

Fossil fuels - coal

Nerostné zdroje
světa
part 03, coal

Uhlí - oblasti

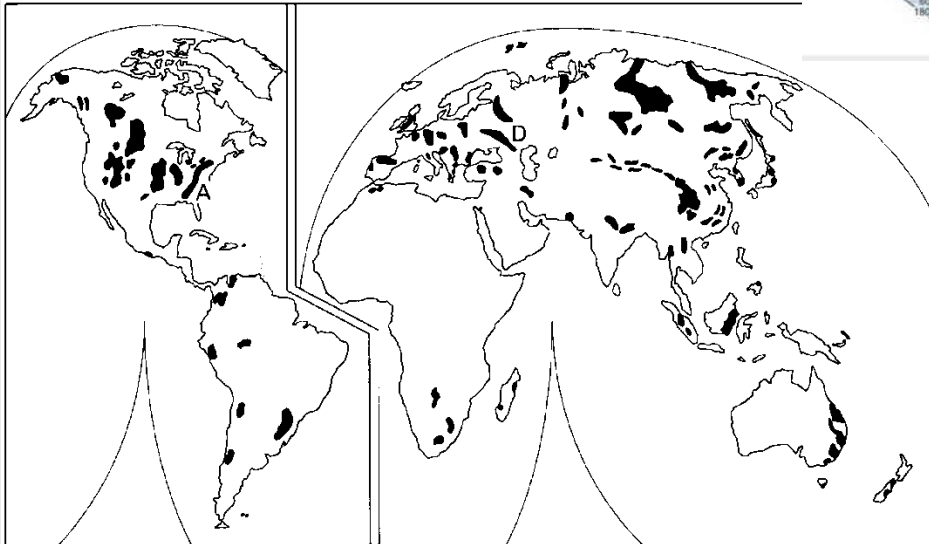


Fig. 24.2 World distribution of coalfields. A, Appalachian; D, Donets.

Uhlonosné pánve - typy

■ paralická

pasivní okraje kontinentů, delty, předhlubňové pánve –
v předpolí orogenu, vliv doznívání orogenu

■ limnická

intrakratonní pozice,
stabilní kůra, platformní režim



Mangrove Swamp in the
Everglades, SW Florida,
example of coalbearing delta
conditions

Delta – uhlonosné cykly

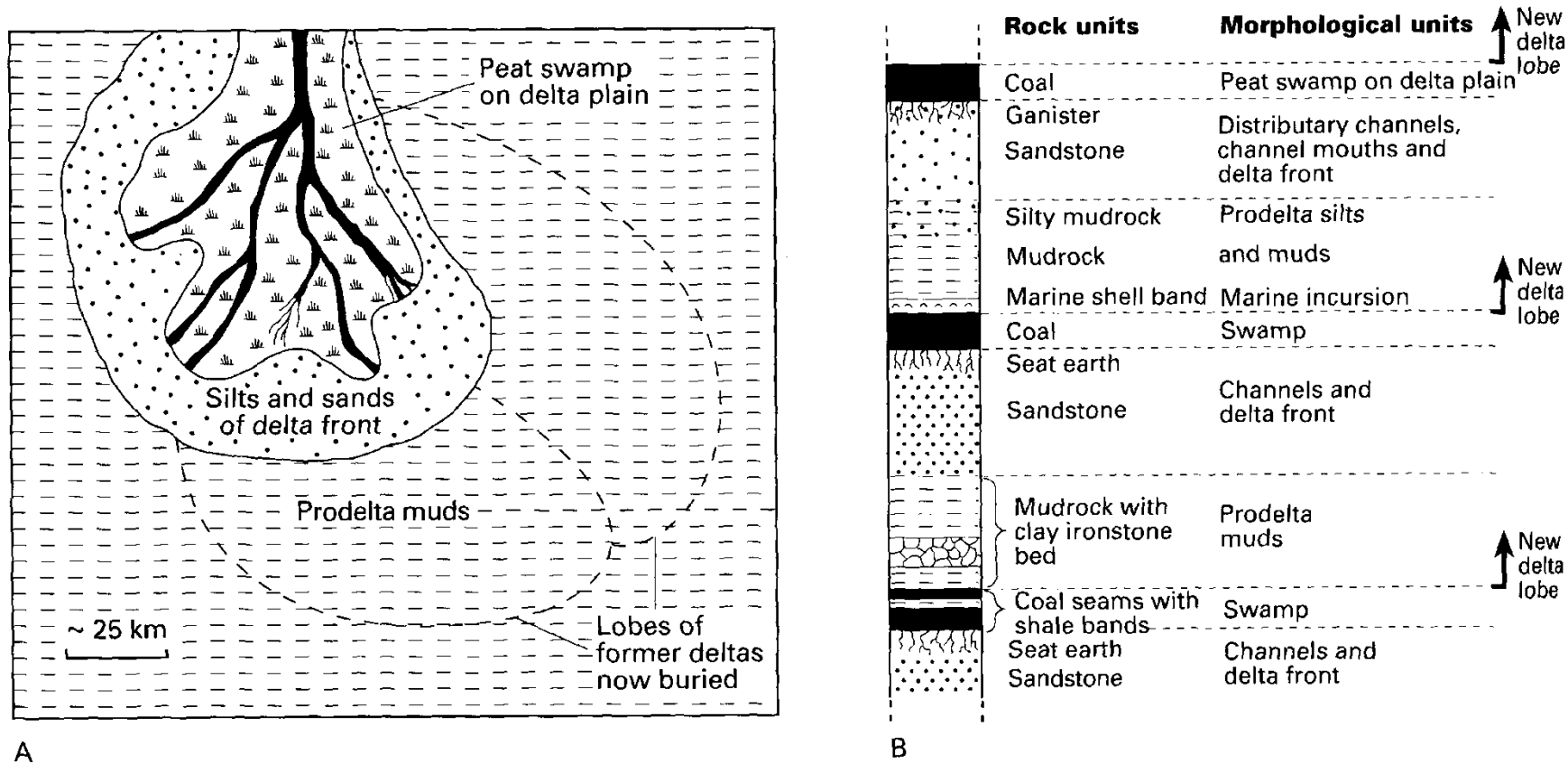


Fig. 24.4 (A) Three elongate delta lobes superposed upon each other with the three principal morphological units of the latest delta indicated. (B) A typical sequence of cyclothems. The positions of the approximate boundaries between the deposits of the three main morphological units of the delta are indicated with pecked lines.

Klasifikace uhlí

Coal types and peat				Total water content (%)	Energy content af* (KJ/kg)	Energy content (kcal/kg) nar	Volatiles maf** (%)	Vitrinite reflection in oil (%)
UN - ECE	USA (ASTM)	Germany (DIN)						
Peat	Peat	Torf		75	6.700	1.600		
Ortho lignite	Lignite	Weichbraunkohle		35	16.500	3.950		0,3
Meta lignite		Subbituminous coal	Mattbraunkohle	Steinkohle	25	19.000	4.500	
Subbitum. coal	Glanzbraunkohle		10		25.000	6.000	45	0,65
Bituminous coal	Hight volatile bituminous coal	Flammkohle	Steinkohle	HARTKOHLE (Hard Coal)	36.000	8.600	40	0,75
		Gasflammkohle					35	1
		Gaskohle					28	1,2
	Medium vol. bitumin. coal	Fettkohle			Kokskohle		19	1,6
	Low vol. bitumin. coal	Esskohle			14	1,9		
Anthracite	Semi anthracite	Magerkohle						
	Anthracite	Anthrazit		3	36.000	8.600	10	2,2

Zásoby světa

Proved reserves at end 2008

Thousand million tonnes (anthracite and bituminous coal shown in brackets)



