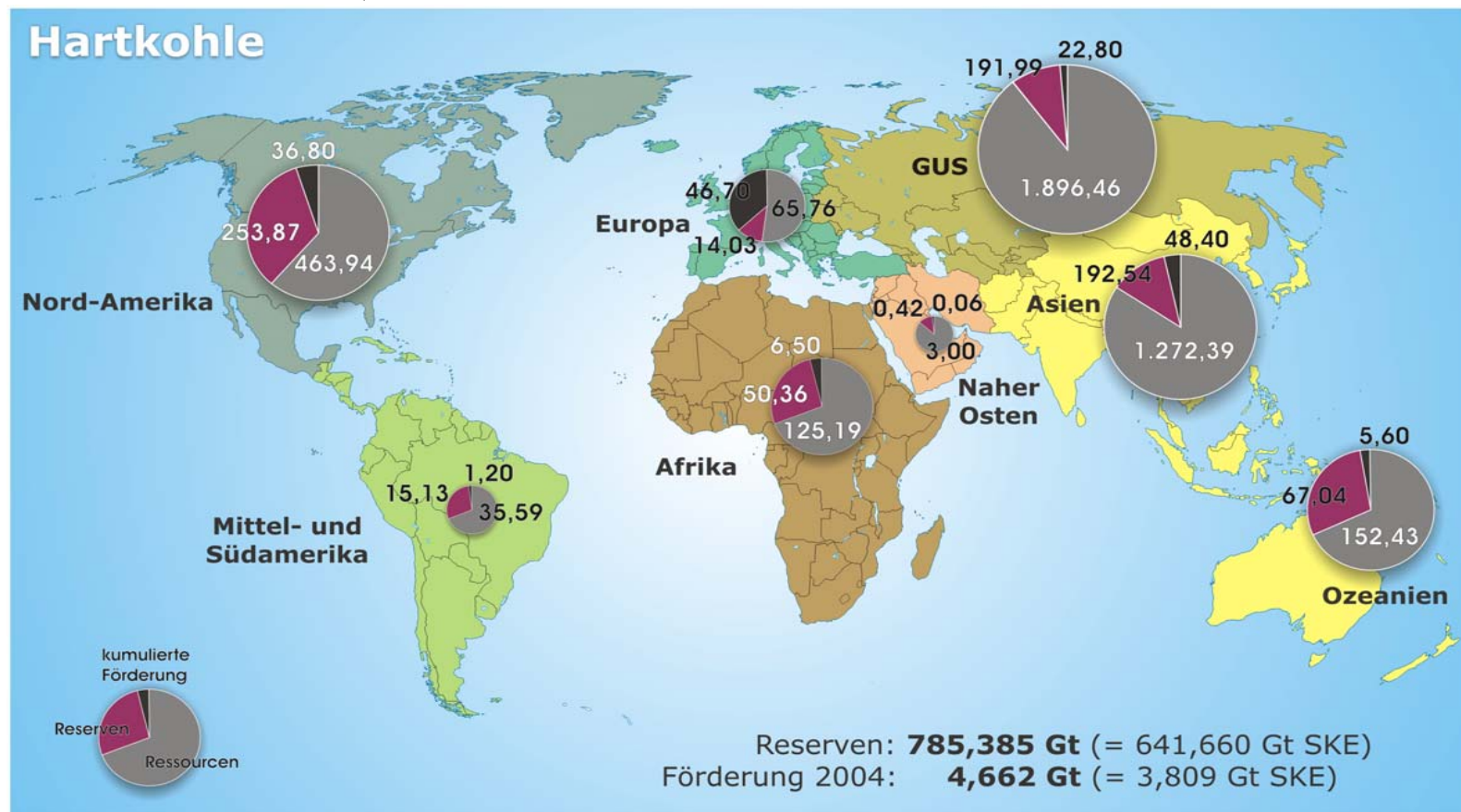


Situation of hard coal in Germany (- 2010)



Regional Dispersion of Hard Coal in the World

(stand 2004, 785 bln. T. Reserves)



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- Financial Trading



Qualities of Coal: There is not **one** commodity

Coal from different mines are different in:

- Heating Value
- CO₂ content
- SO₂ Content
- Moist
- Ashes
- Etc.

