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Energy statistics in Mongolia

(experiences gained through their development for GHG Inventory)

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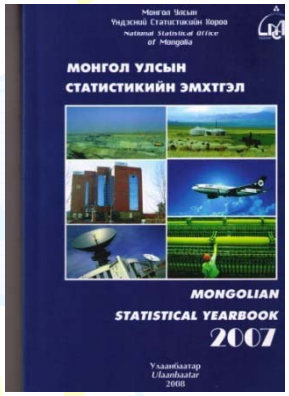
Energy Statistics

The main sources of Energy Statistics

- *Mongolian Statistical Yearbook*
- *Energy statistics (Yearbook)*
- *Energy policy and statistics in Northeast Asia*
- *Country report on Energy outlook in Northeast Asia*
- *Sources from Ministry of Minerals and Energy and other related ministries*

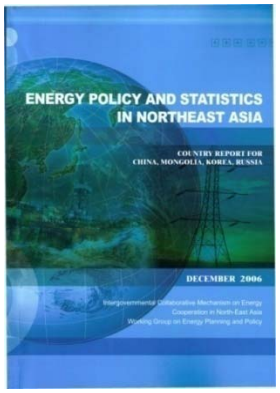


Mongolian Statistical Yearbook by National Statistical office

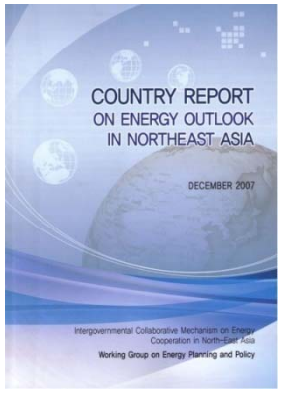
Coal balance
Electricity balance
Heat balance
Import of petroleum products

Energy statistics (Yearbook) by Energy regulatory Agency

Technical economical and financial data of energy systems and power plants
Energy price indexes



Energy policy and statistics in Northeast Asia
Energy demand structure changes 1990-2005
Energy supply structure changes 1990-2005



Country report on Energy outlook in Northeast Asia

Energy demand and Supply outlook up to 2020

Energy balance

Coal

- Coal supplies about 93% of Mongolia's electricity and heat requirements. All of this coal are produced domestically.

  Lignite and bituminous coals are used for energy production.
- Lignite is still the principle energy source in power generation of the central and eastern energy system. Lignite is consumed by CHPs, boilers and households.
- Bituminous coal deposits are located mainly in the Western and relatively low developed regions of the country causing the low production of this rank of coal comparing with lignite production. However, bituminous coal is still the principle energy source in the residential sector.
- The main course of coking coal is Tavan tolgoi coal mine, the only coking coal deposit to produce and export metallurgical coal.