1.4 (1.4)
Middle
East

15.0 (7.0)
S. & Cent.
America

32.0 (31.8)
Africa

246.1 (113.3)
North America

259.3 (155.8)
Asia Pacific

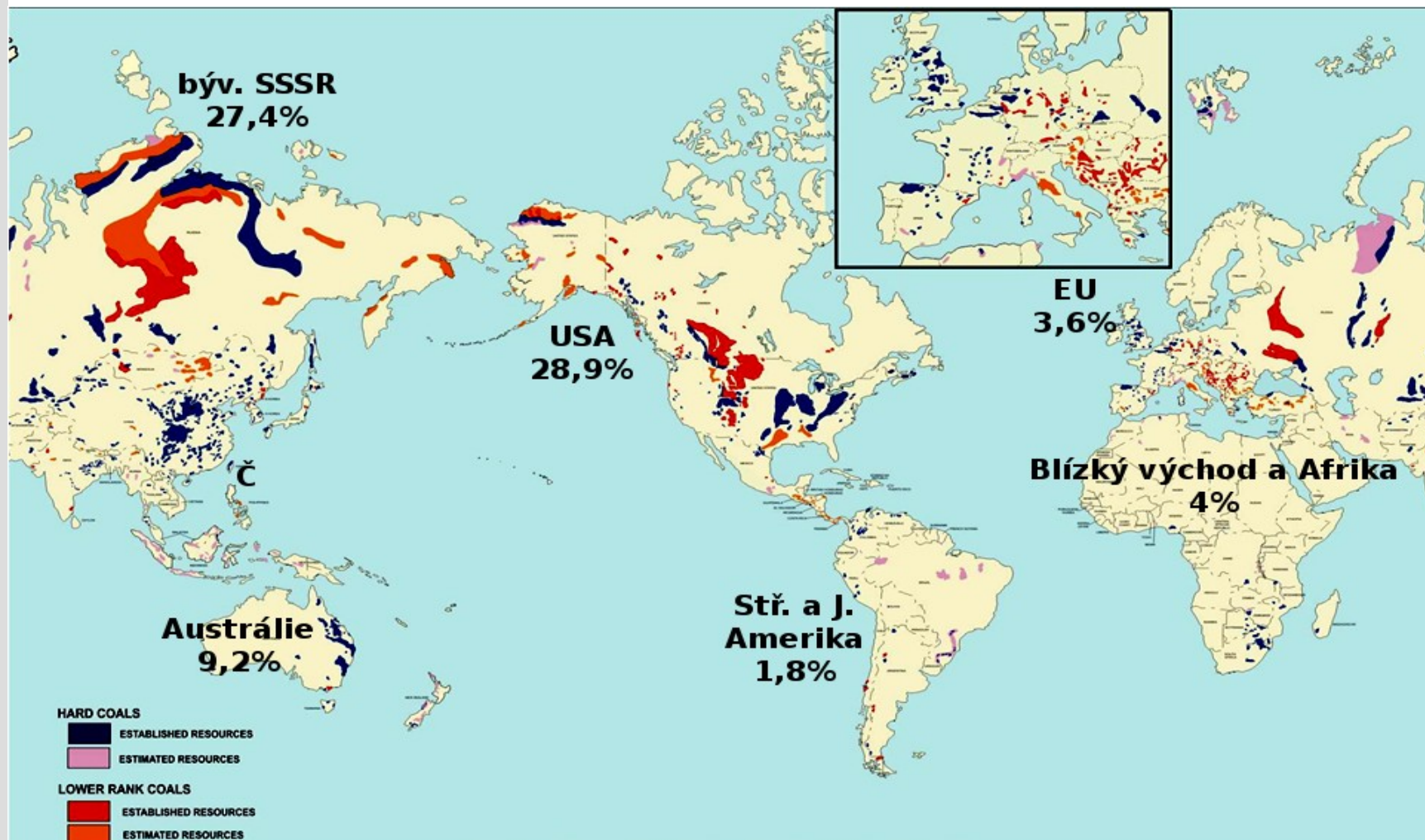
272.2 (102.0)
Europe & Eurasia

Významné pánve světa

- Rusko: doněcká, podmoskevská, kuzněcká, tunguzská, lenská
- Německo: magdeburská (**hnědé uhlí**), rúrská (zavřeno 2007 – důlní otřesy)
- Polsko: hornoslezská, lublinská
- Velká Británie: East Penine Coal Basin, Newcastle Basin
- Čína: Šan-si, Fu-šun
- USA: Apalačská pánev, Powder River
- Jihoafrická republika: South Transvaal Coal Area
- Austrálie: pánev Sydney

Rozložení zásob

kvalita-prouhelnění, vztah ke
geologickým jednotkám
různého stáří



China coal basins



Objevené zásoby - 2008

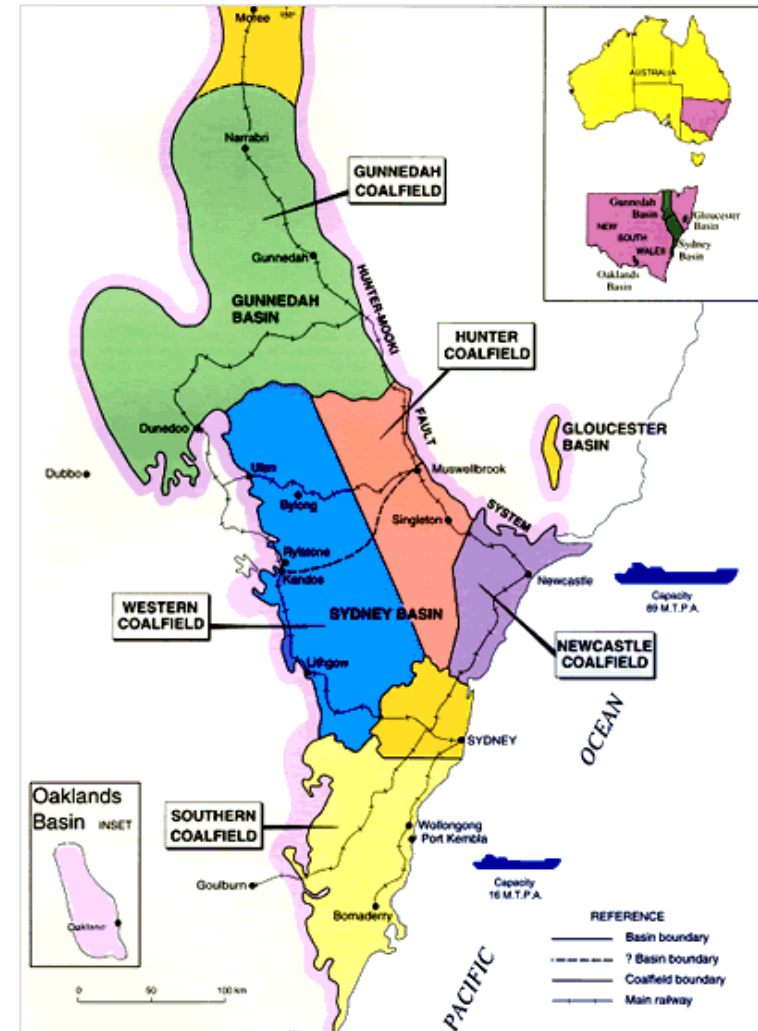
**Potvrzené objevené uhelné
zásoby na konci roku 2008
(v miliónech tun)**

Země_	Černé uhlí_	Hnědé uhlí_	Celkově -	Podíl
<u>Spojené státy Americké</u>	108 950	129 358	238 308	28,9
<u>Rusko</u>	49 088	107 922	157 010	19,0
<u>Čína</u>	62 200	52 300	114 500	13,9
<u>Austrálie</u>	36 800	39 400	76 200	9,2
<u>Indie</u>	54 000	4 600	58 600	7,1
<u>Ukrajina</u>	15 351	18 522	33 873	4,1
<u>Kazachstán</u>	28 170	3 130	31 300	3,8
<u>Jihoafrická republika</u>	30 408	-	30 408	3,7
<u>Evropská Unie</u>	8 427	21 143	29 570	3,6
<u>Polsko</u>	6 012	1 490	7 502	0,9
<u>Brazílie</u>	-	7 059	7 059	0,9
<u>Kolumbie</u>	6 434	380	6 814	0,8
<u>Německo</u>	152	6 556	6 708	0,8
<u>Kanada</u>	3 471	3 107	6 578	0,8
<u>Česko</u>	1 673	2 828	4 501	0,5
<u>Indonésie</u>	1 721	2 607	4 328	0,5
<u>Řecko</u>	-	3 900	3 900	0,5
Celosvětově	411 321	414 680	826 001	100,0

Coalfields of New South Wales

Coalfields of New South
Wales

(pánev „Sydney“,
„Oaklands“ – malá)



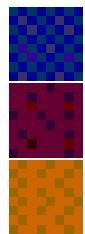
Austrálie - uhlí

State	Underground	Open Cut	Total
New South Wales	19,530	14,580	34,110
Queensland	12,080	17,300	29,380
South Australia	2,450	3,100	5,550
Western Australia	890	1,300	2,190
Tasmania	500	20	520
Total	35,450	36,300	71,750

Identified In Situ Resources of Black Coal, Australia, 2006
(Million tonnes)

Austrálie - zdroje

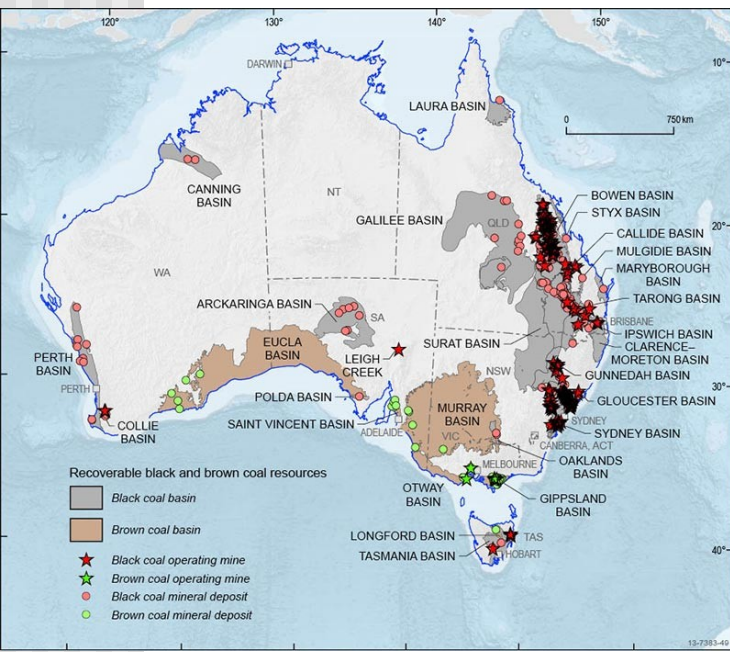
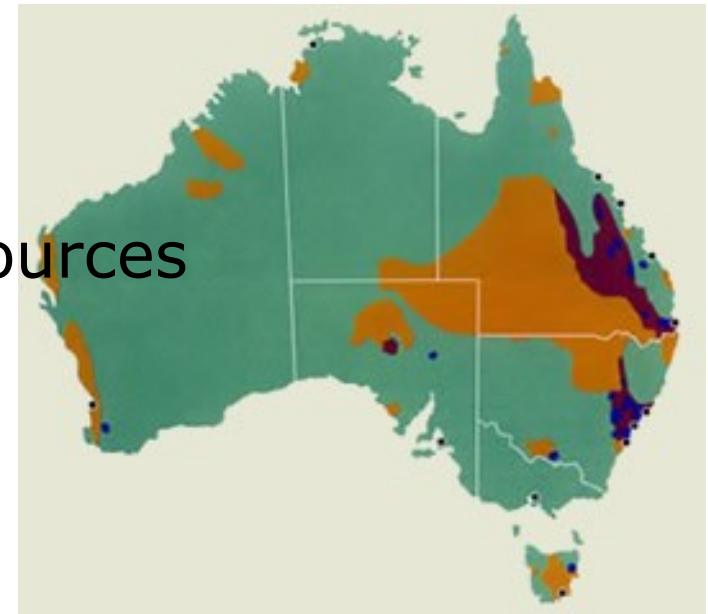
Black Coal Resources