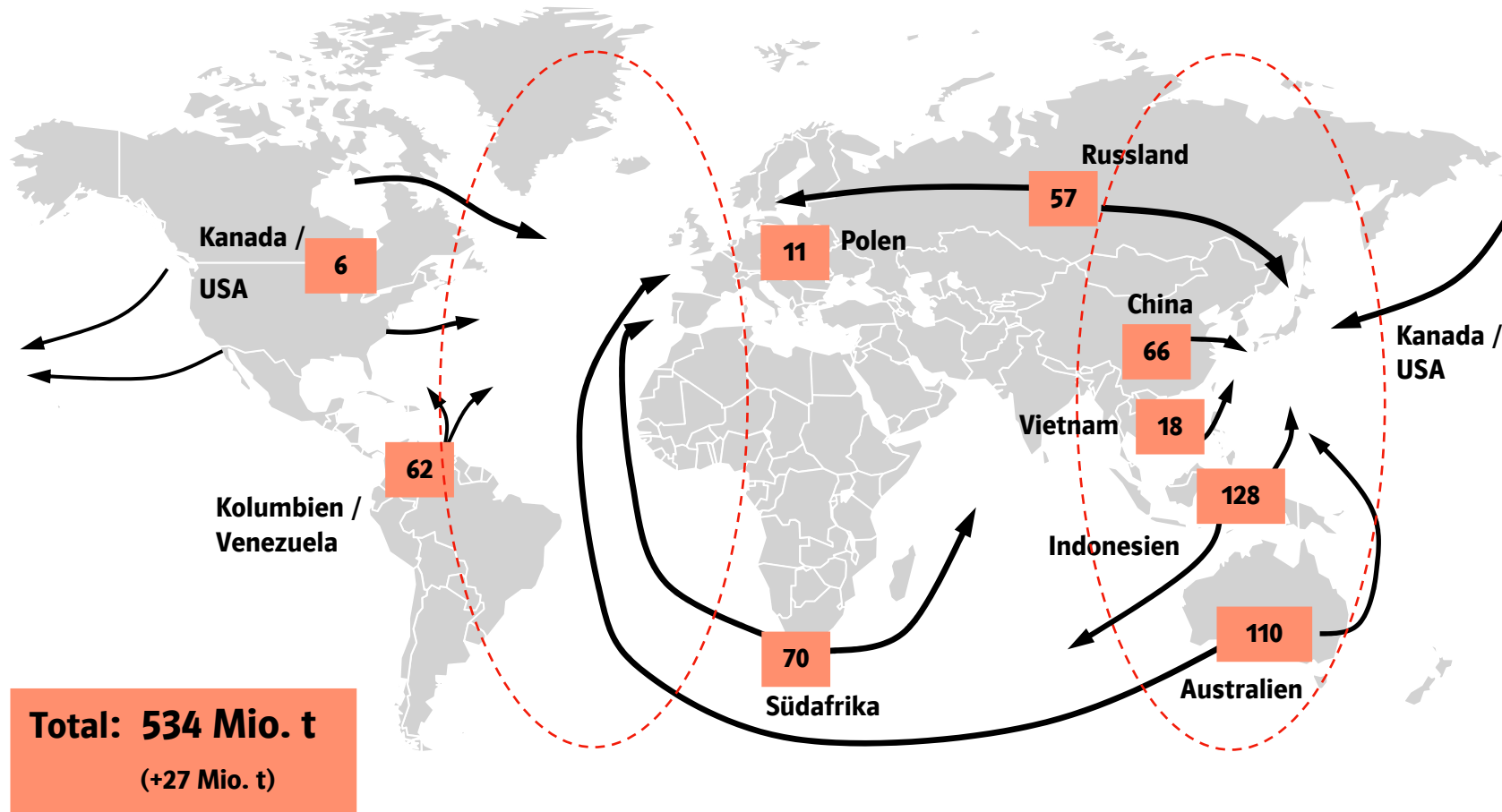
Buyers of coal often have specific preferences, depending on:

- Burning facilities
- Government / EU Regulations
- Availability of Storage facilities
- Etc.

