Coal extraction data

Richard Heede
Climate Mitigation Services
File started: 11 January 2005
Last modified: November 2011

Kazakhstan

Astana

yellow column indicates original reported units

Production / Extraction data

Year	Lignite & Bituminous			Anthracite & Coke			Total Coal	
	Gross production	Gross production		Gross production	Gross production		Gross production	Gross production
	Million tons/yr	Million tons/yr		Million tons/yr	Million tons/yr		Million tons/yr	Million tonnes/yr

US BuMines data 1960-1969		USSR		USSR		USSR	
	%	Lignite	Bitumin. & Anthrac.	%	Total		

Year	US BuMines	%	Lignite	Bitumin. & Anthrac.	%	Total
1950						
1951						
1952						
1953						
1954						
1955						
1956						
1957						
1958						
1959						
1960	566.2	27%	152.41	413.80	73%	566.21
1961	563.2	26%	147.18	416.00	74%	563.18
1962	570.9	25%	144.40	426.45	75%	570.85
1963	586.5	26%	150.57	435.96	74%	586.53
1964	611.1	26%	159.98	451.12	74%	611.10
1965	637.4	26%	165.18	472.20	74%	637.38
1966	646.0	25%	161.42	484.54	75%	645.96
1967	656.6	24%	158.53	498.04	76%	656.57
1968	656.2	23%	152.45	503.73	77%	656.18
1969	590.0	27%	159.13	430.88	73%	590.01
1970	584.8	25%	148.32	436.44	75%	584.76
1971	603.1	26%	157.63	445.44	74%	603.07
1972		Total	1,857	5,415		7,272
1973		%	25.5%	74.5%		
1974						
1975						
1976						
1977						
1978						
1979						
1980						
1981						
1982						
1983						
1984						
1985						
1986						
1987						
1988						
1989						

Included in Former Soviet Union (FSU) coal production 1900-1991

EIA coal stats:

metallurgical coal not included in total

Year	Lignite	Bituminous	Anthracite	Metallurgical		Kazakhstan	Kazakhstan
	million tonnes	million tonnes	million tonnes	million tonnes		million short tons	million tonnes
1990							
1991							
1992	4.2	122.4	none	3.2		139.5	127
1993	4.7	107.2		0.8		123.3	112
1994	4.8	99.8		1.3		115.3	105
1995	3.7	80.8		1.9		93.1	84
1996	3.6	74.4		1.8		86.0	78
1997	2.5	70.2		2.7		80.1	73
1998	1.7	69.1		2.8		78.1	71
1999	1.8	58.0		3.6		65.9	60
2000	2.6	74.9		2.4		85.4	77
2001	2.5	76.6		2.5		87.2	79
2002	2.7	71.0		2.5		81.3	74
2003	4.1	80.8		2.5		93.6	85
2004	3.8	83.1	-	2.7		95.8	87
2005	3.8	82.8		2.5		95.4	87
2006	4.2	92.0		2.6		106.1	96
2007	4.3	93.5		2.9		107.8	98
2008	4.9	106.2		2.7		122.4	111	104
2009	5.3	96.2		2.7		111.9	102
2010	5.8	105.1		-		122.2	111

Total	71	1,644	-			1,890	1,715

			1992-2010 total:		1,890	tonnes

Coal Types:	Lignite	4.13%	Bituminous	95.87%	Anthracite	0.00%	100.00%

Kazakhstan

		Lignite	Bituminous		Anthracite	Metallurgical		Total coal		Coal methane emissions
		EIA coal stats:	EIA coal stats:		EIA coal stats:	EIA coal stats:		EIA coal stats:		CMM emissions	Crude CMM rate
		thousand tons	thousand tons		thousand tons	thousand tons		thousand tons		million cubic meters	Cubic meters per tonne
											CH4 content ranges up to 33 m^3 per tonne

	Lignite	Bituminous		Anthracite	Metallurgical	Total coal	CMM emissions	Crude CMM rate
1990						excluding metallurgical coal	1,760	
1991							1,695	
1992	4,577	134,913		-	3,490	139,490	1,648	13.0
1993	5,147	118,172		-	827	123,319	1,627	14.5
1994	5,307	110,023		-	1,405	115,329	1,302	12.4
1995	4,123	89,016		-	2,100	93,139	1,216	14.4
1996	3,958	81,998		-	1,931	85,956	857	11.0
1997	2,726	77,354		-	2,967	80,080	755	10.4
1998	1,890	76,181		-	3,048	78,071	649	9.2
1999	1,940	63,972		-	3,915	65,912	528	8.8
2000	2,820	82,548		-	2,695	85,367	704	9.1
2001	2,768	84,400		-	2,714	87,167	657 inte	8.3
2002	3,009	78,264		-	2,719	81,273	609 inte	8.3
2003	4,518	89,074		-	2,727	93,593	562 inte	6.6
2004	4,200	91,563		-	2,931	95,763	514 inte	5.9
2005	4,187	91,258		-	2,747	95,445	467 est	5.4
2006	4,653	101,424		-	2,897	106,077	589 inte	6.1
2007	4,730	103,108		-	3,224	107,838	711 inte	7.3
2008	5,370	117,065		-	2,963	122,436	833 inte	7.5
2009	5,818	106,093		-	2,963	111,911	955 est¹	9.4
2010	6,353	115,854				122,207		

total excludes metallurgical coal production, hence 2010 estimate of lignite and bituminous in 2009