Producing areas

Substantial economic resources

Known coal areas



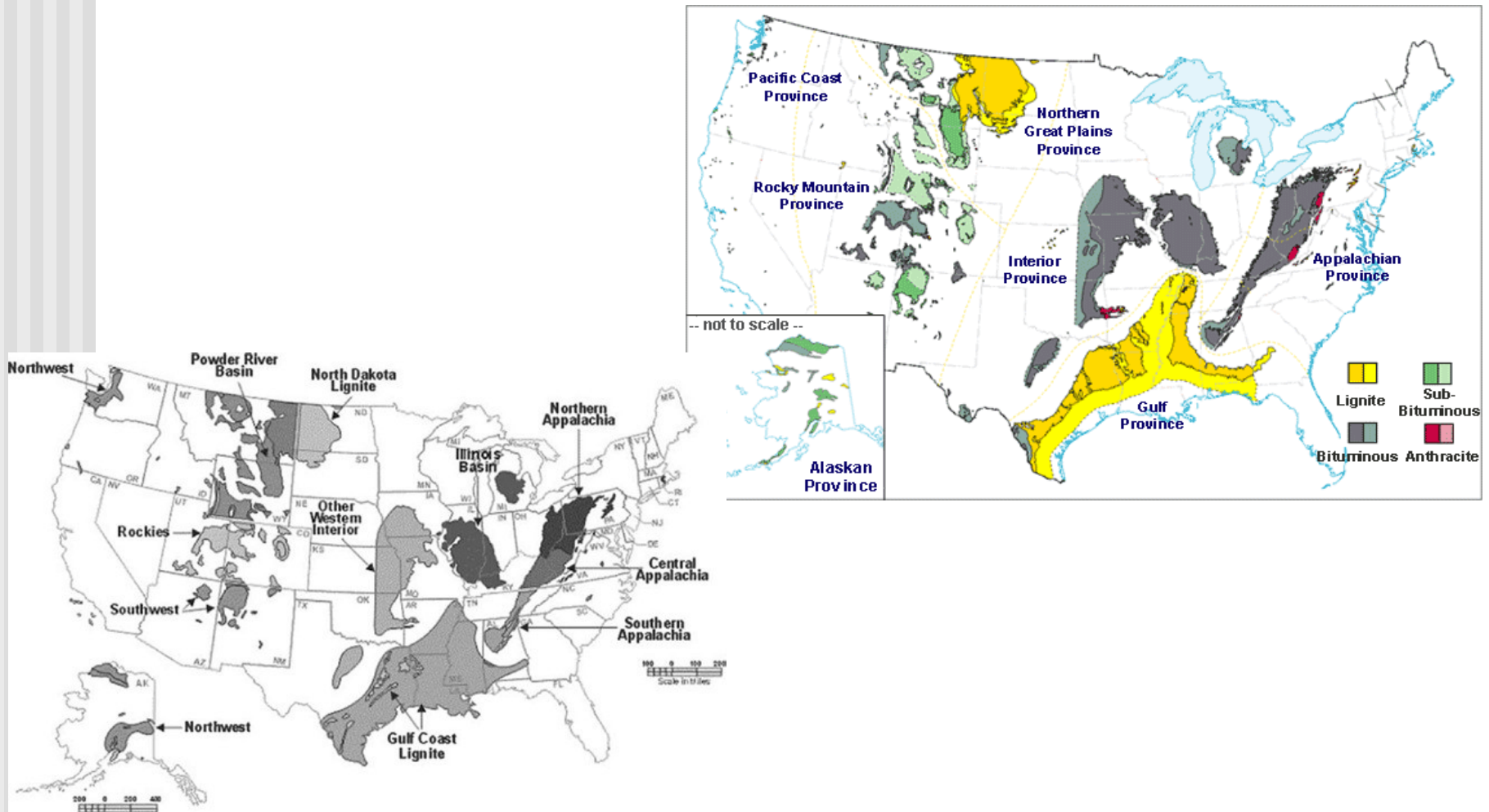
USA – Powder River

Coal extraction in a
Powder River,
Wyoming coal mine.

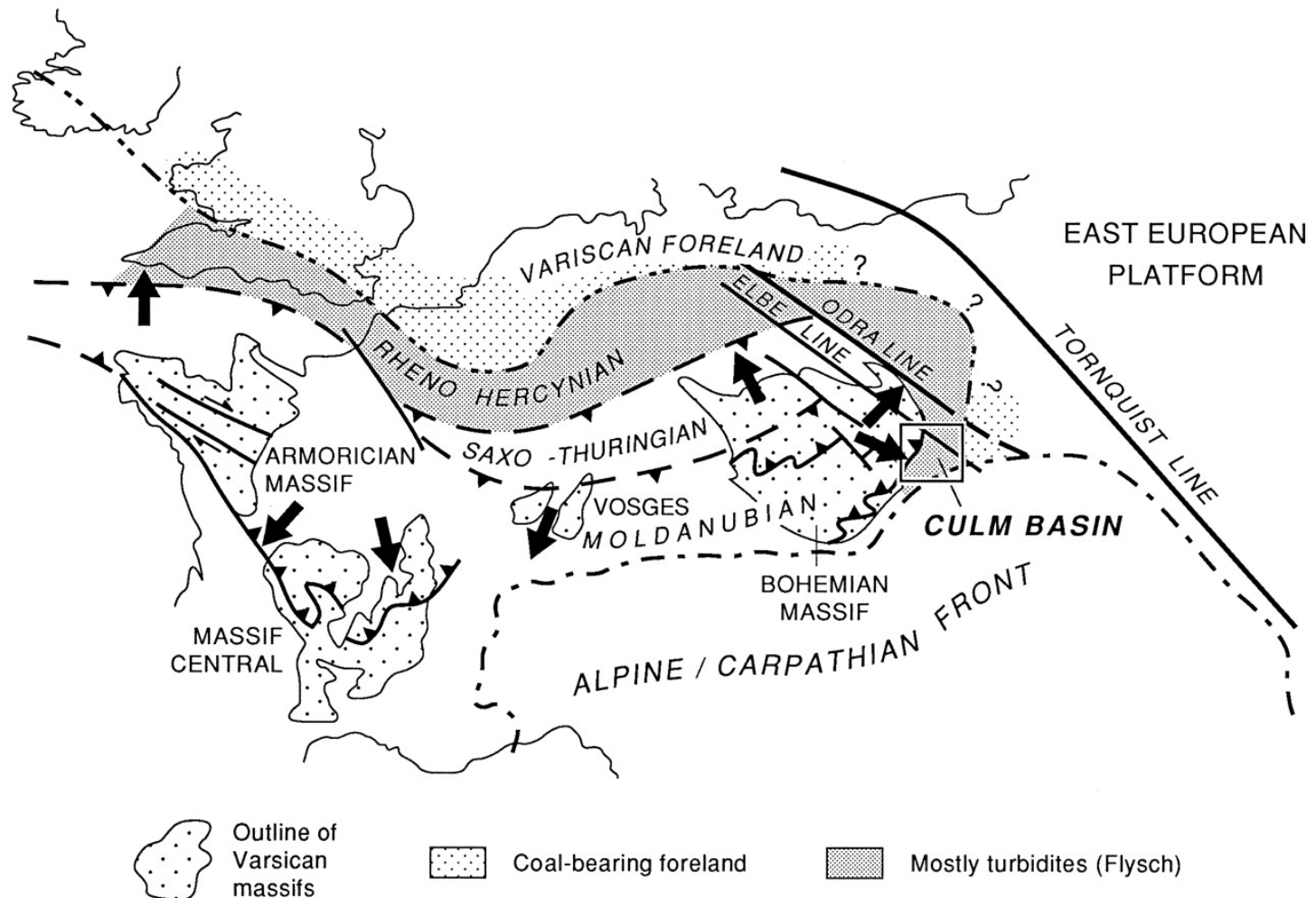


tercierní souvrství s horizontálním uložením hnědouhelných slojí, v pánvi roste kvalita, prouhelnění směrem k Z

