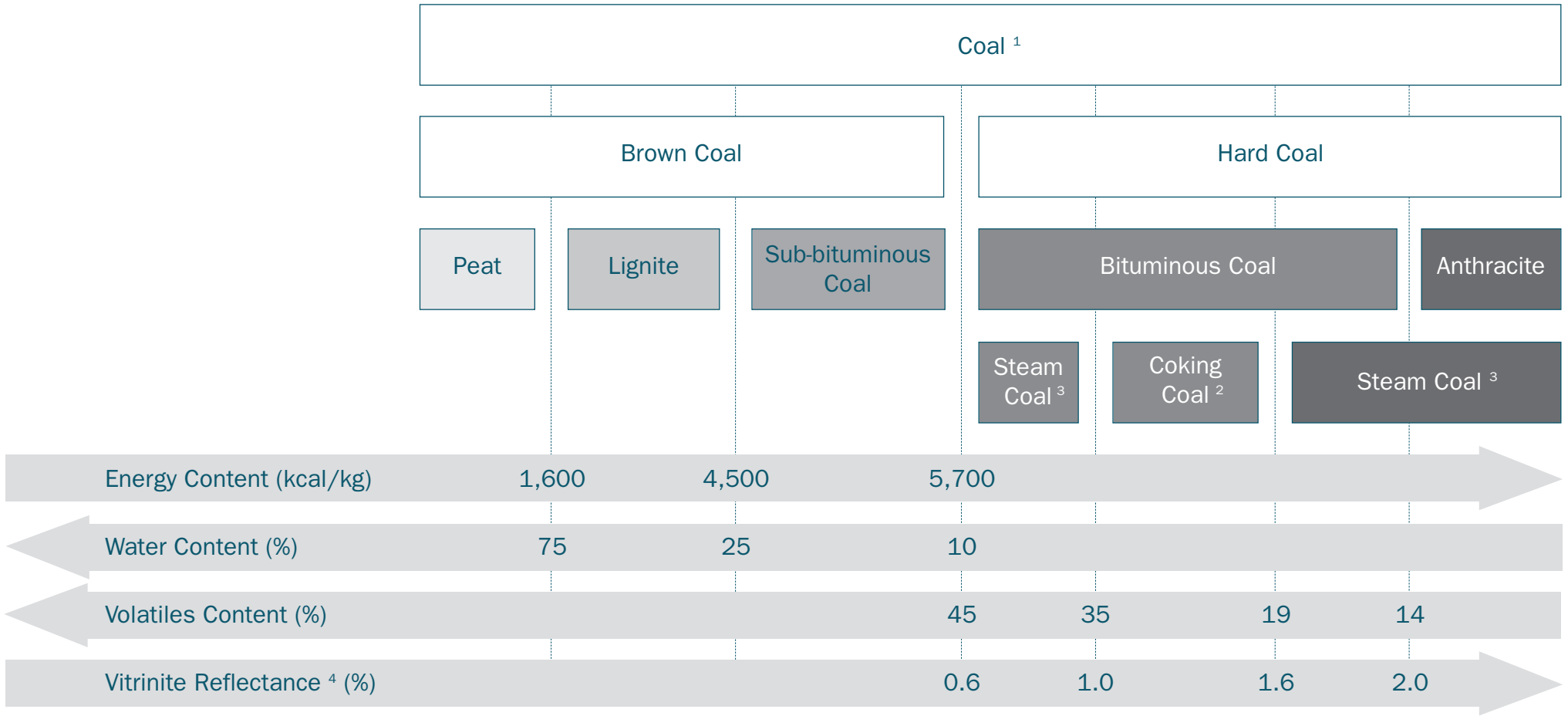
WORLD COAL TRADE FUNDAMENTALS

EGL
NETWORKING ENERGIES

A company of axpo

COAL CLASSIFICATION



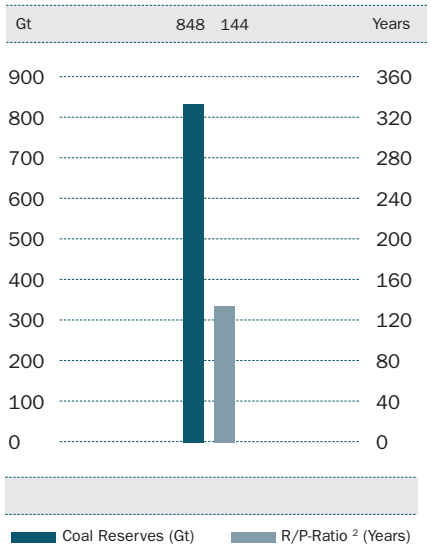
Sources: United Nations Economic Commission for Europe, *International Classification of Hard Coals by Type*, 1956; *International Codification System for Medium and High Rank Coals*, 1988; *International Codification System for Low-Rank Coal Utilization*, 2002; International Energy Agency, *Coal Information 2008*; European Association for Coal and Lignite, *Coal Classification*

Notes:
1 Less than 1% of World Coal Reserves (excl. Peat) is Anthracite, 52% Bituminous Coal, 30% Sub-bituminous Coal and 17% Lignite (World Coal Institute, *The Coal Resource*, 2005)
2 Coking Coal, or Metallurgical Coal, is defined as Hard Coal with a quality that allows the production of Coke.
3 Steam Coal, or Thermal Coal, is defined as all other Hard Coal not classified as Coking Coal. Steam Coal also includes Sub-bituminous Coal for Australia, Belgium, Finland, France, Iceland, Japan, New Zealand, Mexico, Portugal, South Korea and USA.
4 Vitrinite Reflectance is the most commonly used method for identifying the temperature history of sediments and provides an indicator of maturity of hydrocarbon source rocks like Coal. Vitrinite is a type of organic component of Coal analogous to minerals of rocks. It is derived from the cell-wall material or woody tissue of the plants from which Coal was formed. Chemically, it is composed of polymer, cellulose and lignin. In the process of Coalification, driven by increasing temperature and pressure, Vitrinite becomes increasingly reflective.

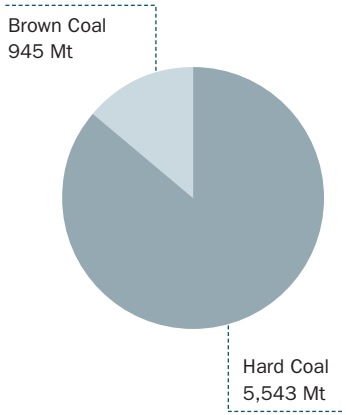
Gt	Gigatonnes	**kcal**	Kilocalories
Mt	Megatonnes	**USD**	US Dollars
kg	Kilogrammes		

COAL [1]