Global Methane Intitiative (2010)
See sources below

subt. 1992-2010	78,094	1,812,279		-	48,265	1,890,373
percent of 2009	5.20%	94.80%		100.00%		
% 1992-2010:	4%	96%		0%	3%	

Coal and Peat in Kazakhstan in 2008

	Anthracite	Coking Coal	Other Bituminous Coal	Sub-Bituminous Coal	Lignite/Brown Coal	Peat	Patent Fuel	Coke Oven Coke	Gas Coke	Coal Tar
Unit	kt	kt	kt	kt	kt	kt	kt	kt	kt	kt
Production	0	14086	92114	0	4872	0	0	2688	0	0
From Other Sources	0	0	0	0	0	0	0	0	0	0
Imports	0	0	264	0	0	1	0	766	0	0
Exports	0	-376	-42323	0	-283	0	0	-235	0	0
Stock Changes	0	0	13	0	0	0	0	-22	0	0
Domestic Supply	0	13710	50068	0	4589	1	0	3197	0	0

International Energy Agency Coal and Peat in Kazakhstan in 2008

Table 20-1. Kazakhstan's Coal Reserves and Production

Indicator	Anthracite & Bituminous (million tonnes)	Sub-bituminous & Lignite (million tonnes)	Total (million tonnes)	Global Rank (# and %)
Estimated Proved Coal Reserves (2009)	28,170	3,130	31,300	7 (3.8%)
Annual Coal Production (2009)			101.5	9 (1.5%)

Source: BP (2010)

Table 20-5. Kazakhstan's CMM Emissions (million cubic meters)

Emission Category	1990	1991	1992	1993	1994	1995
Underground coal mines – ventilation emissions	983.66	914.75	915.52	957.82	678.12	671.37
Underground coal mines – drained emissions	189.84	200.83	179.87	162.96	148.31	115.8
Post-underground emissions	34.8	36.4	33.9	30.6	28.7	23
Surface mine emission	560.1	554.1	529.3	488.8	452.0	411.9
Total liberated (= sum of all above)	1768.4	1706.08	1658.69	1640.18	1307.13	1222.07
Recovered & Used	8.8	10.9	11.0	13.0	5.6	5.9
Total emitted (= Total liberated – recovered & used)	1759.6	1695.18	1647.69	1627.18	1301.53	1216.17

Emission Category	1996	1997	1998	1999	2000	2005 (estimated)	2009** (estimated)
Underground coal mines – ventilation emissions	408.0	347.45	303.45	227.32	286.23		400
Underground coal mines – drained emissions	55.4	48.2	42.6	27.2	41		130
Post-underground emissions	14.9	12.7	9.0	7.1	8.0		
Surface mine emission	381.7	350.2	304.3	277.3	381		450
Total liberated (= sum of all above)	860	758.55	659.35	538.92	716.23		980
Recovered & Used	3.5	4.0	10.5	11.3	12.2		25
Total emitted (= Total liberated – recovered & used)	856.5	754.55	648.85	527.62	704.03	467*	955

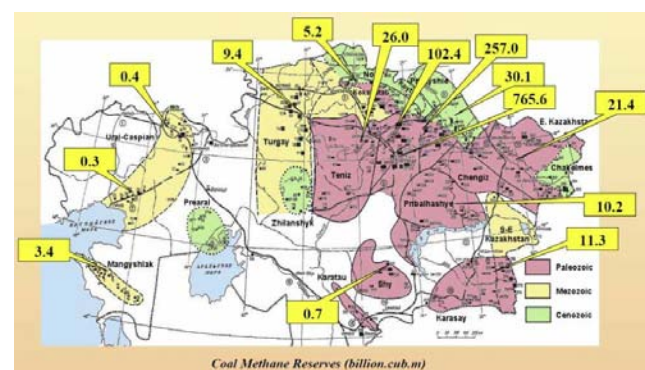Source: KazNIIMOSK (2002); *USEPA (2006); **Shultz & Alekseev (2010)

Global Methane Initative (2010) Coal Mine Methane Country Profiles, Kazakhstan, chapter 20, www.globalmethane.org/tools-resources/coal_overview.aspx

Figure 20-1. Kazakhstan Annual Coal Production (million tonnes)

Global Methane Initative (2010) Coal Mine Methane Country Profiles, Kazakhstan, chapter 20, www.globalmethane.org/tools-resources/coal_overview.aspx
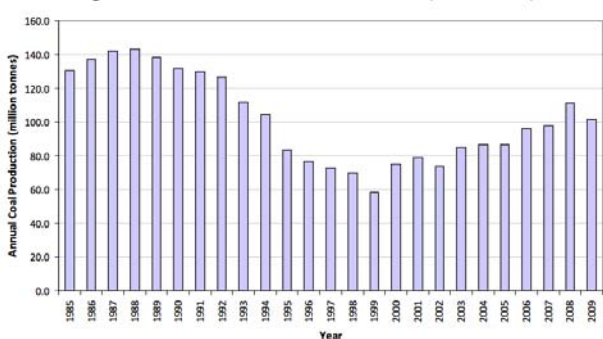
Sources for Coal Mine Methane emissions data in column K90-K109:

KazNIIMOSK (2002): Kazakhstani GNG Emissions Inventory from Coal Mining and Road Transportation – Final Project Report, Kazakh Research Institute for Environment Monitoring and Climate (KazNIIMOSK), Almaty, July, 2002.