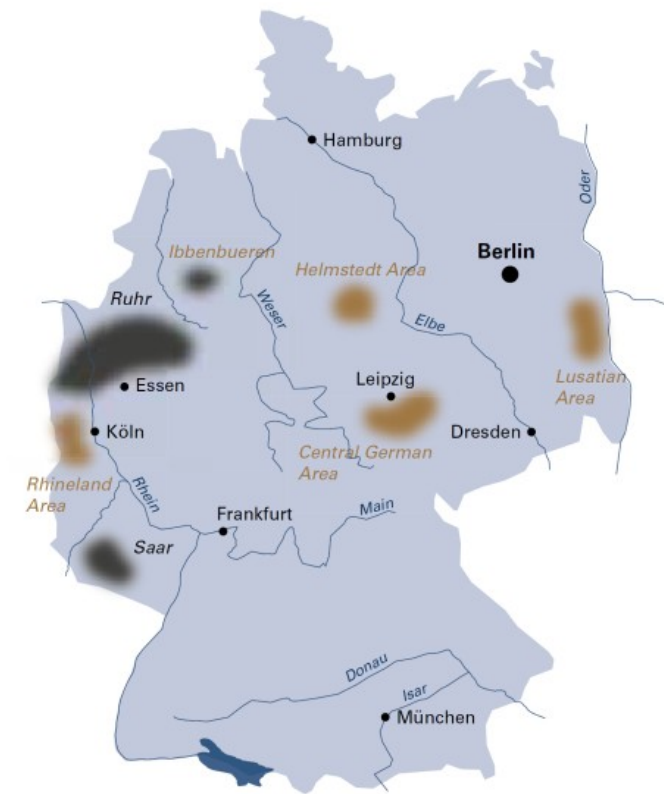
USA – uhelné pánve



Uhelné provincie v Evropě



Uhelné pánve - Evropa



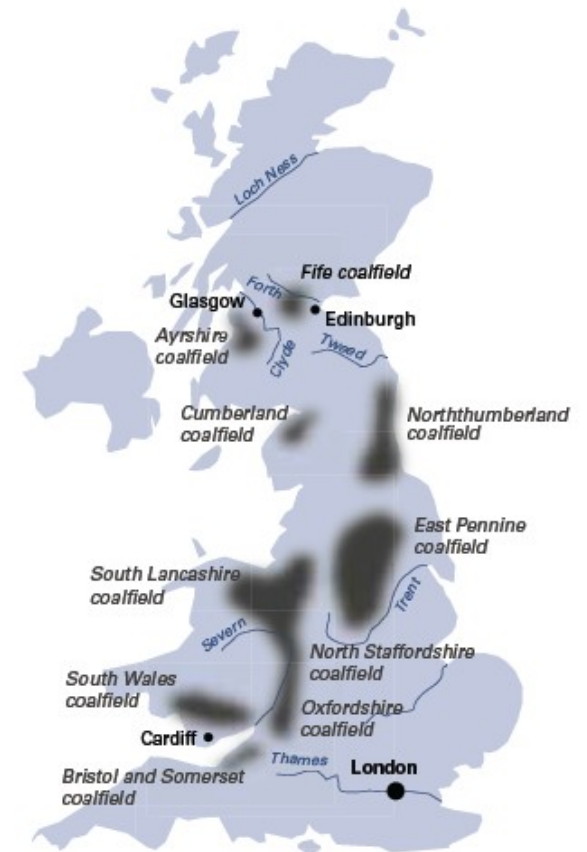
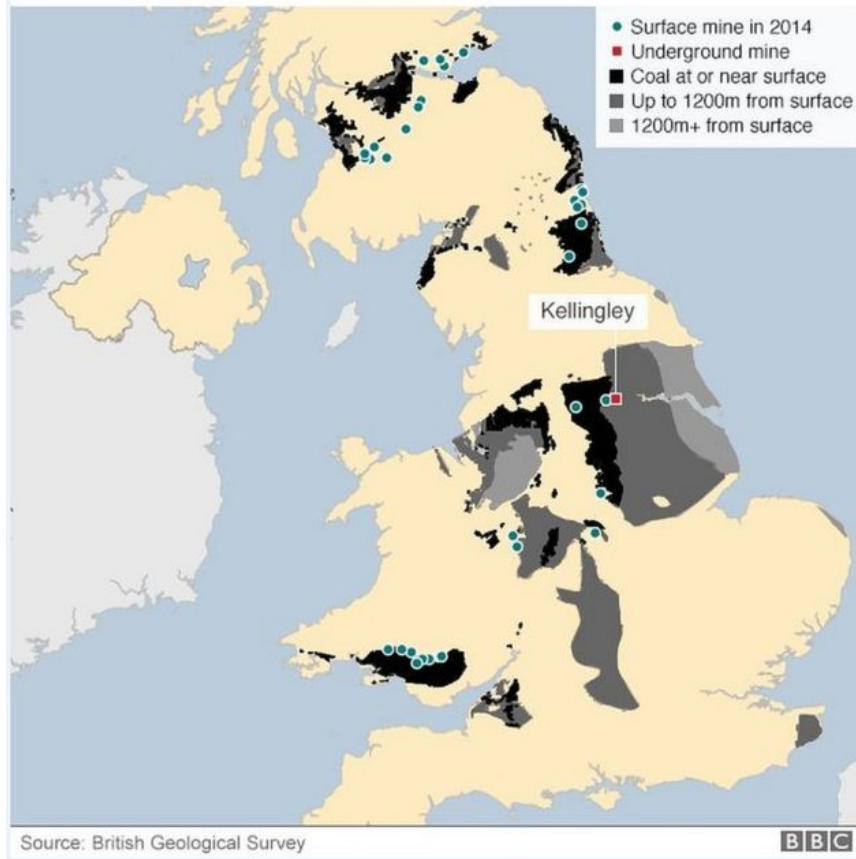
 Lignite  Hard coal