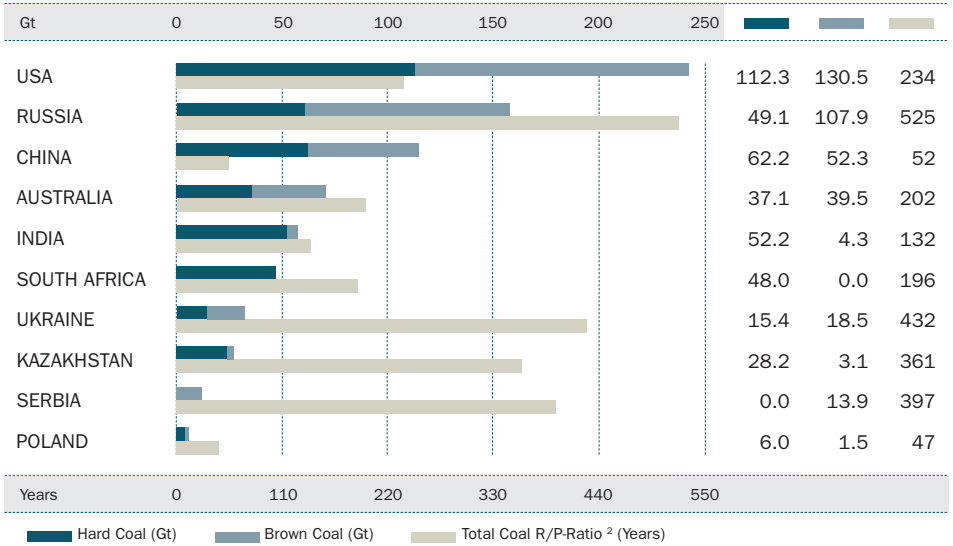
RESERVES



PRODUCTION 2007

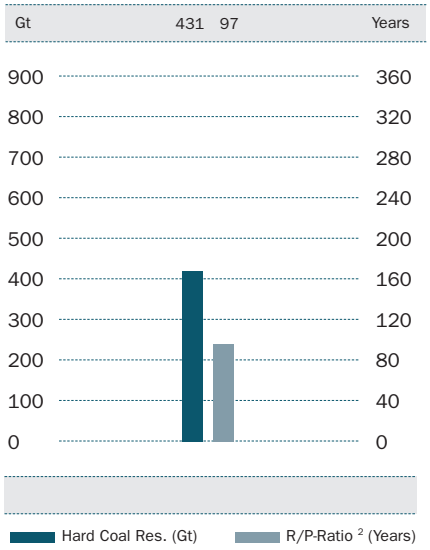


TOP 10 RESERVES

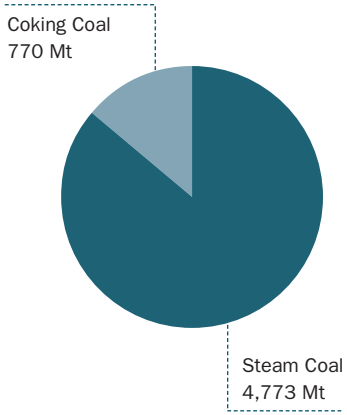


HARD COAL

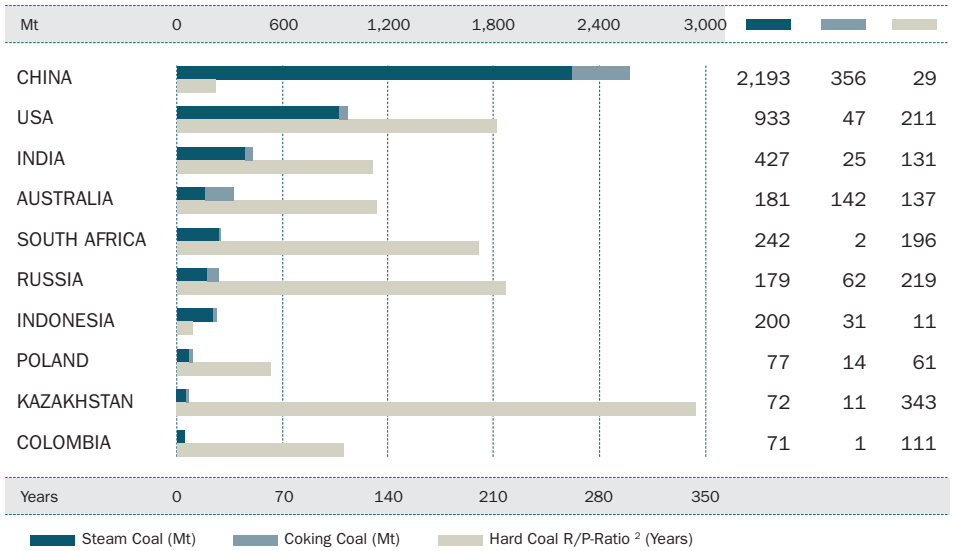
RESERVES



PRODUCTION 2007