* USEPA (2006): Global Anthropogenic Non-CO2 Greenhouse Gas Emissions: 1990–2020, U.S. Environmental Protection Agency, Office of Atmospheric Programs, Climate Change Division, June 2006, at http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf

** Shultz, K. and Alekseev, E. (2010): The Role of Policy on CMM Project Development: Ukraine and Kazakhstan as Case Studies. Presented at International Investment Forum: Funding of CMM Project in Ukraine. Donetsk, Ukraine June 3, 2010.

Kazakhstan

Cell: D11
Comment: Rick Heede:

Coal production by coal mining companies and state-owned enterprises, including subsidiaries of oil and gas companies.

Coal types produced are not ordinarily reported by coal operators (except for metallurgical coal). We distinguish, where possible and reasonably well known, between hard (bituminous and subbituminous) and soft (lignite or peat) coals, especially for the larger companies operating in regions such as Australia and India where soft coals are predominant. Soft coals have lower carbon content per tonne than do hard coals.

Cell: H25
Comment: Rick Heede:

Soviet production includes Svalbard production-sharing with Norway (~0.4 million tons per year).

Cell: H52
Comment: Rick Heede:

EIA (2011) International Energy Statistics on World Coal Production (lignite, bituminous, anthracite, and metallurgical coal), by country; data for1980-2009; total Primary Coal Production data extends to 2010. www.eia.gov/emeu/internationalenergy.html or www.eia.gov/countries/data.cfm.

Cell: E70
Comment: Rick Heede:

EIA (2006) Table 5.3 World Bituminous Coal Production, 1980-2004.

Cell: M74
Comment: Rick Heede:

World Coal Institute 2009 report, http://www.worldcoal.org/resources/coal-statistics/,
http://www.worldcoal.org/bin/pdf/original_pdf_file/coal_factsnewversion09(15_09_2010).pdf

Cell: K76
Comment: Rick Heede:

World Coal Assoc website http://www.worldcoal.org/resources/coal-statistics/, 2010 production, link to 2008 production, no link to 2009 (Rhea), assume 2009 same as 2010

Cell: H84
Comment: Rick Heede:

EIA (2011) International Energy Statistics on World Coal Production (lignite, bituminous, anthracite, and metallurgical coal), by country; data for1980-2009; total Primary Coal Production data extends to 2010. www.eia.gov/emeu/internationalenergy.html or www.eia.gov/countries/data.cfm.

Cell: K87
Comment: Rick Heede:

Source: Global Methane Initative (2010) Coal Mine Methane Country Profiles, Kazakhstan, chapter 20, www.globalmethane.org/tools-resources/coal_overview.aspx

"Coal production in Kazakhstan declined by more than 50 percent in the years following independence from the Soviet Union in 1991 (BP, 2010).

The Kazakh coal mines are particularly gassy and prone to violent gas outbursts, and must be degasified and ventilated to prevent explosions and promote worker safety. The underground mines in the Karaganda basin use a variety of pre-mining and post-mining methane drainage techniques. Most of the mines are operated at a depth of more than 500 meters (m) and gas contents in these mines average between 18 and 24 m3/tonne (Baimukhametov et al, 2009) with specific emissions averaging 33 m3/tonne (KazNIIMOSK, 2002). Pre-drainage has historically been carried out using in-seam boreholes. Advance degassing from the surface has been trialed with limited success because of the low permeability of the coal seams. The Arcelor Temirtau Coal Division has had recent success in increasing degasification rates, and hence coal production rates, by drilling cross-measure boreholes from a roadway driven 8–12 m below the coal seam. Gob gas is drained with vertical wells from the surface or via galleries driven 20–30 m above the seam (Baimukhametov et al., 2009).

Current drained methane emissions are estimated to be approximately 130 million m3 resulting from increased underground coal production rates (Alekseev, 2010), However, the level of methane utilization is very low, only about 25 million m3 annually, which is recovered and combusted in the boiler houses of five mines for mine heating. Surface mines are heavily ventilated and ventilation air with methane concentrations of about 1 percent is vented to the atmosphere (KazNIIMOSK, 2002).

Table 20-5 details Kazakhstan's measured and estimated CMM emissions. The data in this table may vary from the U.S. EPA data presented in the Executive Summary due to differences in inventory methodology and rounding."

Cell: O175
Comment: Rick Heede:

Left Intentionally Blank