Freight

- Worldwide freight market ...
 - ca. 685 Capesize ships (130.000 – 180.000 t)
 - ca. 1.348 Panamaxsize ships (60.000 – 80.000 t)
 - ca. 4.195 Handymax & Handysize ships (10.000 – 59.000 t)
- ... Carrying approximately
 - 2/5 Coal and 3/5 Iron Ore with Capes
 - 40 % Coal, 30 % Crop, 15 % Iron Ore with Panamaxes
- Physical freight market more short-term oriented
- (Financial) Forwards on exposures further out

Seaborn Coaltrade in 2005

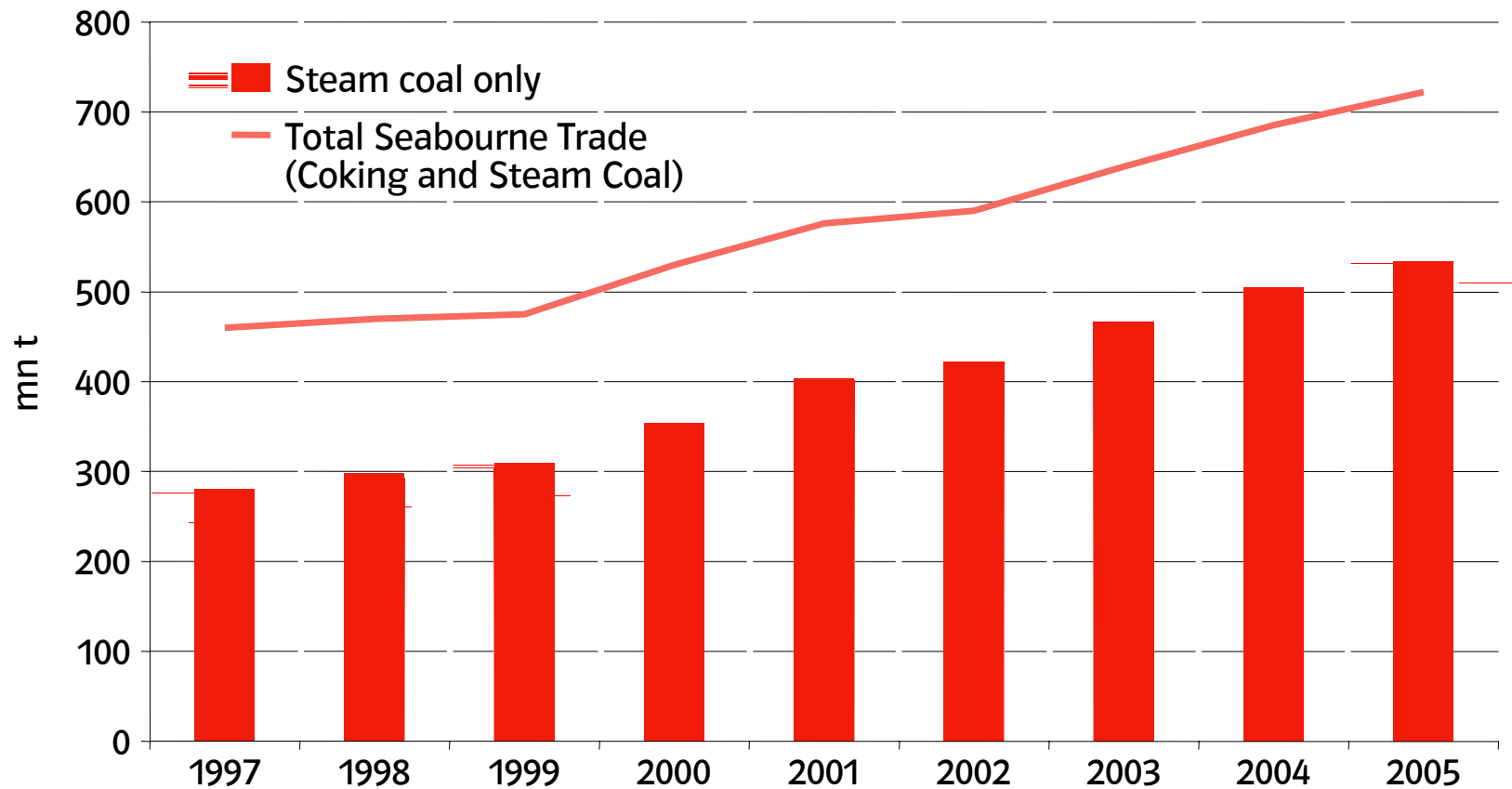


Important Players in the Physical Market

- **Big Four**
 - Xstrata / Glencore
 - BHP Biliton
 - Anglo American
 - Rio Tinto
- **China**
 - China Coal Company
 - Vinacoal
 - Shenhua Group
 - Shanxi Group
- **South America**
 - Drummond
 - Cerrejon Coal Company
- **Eastern Europe & former USSR**
 - Weglokoks
 - Suek
 - Krutrade
- **South East Asia**
 - Banpu
 - Adaro
 - KPC
 - Arutmin

Estimates of Trade Volumes for Physical Coal Market

World Coal Trade Volumes (Foreign Trade) - Coking and Steam Coal



Content

- Demand and Supply in Coal
- Physical Trading
- Financial Trading

euro base 2.vwb - Reuters Order Routing for Commodities

Date	Holland Baseload					Germany Baseload					Belgium Baseload					France Baseload										
	F	Cod	Qty	Bid	Ask	Qt	Code	F	Code	Qty	Bid	Ask	Qt	Code	Code	Qt	Bid	Ask	Qt	Code	Cod	Qty	Bid	Ask	Qt	
Tue 13/09/06									GFIG	25	56,00	56,50	25	GFIG							GFIG	25	51,50	59,00	25	
									ICPE	25	57,35	56,50	25	SPEC							SPEC	25	50,80			
									PRBE												GFIG	25	50,00			
									GFIG																	
									ICPE																	
									GFIG																	
									SPEC								61,50	5	SPEC	ICPE	25	54,25	54,70	25		
									SPEC												GFIG	25	54,00	54,75	25	
									TFS												25*	54,00	55,00	25		