TOP 10 PRODUCERS 2007



Sources: World Energy Council, *2007 Survey of Energy Resources;* International Energy Agency, *Coal Information 2008*

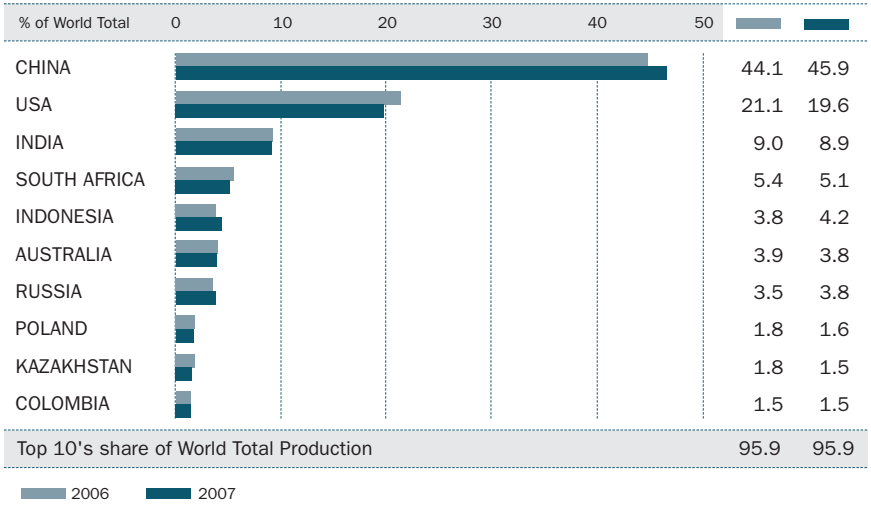
Notes: 1 For a classification of Hard, Brown, Steam and Coking Coal see rear page