 Lignite  Hard coal

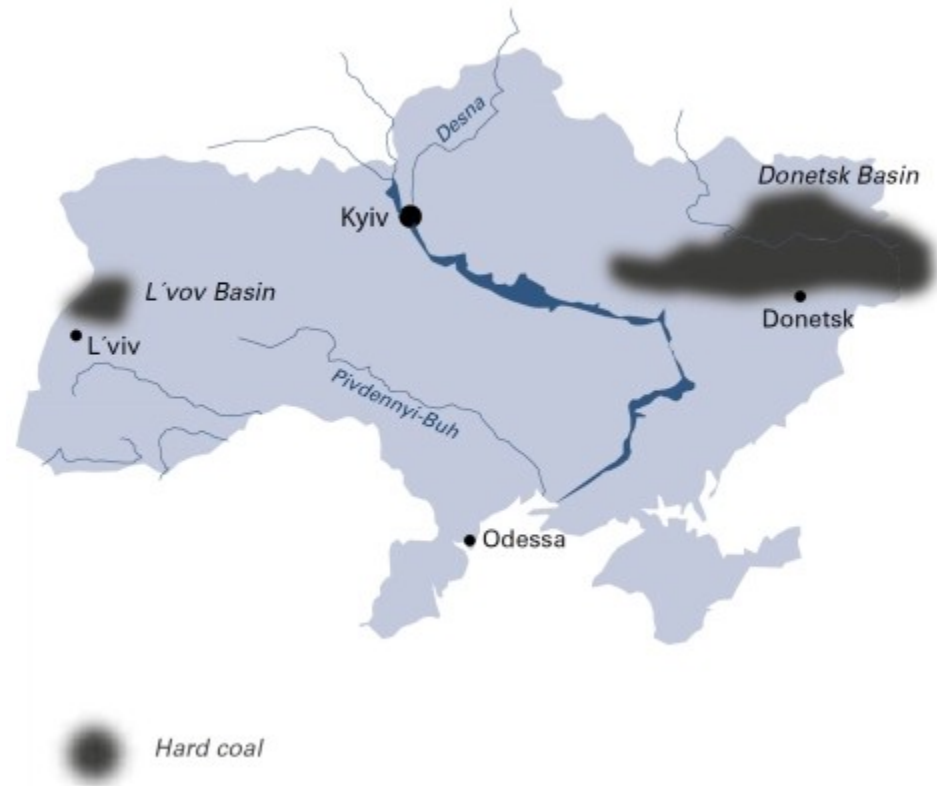
Uhelné pánve - UK

UK still has surface coal mines

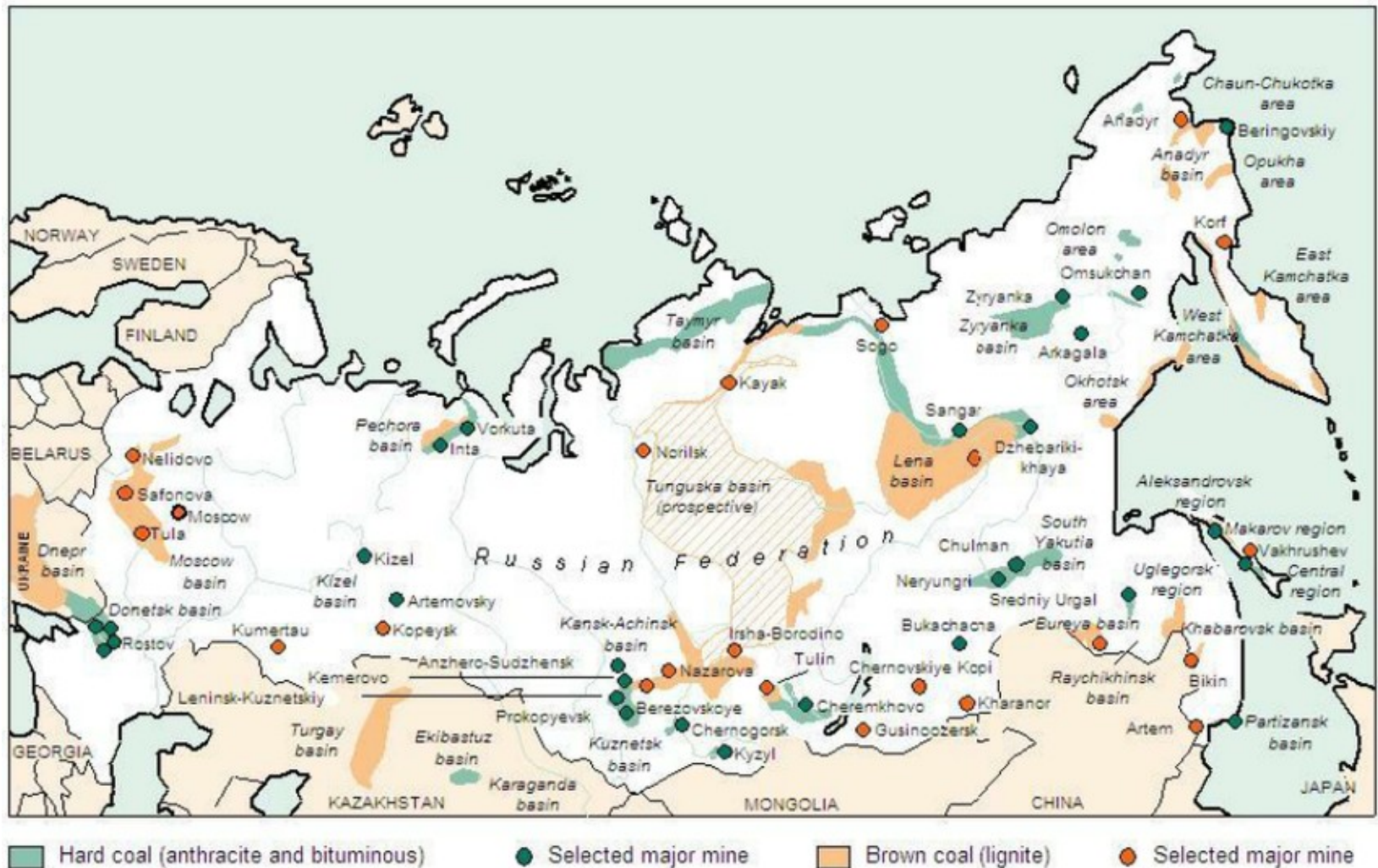


Lignite Hard coal

Ukrajina



Russian coal basin

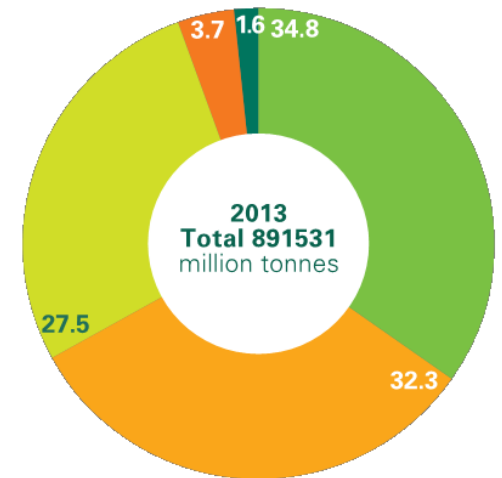
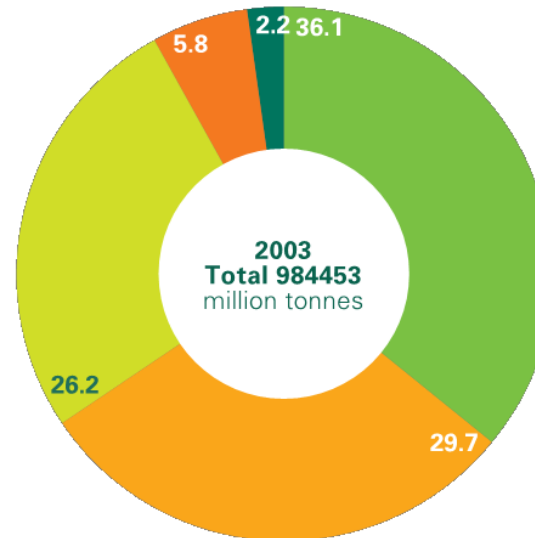
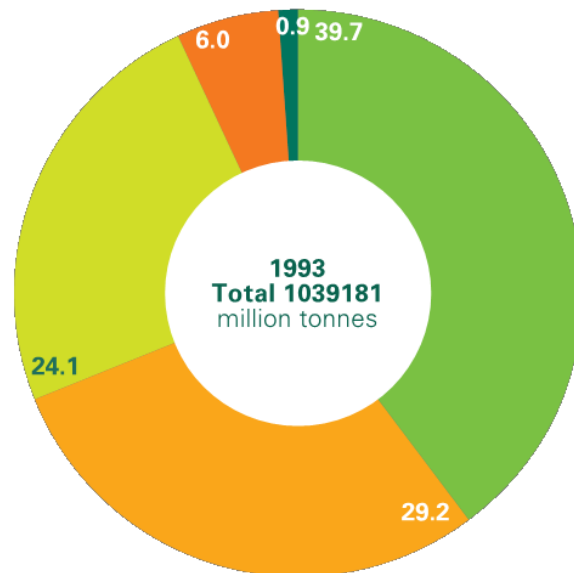


Zásoby, ceny, ...

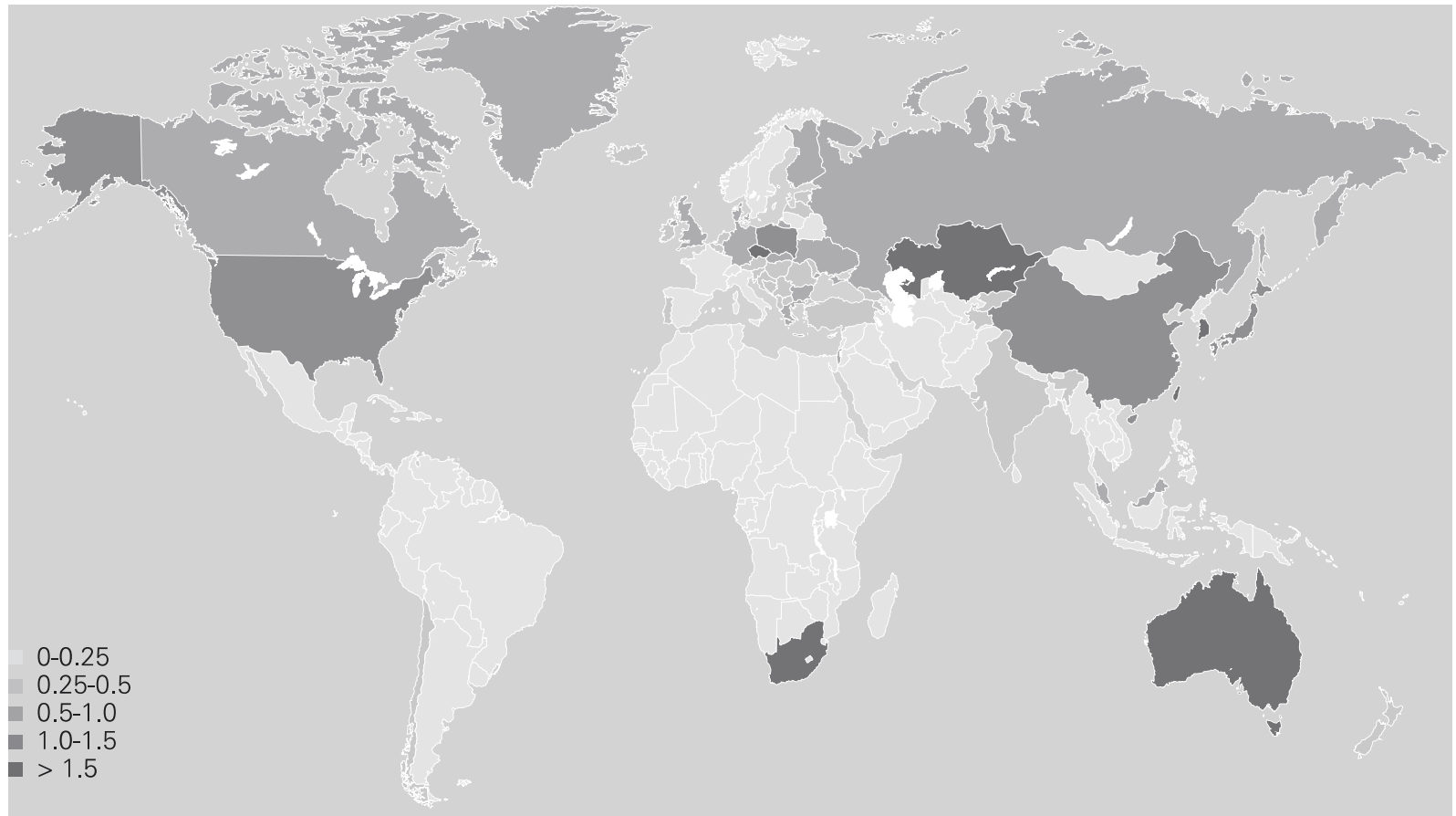
- zásoby
- cena: uhlí – průměr USA: 2005: 36\$/t (...1000Kč/t)
1999: 16\$/t
ČR: velkoobchod:
1100-1700 Kč/t MUS – 2007
- 2014-2018 (Kč/t):
- 2500 – 3800, OKD, koksovatelné
- 1800 – 2000, OKD, energetické
- 1800 – 2200, Severočeské doly, bez daně

Distribution of proved coal reserves in 1993, 2003 and 2013

- Europe & Eurasia
- Asia Pacific
- North America
- Middle East & Africa
- S. & Cent. America



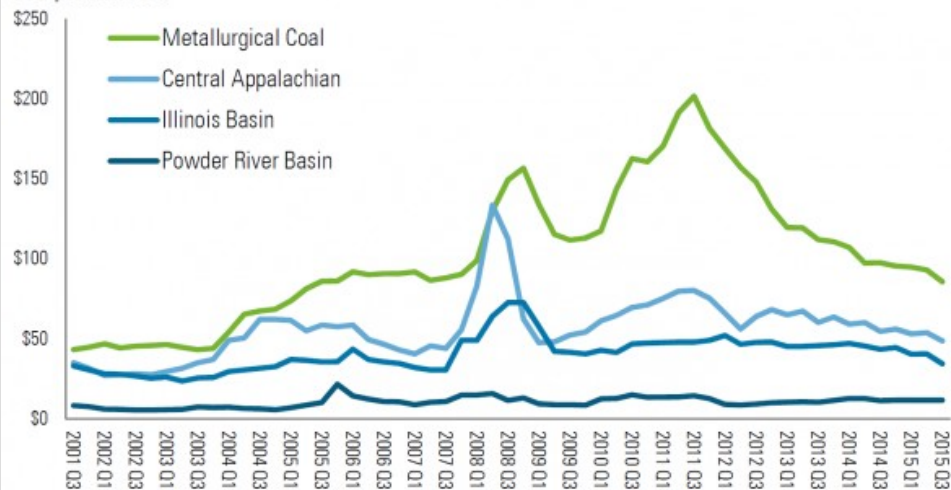
Coal consumption per capita 2013 Tonnes oil equivalent



Světové ceny černého uhlí (USD/t)

Figure 2: Coal prices

USD per short ton



Source: EIA, Bloomberg, and RHG estimates.