									PRBE												ICPE	25	71,75	72,50	25	
									PRBE												ICPE	25	71,50	72,75	25	
									PRBE												ICPE	25	71,00	73,00	25	
																					ICPE	25	69,75	71,00	25	
																					SPEC	25	69,50	71,25	25	
																					ICPE	25	69,25	71,50	25	
									ICPE													GFIG	25	65,30	66,00	25
2006 Q4									TFS	25	63,10	63,75	20	GFIG							GFIG	25	65,25	66,25	25	
									PRBE	25	63,00	64,00	10	GFIG											10	
				81,90	5	SPEC			ICPE	25	67,50	67,85	10	ICPE	GFIG	5	74,80									
2007 Q1				82,00	5	ICPE			SPEC	25*	67,50	68,00	25	SPEC												
				82,25	5	SPEC			PRBE	25	67,30	68,25	25	PRBE												
2007 Q2	ICPE	5	55,85	56,25	5	ICPE			GFIG	25	46,85	47,25	25	GFIG										44,90	10	
									ICPE	25	46,50															
									GFIG	25	46,50															
2007 Q3									PRBE	25	51,75															
2007 Q4	ICPE	5	70,25	71,25	5	ICPE						61,30	25	PRBE							GFIG	25	63,00	64,00	25	
				71,50	5	ICPE															GFIG	25	62,00	64,25	25	
2007	ICPE	5	67,00	67,15	5	ICPE			GFIG	5	56,70	56,80	5	ICPE	GFIG	5	61,15	61,40	5	GFIG	GFIG	5	57,35	57,70	5	
	TFS	5	66,80	67,35	5	TFS			PRBE	5	56,70	56,80	5	PRBE	SPEC	5	61,10	61,50	5	SPEC	ICPE	5	57,30	57,75	5	
	ICPE	5	66,75	67,40	5	GFIG			ICPE	5	56,70	56,80	5	SPEC								5	57,20	57,80	5	
2008	ICPE	5	62,50	63,00	5	ICPE			ICPE	5	55,35	55,55	5	ICPE												
	TFS	5	62,40	63,00	5	TFS			SPEC	5	55,30	55,65	5	PRBE												
				63,15	5	ICPE			GFIG	5	55,30	55,70	5	GFIG												
2009	TFS	5	59,50	60,50	5	TFS			GFIG	5	54,40	54,50	5	GFIG	SPEC	5	56,30	56,95	5	SPEC				55,00	5	
				60,70	5	TFS			GFIG	5	54,35				SPEC	5	56,25									
				60,75	5	ICPE																				
2010									GFIG	5	54,00	55,00	5	GFIG								GFIG	5	54,00	55,00	5