2 R/P-Ratio = Reserves-to-Production-Ratio; the result yields the number of years that those remaining Reserves would last if Production were to continue at that rate

STEAM COAL TOP 10

PRODUCTION

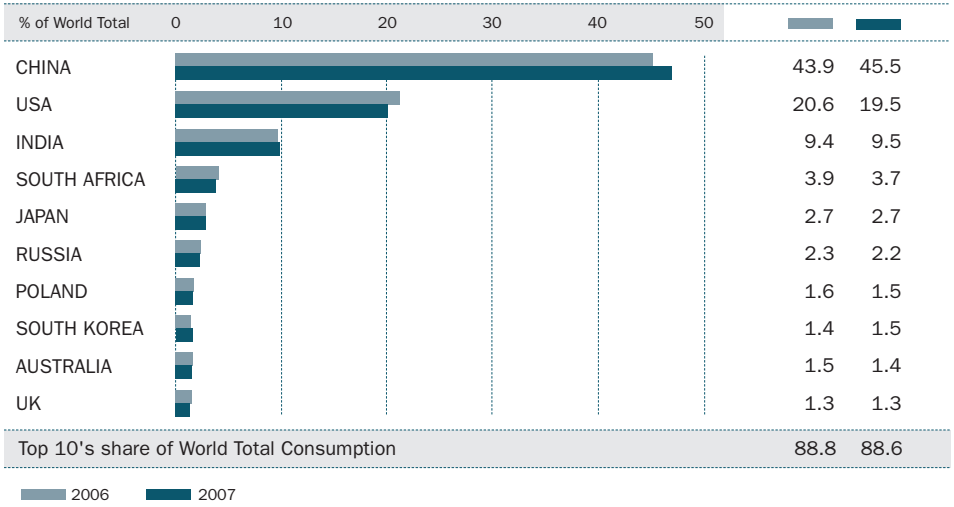
World Total 2006[1]: 4,488 Mt
World Total 2007[1]: 4,774 Mt



	2006	2007
CHINA	44.1	45.9
USA	21.1	19.6
INDIA	9.0	8.9
SOUTH AFRICA	5.4	5.1
INDONESIA	3.8	4.2
AUSTRALIA	3.9	3.8
RUSSIA	3.5	3.8
POLAND	1.8	1.6
KAZAKHSTAN	1.8	1.5
COLOMBIA	1.5	1.5
Top 10's share of World Total Production	95.9	95.9

CONSUMPTION

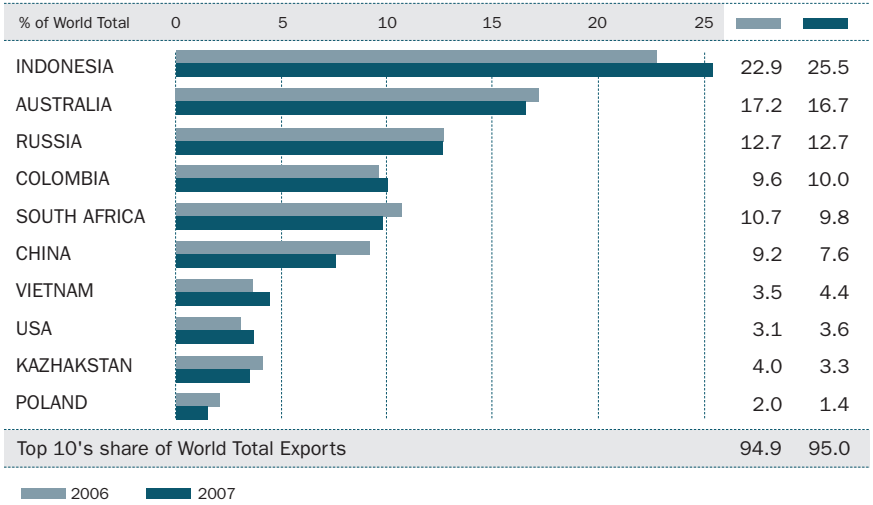
World Total 2006[1]: 4,474 Mt
World Total 2007[1]: 4,799 Mt