Energy balance

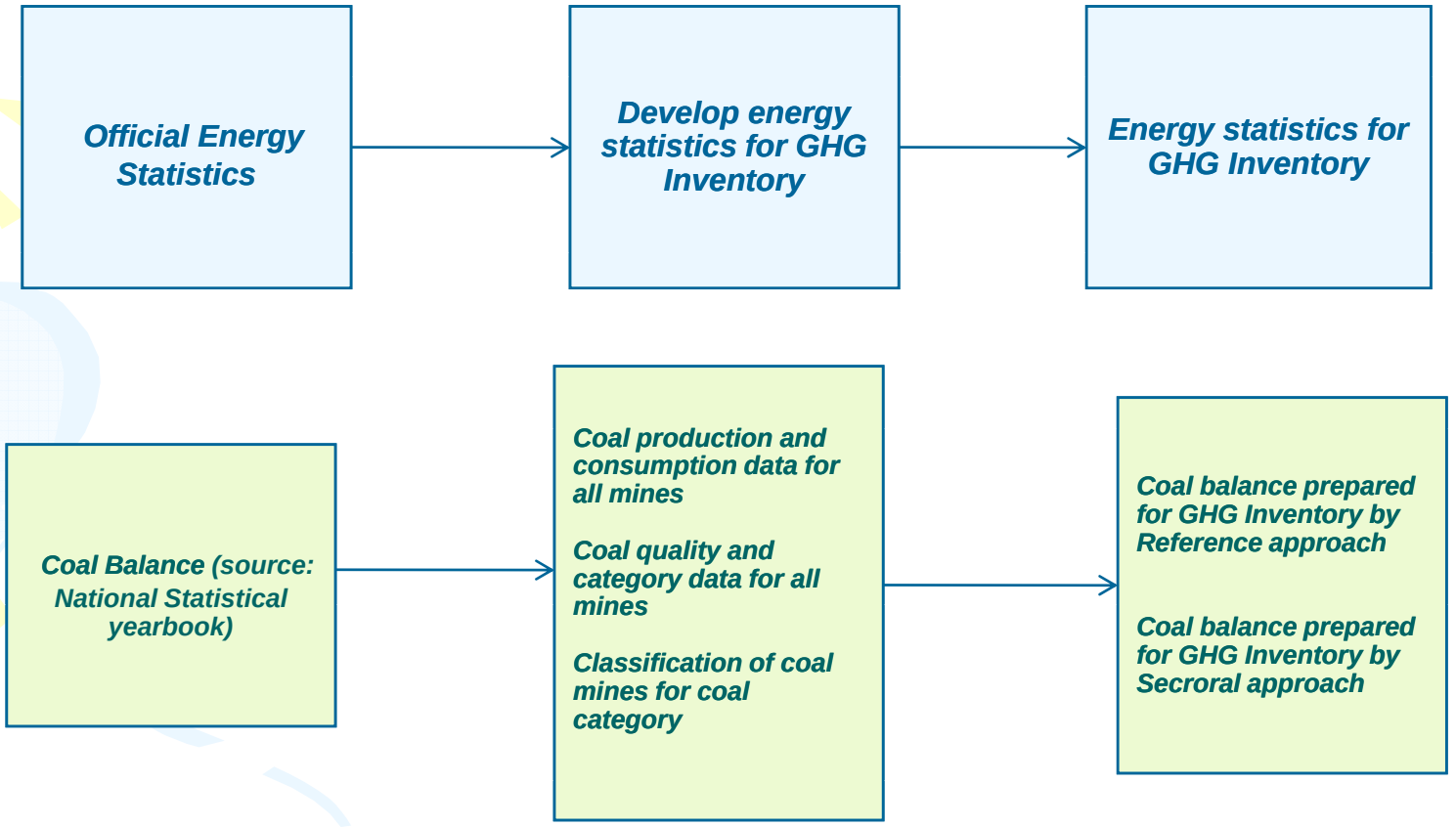
Coal balance *(source: National Statistical yearbook)*

	1999	2000	2001	2002	2003	2004	2005	2006
Resources- Total	5,187.0	5,398.0	5,337.0	5,692.5	5,823.6	7,091.8	7,860.4	8,465.1
Stock at the beginning of the year	193.0	170.0	186.0	148.0	157.2	226.5	342.9	390.8
Produced	***4,964.0***	***5,185.0***	***5,141.0***	***5,544.4***	***5,666.1***	***6,865.0***	***7,517.1***	***8,074.1***
State owned mining companies		4,495.7	4,457.5	4,807.3	4,086.1	4,130.1	4,458.5	4,941.0
Private sector's mining companies		689.3	683.5	737.1	1,580.0	2,734.9	3,058.6	3,133.1
Import	30.0	43.0	10.0	0.1	0.3	0.3	0.4	0.2
Consumption-Total	***5,017.0***	***5,211.4***	***5,189.0***	***5,535.3***	***5,161.7***	***5,188.5***	***5,472.6***	***5,691.2***
Consumed by thermal power stations	4,127.0	4,449.0	4,324.0	4,723.2	4,380.2	4,478.6	4,619.6	4,595.2
Distributed to economic sectors	890.0	762.4	865.0	812.1	781.5	709.9	853.0	1,096.0
Of which:								
Industry & construction	347.0	180.0	152.0	151.7	153.5	90.6	106.6	237.3
Transport & communication	58.0	73.0	55.0	78.3	3.2	63.8	101.4	120.9
Agriculture	32.0	3.0	4.0	7.6	8.6	5.3	18.3	8.2
Communal housing	202.0	406.4	334.0	435.7	464.9	451.2	513.9	549.9
of which: household	87.0	180.0	205.0	379.0	409.0	412.2	337.0	549.9
Other	251.0	100.0	320.0	138.8	151.3	99.0	112.8	179.7
Export		0.6	-	-	435.4	1,560.4	2,116.2	2,456.6
Stock at the end of the year	170.0	186.0	148.0	157.2	226.5	342.9	271.6	317.3