Thermal Coal CAPP Price
40.00 USD/st
28 Mar '17



InfoMine.com

hnědé uhlí

Ceny uhlí - burza

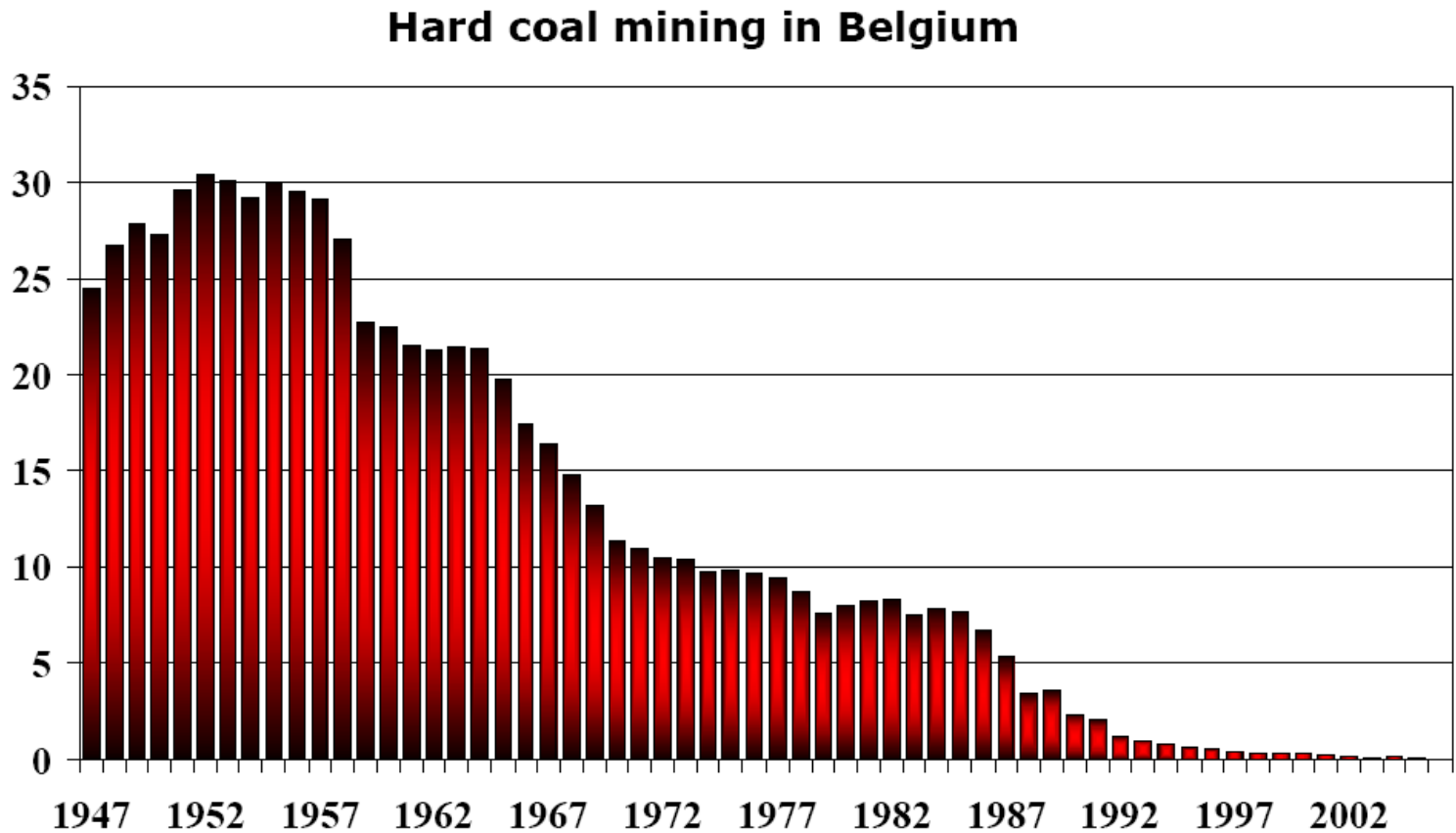
Thermal Coal CAPP Price
51.18 USD/st
7 Apr '15



SOURCE: TRADINGECONOMICS.COM | OTC

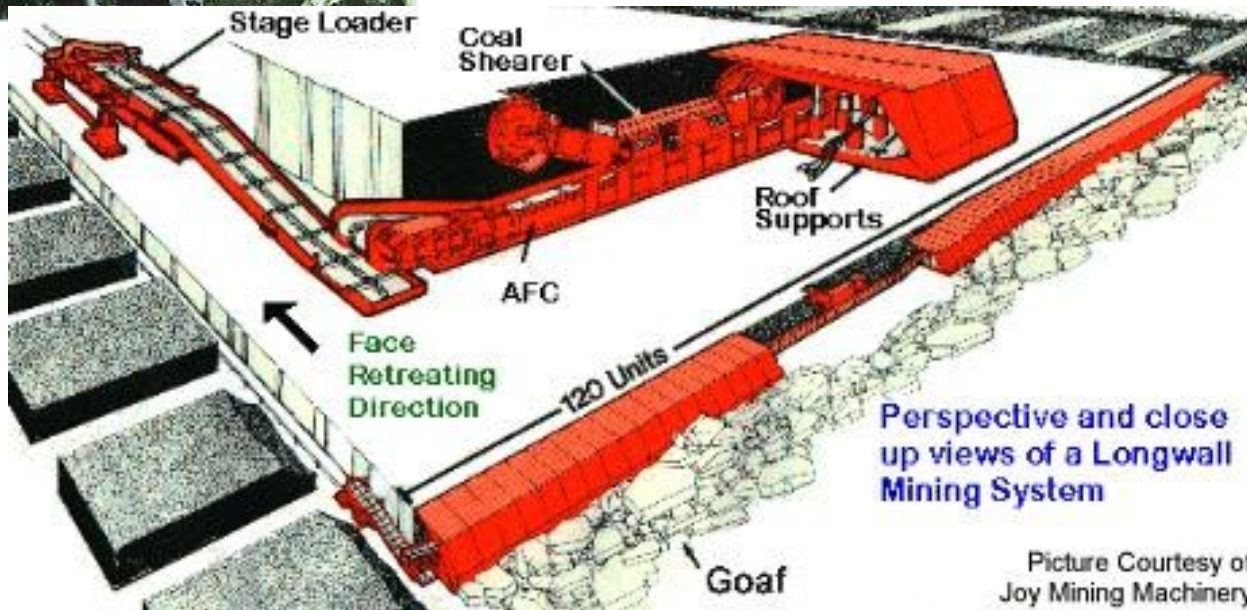
hnědé uhlí

Těžba černého uhlí v Belgii (mil t)

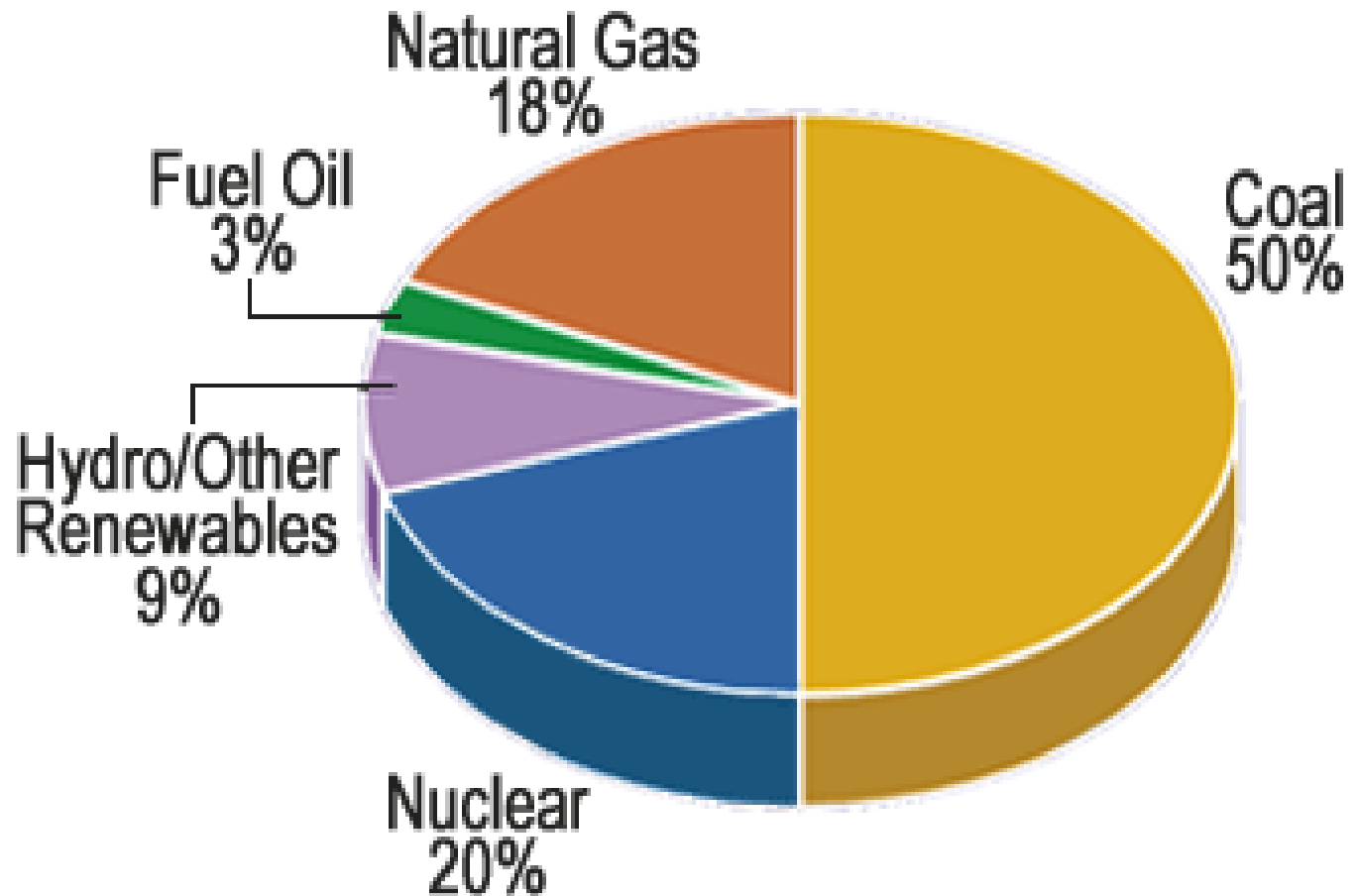




Longwall mining



Struktura výroby el. energie (USA)