	2006	2007
CHINA	43.9	45.5
USA	20.6	19.5
INDIA	9.4	9.5
SOUTH AFRICA	3.9	3.7
JAPAN	2.7	2.7
RUSSIA	2.3	2.2
POLAND	1.6	1.5
SOUTH KOREA	1.4	1.5
AUSTRALIA	1.5	1.4
UK	1.3	1.3
Top 10's share of World Total Consumption	88.8	88.6

EXPORTS

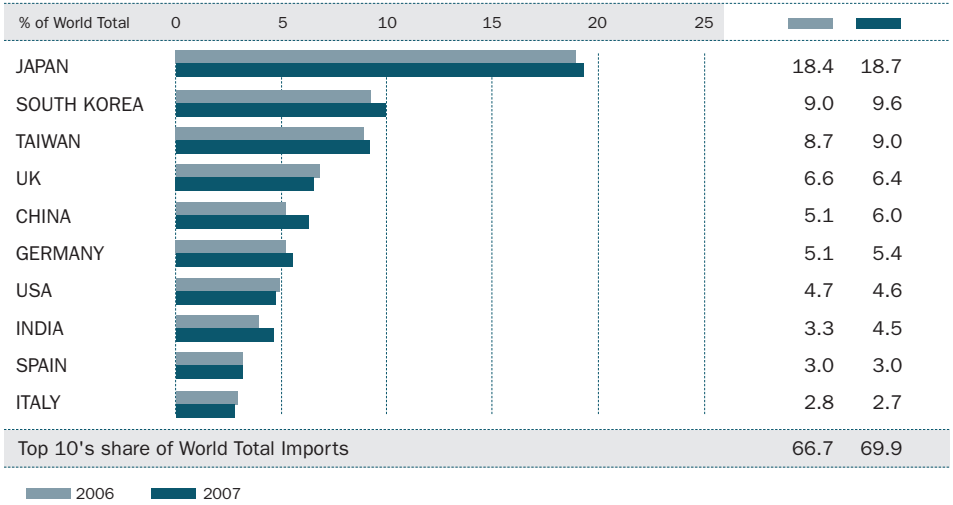
World Total 2006[1]: 643 Mt
World Total 2007[1]: 670 Mt



	2006	2007
INDONESIA	22.9	25.5
AUSTRALIA	17.2	16.7
RUSSIA	12.7	12.7
COLOMBIA	9.6	10.0
SOUTH AFRICA	10.7	9.8
CHINA	9.2	7.6
VIETNAM	3.5	4.4
USA	3.1	3.6
KAZHAKSTAN	4.0	3.3
POLAND	2.0	1.4
Top 10's share of World Total Exports	94.9	95.0