Ready

API#2 Index Market

- One „average“ Coal Contract, proxy for all seaborne Coal into Western / North Europe
 - 6000 kcal/kg
 - CIF delivered to ARA (Amsterdam, Rotterdam or Antwerpen)
 - 1 % sulphur NAR
- Average of oral / telephone surveys done by Argus and McCloskey on prices paid for coal with delivery in the next 90 days over 40 market participants
- Also in Index: deliveries into France, Denmark, Germany, UK netback for freight
- Like API #2 there is also a API #4 market for South-African Coal

Swaps on the API Index

Advantages:

- No handling / logistics
- Decoupling pricing question from quality issues
- „Hedge“ for more grades of Coal (with a basis risk)
- Standard size per trade much smaller compared to the physical market
- Standard contract

Disadvantages:

- Index settlement is not always transparent
- Premiums / Discounts for a specific grades of Coal are not hedged

Trading options (1):

Power-producer hedging his power sales

- Power producer profits depend on margin between producing costs (eg. coal) and power proceeds
- Coal: dark spread, gas: spark spread
- Power sales-volume also depend on spread levels
- Every day a make-or-buy decision, some sales will be bought back when spark- and dark spread falls
- To hedge those profits our producer needs to be able to act quickly, in flexible volume and without any logistics / issues

Trading options (2):

Coal producer that wants to be exposed to Spot prices

- Producer holds the view that he cannot beat the market, thus wants to leave its price-exposure open
- Physical customers however, are interested in fixed forward prices
- Every time the producer sells "fixed" (physical) to customers he buys the corresponding API#2 contract to reach the preferred exposure

Trading options (3):

Coal producer wants to open an new mine

- Coal producer wants to open an new mine and needs financing
- Bank wants security of income stream throughout the investment lifecycle
- Physical Market does not trade this far out (usually)
- In the financial market there are more parties with a risk appetite to take on those risks ("at a fee")
- Producer sells forward (say 5 years) part of his production to the Financial participant to satisfy the bank

Players in Financial Market

- Banks (Deutsche, BNP Paribas, Morgan Stanley, etc.)
- Utilities (EDF, RWE, NUON, E.ON, etc.)
- Producers (BHP-Billiton, Cargill, Glencore, etc.)
- Trading Houses (Constellation, Sempra, Foundation etc)

Marketplaces

- **Brokers**
 - Voice / screen broking,
 - Most trades on bilateral credit / contracts
 - Clearing possible (eg. via European Energy eXchange)
- **Exchange**
 - Standard contract
 - No voice assisted trading, incl. clearing
 - Example EEX, NYMEX, ICE

Estimates of Trade Volumes for Financial Coal Market

Trade Volume for the API#2 and API#4 Swap Market