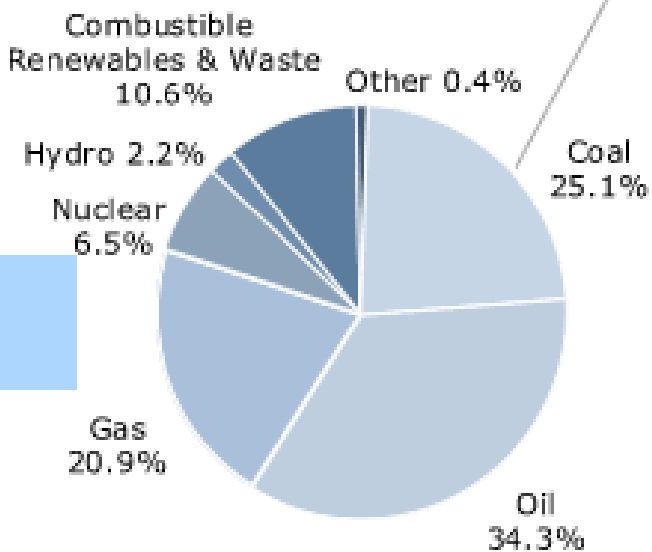


Struktura světových zdrojů

Total World Primary Energy Consumption (% by fuel - 2004)
Commercial & Non-Commercial Sources

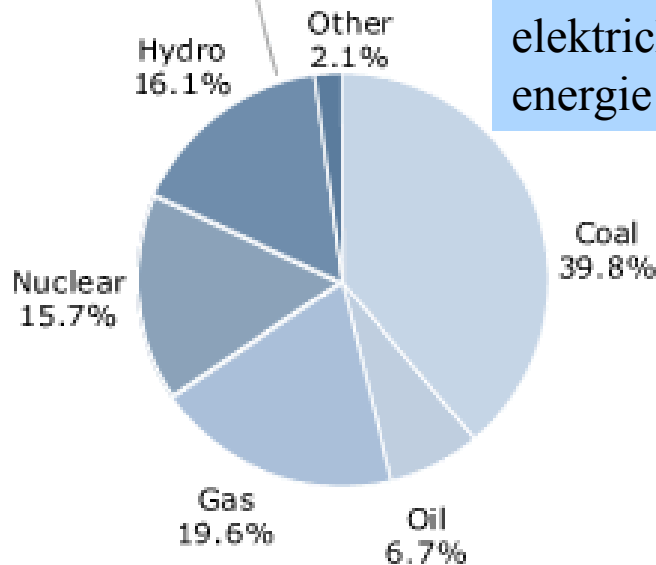
Total World Electricity Generation (% by fuel 2004)