IMPORTS

World Total 2006[1]: 660 Mt
World Total 2007[1]: 685 Mt

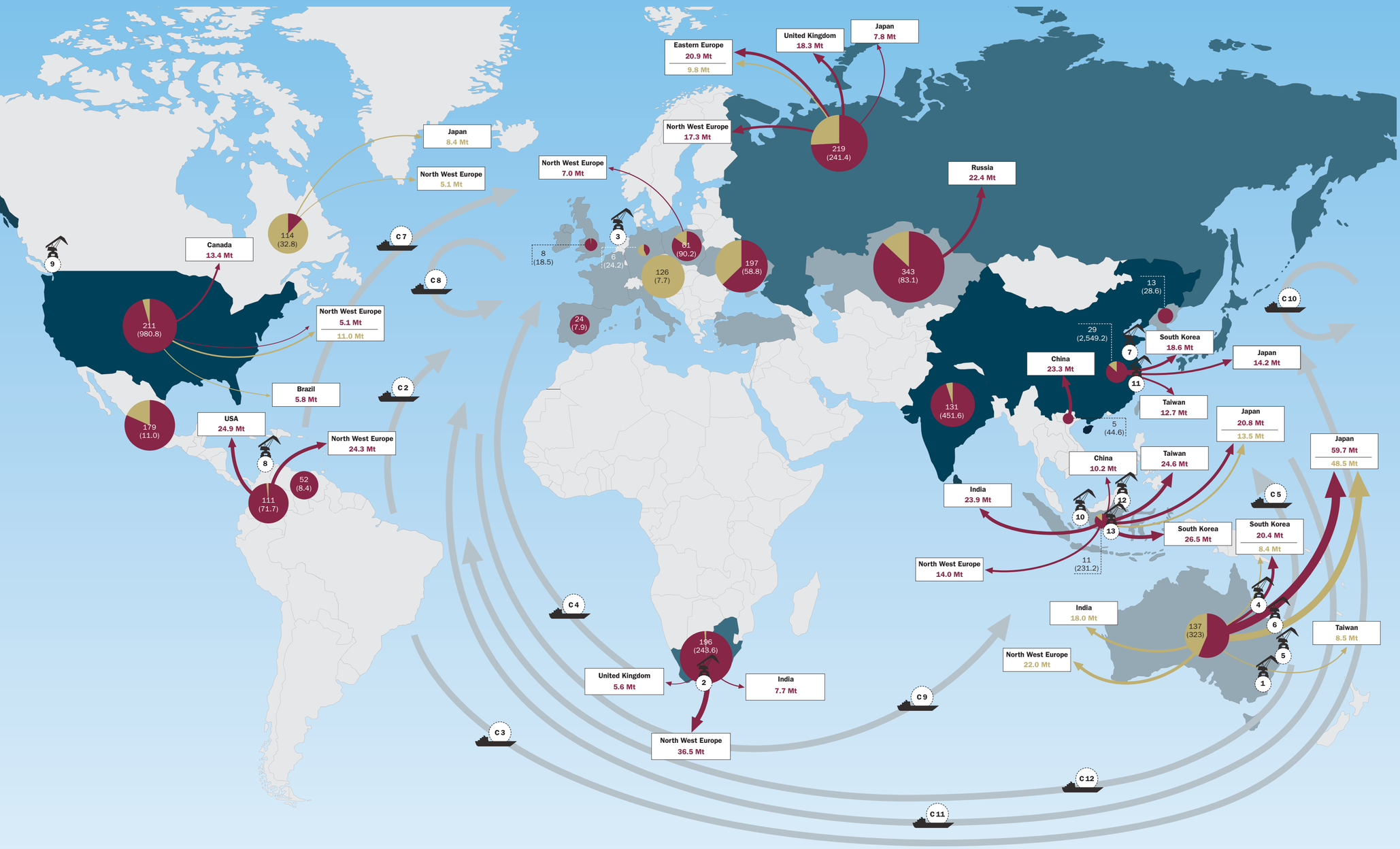


	2006	2007
JAPAN	18.4	18.7
SOUTH KOREA	9.0	9.6
TAIWAN	8.7	9.0
UK	6.6	6.4
CHINA	5.1	6.0
GERMANY	5.1	5.4
USA	4.7	4.6
INDIA	3.3	4.5
SPAIN	3.0	3.0
ITALY	2.8	2.7
Top 10's share of World Total Imports	66.7	69.9

Source: International Energy Agency, *Coal Information 2008*

Note: 1 World Total Production and Consumption as well as World Total Exports and Imports do not exactly equal each other. First, because data is based on national inventories amongst which recording, classification and reporting techniques and policies differ. Second, because storage and transportation capacities are neglected.