Gaps for GHG Inventory:

- *Only total coal balance;*
- *No separation of coal by coal categories*

Energy statistics for GHG Inventory



Energy statistics for GHG Inventory

Coal balance prepared for GHG Inventory by Reference approach

	Production				Import				Export				Stock Change				Consumption			
	Coking	Sub-bit	Lignite	Total	Coking	Sub-bit	Lignite	Total	Coking	Sub-bit	Lignite	Total	Coking	Sub-bit	Lignite	Total	Coking	Sub-bit	Lignite	Total
1990	185.7	587.1	6,384.2	7,157.0	-	73.0	-	73.0	-	-	490.0	490.0	9.0	41.8	40.2	91.0	176.7	618.3	5,854.0	6,649.0
1991	230.3	528.7	6,278.0	7,037.0	-	-	-	-	-	-	121.0	121.0	(3.0)	11.7	(84.7)	(76.0)	233.3	517.0	6,241.7	6,992.0
1992	145.8	370.8	5,730.4	6,247.0	-	-	-	-	-	-	88.0	88.0	(3.9)	4.9	(61.0)	(60.0)	149.7	365.9	5,703.4	6,219.0
1993	89.5	206.4	5,321.1	5,617.0	-	-	-	-	-	-	-	-	(3.5)	(9.9)	(33.6)	(47.0)	93.0	216.3	5,354.7	5,664.0
1994	53.9	154.2	4,949.9	5,158.0	-	-	-	-	-	-	-	-	(2.6)	(6.0)	(0.4)	(9.0)	56.5	160.2	4,950.3	5,167.0
1995	49.3	286.0	4,683.7	5,019.0	-	211.0	-	211.0	-	-	1.0	1.0	(2.3)	(1.7)	29.0	25.0	51.6	498.7	4,653.7	5,204.0
1996	24.8	170.5	4,914.7	5,110.0	-	23.0	-	23.0	-	-	1.0	1.0	-	-	(7.0)	(7.0)	24.8	193.5	4,920.7	5,139.0
1997	20.4	24.6	4,879.0	4,924.0	-	100.0	-	100.0	-	-	-	-	-	-	(11.0)	(11.0)	20.4	124.6	4,890.0	5,035.0
1998	20.2	21.2	5,015.6	5,057.0	-	38.0	-	38.0	-	-	3.1	3.1	-	-	105.9	105.9	20.2	59.2	4,906.6	4,986.0
1999	-	203.0	4,761.0	4,964.0	-	30.0	-	30.0	-	-	-	-	-	-	(23.0)	(23.0)	-	233.0	4,784.0	5,017.0
2000	-	225.0	4,960.0	5,185.0	-	43.0	-	43.0	-	0.6	-	0.6	-	-	16.0	16.0	-	267.4	4,944.0	5,211.4
2001	-	385.0	4,756.0	5,141.0	-	10.0	-	10.0	-	-	-	-	-	-	(38.0)	(38.0)	-	395.0	4,794.0	5,189.0
2002	-	196.8	5,347.6	5,544.4	-	0.1	-	0.1	-		-	-	-	(0.1)	9.3	9.2	-	197.0	5,338.3	5,535.3
2003	-	1,059.5	4,606.6	5,666.1	-	0.3	-	0.3	-	435.4		435.4	-	(1.2)	70.5	69.3	-	625.6	4,536.1	5,161.7
2004	26.2	1,721.5	5,117.3	6,865.0	-	-	-	-	26.2	1,534.2	-	1,560.4	-	11.9	104.2	116.1	-	175.4	5,013.1	5,188.5
2005	360.7	1,956.7	5,199.7	7,517.1	-	-	-	-	360.7	1,755.5	-	2,116.2	-	(11.5)	(60.2)	(71.7)	-	212.7	5,259.9	5,472.6
2006	707.5	2,079.6	5,287.0	8,074.1		0.2		0.2	707.5	1,749.1		2,456.6			(73.5)	(73.5)	-	330.7	5,360.5	5,691.2