energie celkem



▪ Other includes geothermal, solar, wind, heat etc

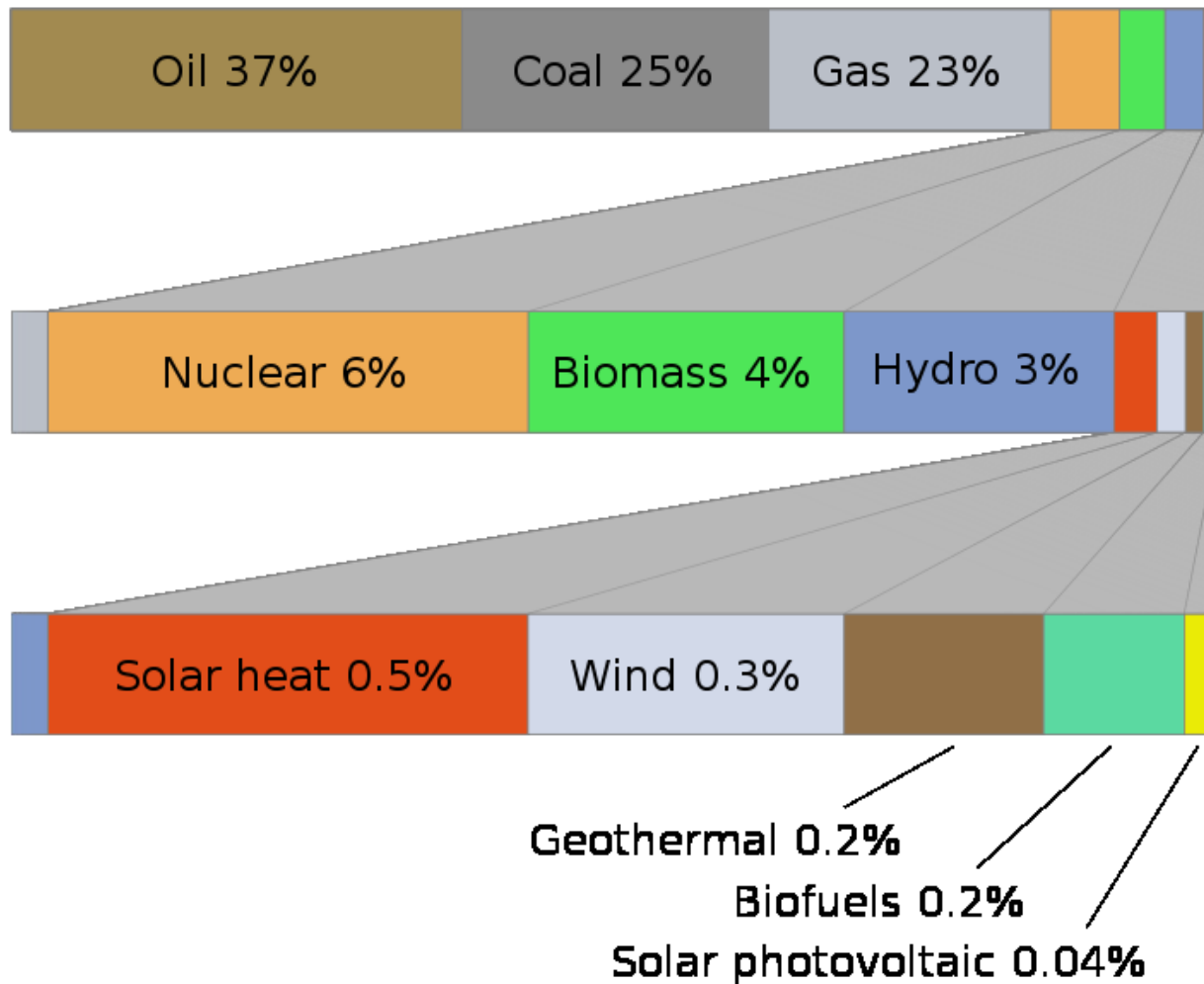
elektrická energie



▪ Other includes solar, wind, combustible renewables, geothermal & waste

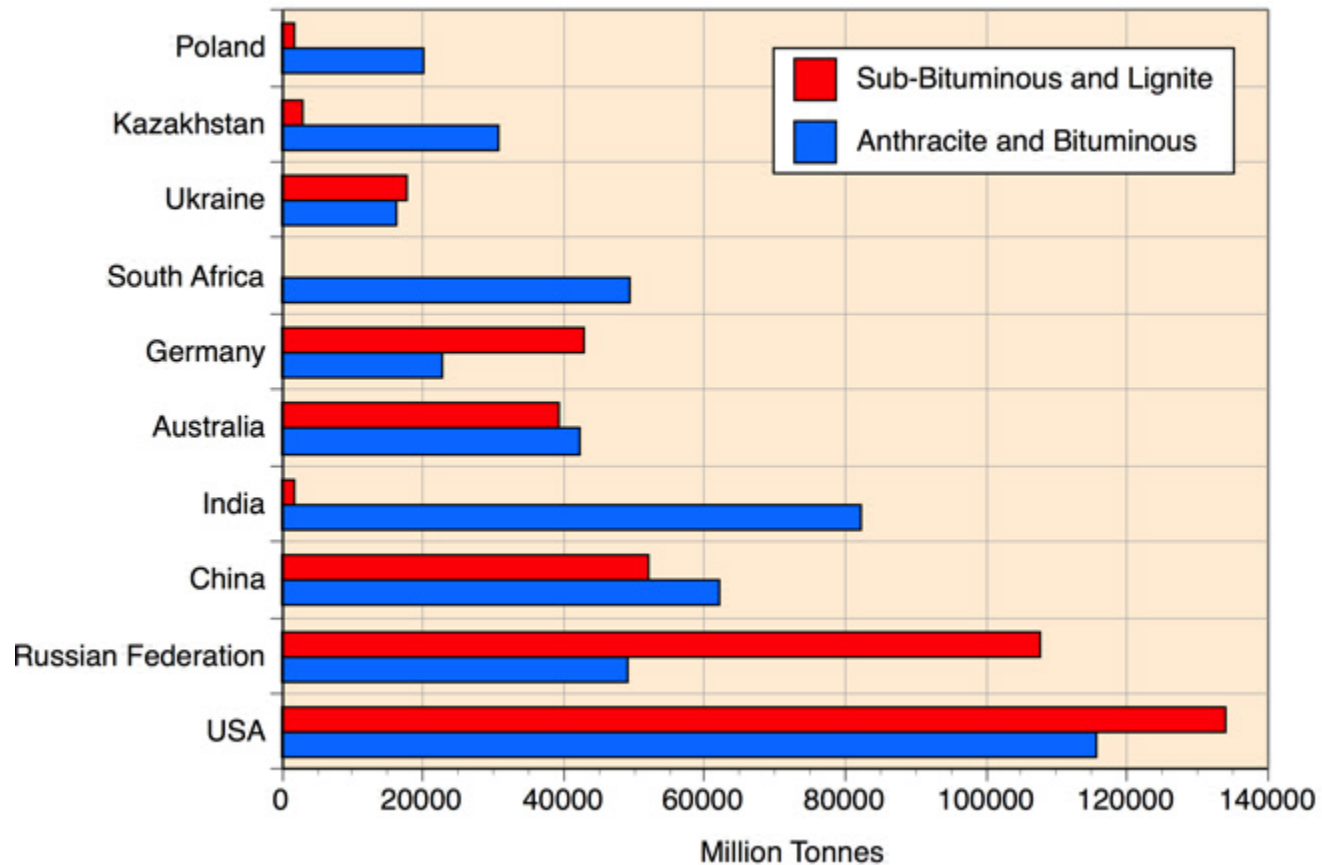
Coal World facts

World energy usage



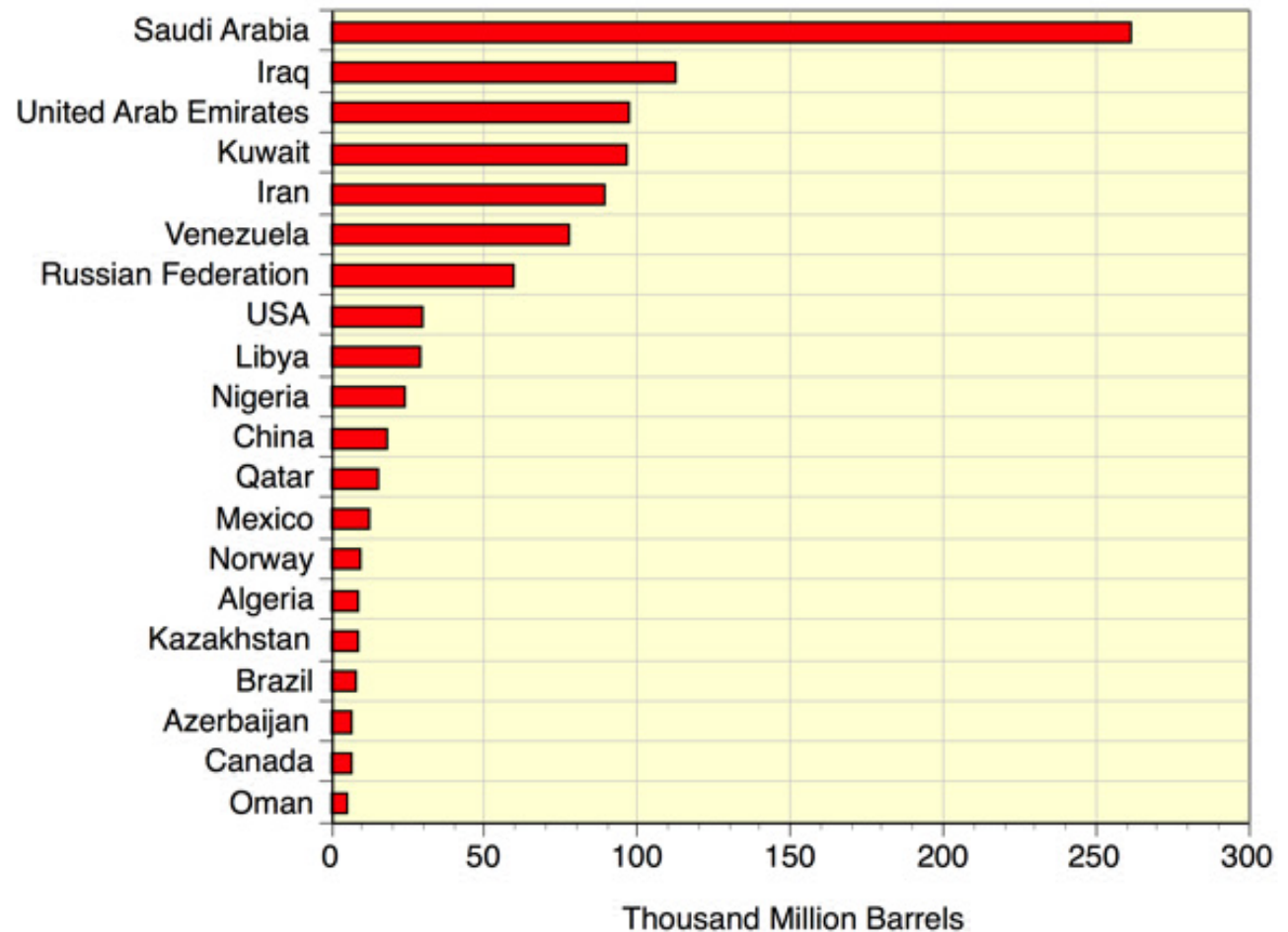
Coal reserves

Proved Coal Reserves 2002 - Top 10 Countries

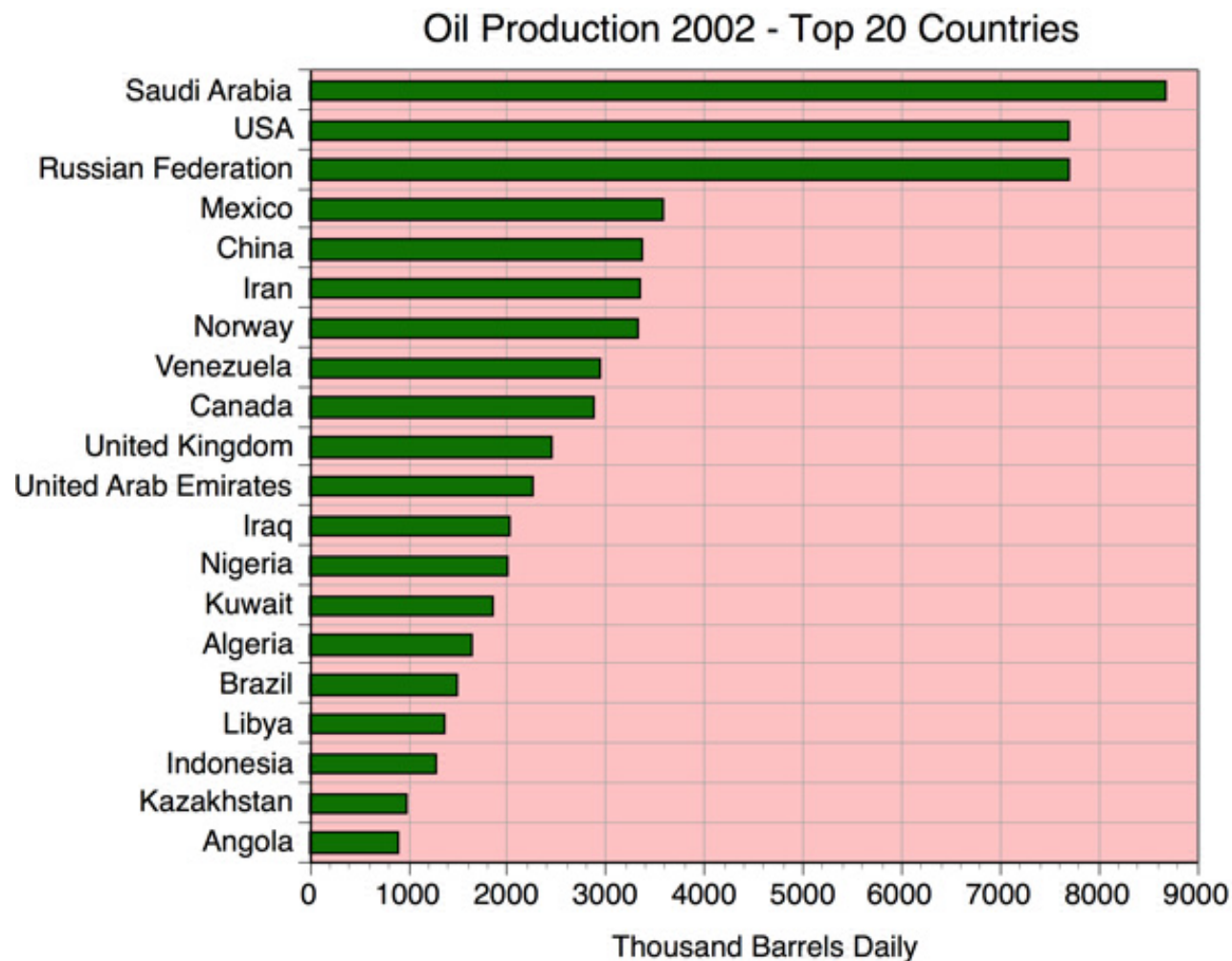


Oil reserves

Proved Oil Reserves 2002 - Top 20 Countries



Produkce ropy



Spotřeba nukleární energie

Nuclear Energy Consumption 2002 - Top 20 Countries