WORLD COAL TRADE FUNDAMENTALS



MAJOR COAL PORTS

	Port		Throughput (Mt/Year)	Maximum Vessel Size (dwt)[3]	Stockpile Capacity (Mt/Year)	Handling Costs (USD)[4]
1	Newcastle	Australia	80	180,000	4.5	102,995
2	Richards Bay	South Africa	72	200,000	6.0	44,818
3	ARA Amsterdam	Netherlands	20[5]	Unlimited	3.5[5]	181,146
	Rotterdam	Netherlands	23	350,000	6.0[5]	198,251
	Antwerp	Belgium	20	n/a	3.0	185,180
4	Dalrymple Bay	Australia	51	250,000	2.2	106,623
5	Gladstone	Australia	38	220,000	4.2	126,026
6	Hay Point	Australia	34[6]	200,000	1.8	111,910
7	Qinhuangdao	China	30	100,000	5.0	102,142
8	Puerto Bolivar	Colombia	25	175,000	0.5	83,298
9	Roberts Bank	Canada	25	250,000	2.5	105,528
10	Pulau Laut	Indonesia	24[6]	150,000	1.0	82,837
11	Rizhao	China	15	160,000	3.0	95,477
12	Tanjung Bara	Indonesia	15	210,000	1.2	51,098
13	Banjarmasin	Indonesia	10	Capesize	0.2	20,846

Source: Global Ports

MAJOR CAPESIZE ROUTES[8]

C 2	Tubarao – Rotterdam
C 3	Tubarao – Beilun/Raoshan
C 4	Richards Bay – Rotterdam
C 5	West Australia – Beilun/Raoshan
C 7	Bolivar – Rotterdam
C 8	Gibraltar/Hamburg Trans Atlantic Round Voyage
C 9	Continent/Mediterranean trip Far East
C 10	Pacific Round Voyage
C 11	China/Japan trip Mediterranean/Continent
C 12	Gladstone – Rotterdam

DRY BULK CARRIER OVERVIEW

Name	Size (dwt)[3]	Number of Vessels
Capesize	> 100,000	797
Panamax	60 – 100,000	1,526
Supramax	40 – 60,000	1,579
Handysize	20 – 40,000	2,178

Source: Barry Rogliano Salles, *Shipping and Shipbuilding Markets 2008*

CONTACT

Rana K. Nag, Tel. +41 (0)44 749 43 90
Nadine Brauchli, Tel. +41 (0)44 749 43 86
Kathrin Meyer, Tel. +41 (0)44 749 46 06

EDITOR

Elektrizitäts-Gesellschaft Laufenburg AG
EGL Analysis & Strategy
Energy Market Analysis

Lerzenstrasse 10, CH-8953 Dietikon
Tel. +41 (0)44 749 41 41
research@egl.ch / www.egl.ch

EGL NETWORKING ENERGIES

A company of axpo

HARD COAL CONSUMPTION 2007

- < 20 Mt
- 20 – 100 Mt
- 100 – 250 Mt
- > 250 Mt

HARD COAL PRODUCTION 2007

(#) R/P-Ratio [1, 2] (Production)

Steam Coal Share

Coking Coal Share

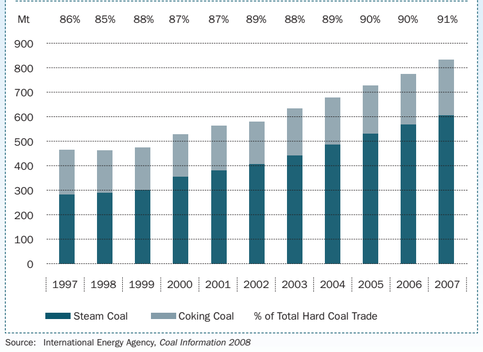
HARD COAL EXPORTS 2007

Steam Coal Exports > 5 Mt

Coking Coal Exports > 5 Mt

Sources: World Energy Council, *2007 Survey of Energy Resources*; International Energy Agency, *Coal Information 2008*

SEABORNE HARD COAL TRADE



Source: International Energy Agency, *Coal Information 2008*

Notes: **1** R/P-Ratio = Reserves-to-Production-Ratio; the result yields the number of years that those remaining Reserves would last if Production were to continue at that rate – **2** Size of pie is proportional to R/P-Ratio – **3** dwt = deadweight tonnes (metric); denotes a measure of how much mass or weight a cargo ship can safely carry (defined as the sum of the masses or weights of cargo, fuel, fresh water, ballast water, provisions, passengers and crew) – **4** Denotes the costs for loading a 172,000 dwt vessel (pro forma figures) – **5** Includes Iron Ore – **6** Refers to capacity – **7** Source: port operator – **8** Capesize carriers carry all kinds of dry bulk interchangeably. Primarily, Coal, Coke and Iron Ore are shipped. The routes C4, C7 and C12 are used for Coal transportation mainly.