Energy balance

Coal balance prepared for GHG Inventory by Secroral approach

	1990	1995	2000	2001	2002	2003	2004	2005	2006
Consumption-Total	6,649.0	5,204.0	5,211.4	5,189.0	5,524.3	5,161.7	5,188.5	5,472.6	5,691.2
Consumed by thermal									
power stations	4,324.0	3,883.0	4,449.0	4,324.0	4,723.2	4,380.2	4,478.6	4,619.6	4,595.2
Coking coal									
Sub-Bit	360.0	300.0	110.0	160.0	87.7	89.3	74.6	88.9	120.0
Lignite	3,964.0	3,583.0	4,339.0	4,164.0	4,635.5	4,290.9	4,404.0	4,530.7	4,475.2
Total	4,324.0	3,883.0	4,449.0	4,324.0	4,723.2	4,380.2	4,478.6	4,619.6	4,595.2
Distributed to economic sectors									
and households	2,325.0	1,321.0	762.4	865.0	812.1	781.5	709.9	853.0	1,096.0
Of which:									
Industry & construction	995.0	651.0	180.0	152.0	151.7	153.5	90.6	106.6	237.3
Coking coal	176.7	51.6							
Sub-Bit	120.0	90.0	80.0	90.0	7.5	10.9	14.7	13.2	40.0
Lignite	698.3	509.0	100.0	62.0	144.2	142.6	75.9	93.5	157.3
Total	818.3	599.0	180.0	152.0	151.7	153.5	90.6	106.7	197.3
Transport & communication	114.0	97.0	73.0	55.0	78.3	3.2	63.8	101.4	120.9
Coking coal									
Sub-Bit				3.0	3.6	1.3	1.0	1.1	
Lignite	114.0	97.0	73.0	52.0	74.7	1.9	62.8	100.3	120.9
Total	114.0	97.0	73.0	55.0	78.3	3.2	63.8	101.4	120.9
Commercial/instituional Sector	302.0	190.0	226.4	129.0	56.7	55.9	39.0	176.9	549.9
Coking coal									
Sub-Bit		60.0	10.0	25.0	9.0	1.5	12.8	11.2	14.0
Lignite	302.0	133.4	216.4	104.0	47.7	55.2	26.9	173.9	135.9
Total	302.0	193.4	226.4	129.0	56.7	56.7	39.7	185.1	149.9
Residential sector	565.0	122.0	180.0	205.0	379.0	409.0	412.2	337.0	549.9
Coking coal									
Sub-Bit	138.3	48.7	67.4	77.0	66.7	60.8	61.5	80.0	130.7
Lignite	426.7	73.3	112.6	128.0	312.3	348.2	350.7	257.0	319.2
Total	565.0	122.0	180.0	205.0	379.0	409.0	412.2	337.0	449.9
Agriculture	159.0	28.0	3.0	4.0	7.6	8.6	5.3	18.3	8.2
Coking coal									
Sub-Bit					0.3		0.1		
Lignite	159.0	28.0	3.0	4.0	7.3	8.6	5.2	18.3	8.2
Total	159.0	28.0	3.0	4.0	7.6	8.6	5.3	18.3	8.2
Other	190.0	233.0	100.0	320.0	138.8	151.3	99.0	112.8	179.7
Coking coal									
Sub-Bit			-	40.0	11.2	37.1	10.7	18.3	26.0
Lignite	190.0	230.0	100.0	280.0	116.6	113.4	87.6	86.2	143.8
	190.0	230.0	100.0	320.0	127.8	150.5	98.3	104.5	169.8

Energy statistics for GHG Inventory

Liquid fuel

Mongolia imports all of oil product demand from Russia and China.
There are official statistics of import of petroleum products in Mongolian Statistical Yearbook

Liquid Fossil Fuel types	1990	1991	1992	1993	1994	1995	1996	1997	1998
Gasoline	341.10	218.40	210.10	174.50	158.80	178.90	193.20	178.90	211.40
Jet fuel	34.00	30.00	23.80	24.00	22.40	20.40	27.50	24.70	20.30
Gas / Diesel Oil	364.30	264.30	162.40	282.10	130.40	103.70	120.40	128.20	132.20
Residual Fuel Oil	63.40	72.50	46.10	56.60	47.50	29.84	33.60	34.50	31.80
Lubricants	36.00	3.80	12.20	10.30	4.70	5.00	0.40	0.50	-

Liquid Fossil Fuel types	1,999	2,000	2,001	2,002	2,003	2,004	2,005	2,006
Gasoline	193.20	233.70	247.20	243.70	259.07	270.07	254.77	280.44
Jet fuel	15.90	18.40	22.80	20.50	23.89	22.76	18.91	41.36
Gas / Diesel Oil	159.40	161.70	197.10	190.60	214.82	258.24	270.85	309.96
Residual Fuel Oil	22.70	14.60	17.50	9.50	12.35	11.10	4.93	4.42
Lubricants	2.50	1.50	2.90	6.30	2.72	1.68	1.83	1.52

Engine	***Gasoline***	***Diesel***	***Jet fuel***
	Road transport	Road transport	Aviation
		Railway	
		Agriculture, Mining and Construction	
		Energy	
Steam generator	***Residual fuel***		
	Thermal Power Station		
	Industrial Furnace		

Energy statistics for GHG Inventory

Liquid fuel statistics developed for GHG Inventory

	1999	2000	2001	2002	2003	2004	2005	2006
Energy Industry								
Other Kerosene	73.15	6.31	5.18	5.77	5.85	4.38	3.36	2.58
Gas/Diesel oil	11.40	10.20	10.20	11.00	12.57	11.30	9.10	8.00
Residual Fuel Oil	22.70	14.60	17.50	9.50	12.35	11.10	4.93	4.42
Industry & construction								
Other Kerosene	9.28	8.78	7.41	8.92	8.61	7.51	7.20	6.71
Gas/Diesel oil	14.80	14.20	14.60	17.00	18.50	19.40	19.50	20.80
LPG							0.30	0.60
Lubricants	2.50	1.50	2.90	6.30	2.72	1.68	1.83	1.52
Transport & communication								
Gasoline	193.20	233.70	247.20	243.70	259.07	270.07	254.77	280.44
Jet Kerosene	11.86	15.50	18.39	18.51	12.90	15.68	18.13	17.90
Other Kerosene	19.64	22.39	21.56	25.87	25.12	24.22	27.13	18.57
Rail way Gas/Diesel oil	31.30	36.20	42.50	49.30	53.97	62.54	73.47	57.56
Auto transport Gas/Diesel oil	72.10	72.70	101.90	85.00	98.43	135.00	137.50	195.50
Residual Fuel Oil	45.23	44.96	51.70	44.60	45.82	52.28	50.77	63.07
LPG							0.50	0.63
Agriculture								
Other Kerosene	18.70	17.56	14.16	14.85	14.59	11.62	11.55	9.07
Gas/Diesel oil	29.80	28.40	27.90	28.30	31.35	30.00	31.28	28.10
Residential sector								
LPG	0.05	0.15	0.3	0.6	1	1.5	2.7	3.27

Energy statistics for GHG Inventory

Biomass fuel

Traditional biomass fuel. This is the most difficult part of the collection of activity data in the National Emission Inventory. In the biomass fuel included both wood and dung used for heat production in private house. The consumers are nomadic herders and households living in ger (traditional round Mongolian tent) or private houses surrounding area of big city like Ulaanbaatar, Darkhan, Erdenet and province center. Therefore, it is required to accurately estimate demand of traditional biomass fuel in households. These estimations were done by scientist group from Mongolian technical university of Mongolia. The estimation based on research and survey results and tested. Therefore, it is accessible for inventory estimation.

Thank you for attention