



Statistics 2001

euro  gas

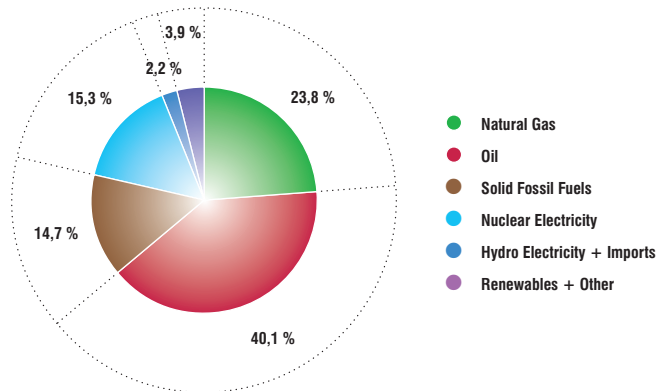
Primary energy consumption

2001 Primary Energy Consumption in EUROGAS Member Countries and EU15

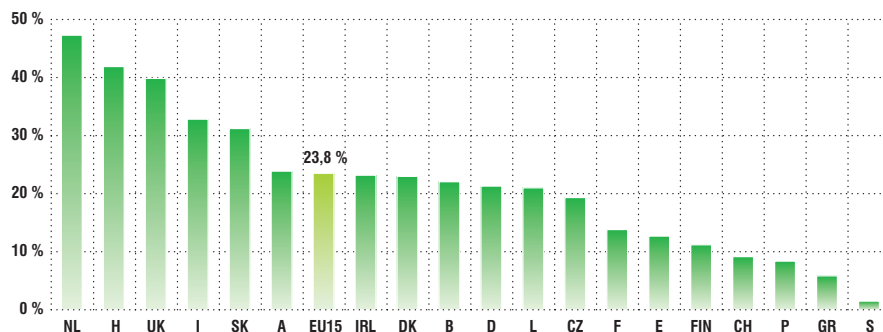
MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Oil	11,5	23,9	13,1	7,9	133,2	8,9	66,7	95,8	8,6	15,9	6,7	90,8	7,9	26,7	16,3	5,4	74,0	2,1	15,5	597,9
Solid Fossil Fuels	3,6	7,7	0,2	22,1	84,4	4,2	19,5	11,8	5,8	9,0	3,7	13,5	2,8	8,5	2,4	4,2	41,4	0,1	3,8	218,5
Natural Gas	7,0	13,2	2,5	8,1	74,6	4,6	16,4	37,3	3,7	1,7	10,7	58,7	3,4	35,9	0,8	6,8	94,5	0,7	2,0	354,5
Nuclear Electricity	0,0	11,5	6,6	3,8	44,6	0,0	16,6	109,9	5,7	0,0	3,6	0,0	0,0	1,0	18,2	4,5	20,8	0,0	0,0	228,3
Hydro Electricity	3,5	0,1	3,6	0,2	2,7	0,0	3,5	6,2	1,2	1,0	0,0	4,0	0,1	0,0	6,8	0,4	0,4	0,0	1,0	30,4
Electricity Net Import	0,0	0,8	-0,9	-0,8	-0,1	-0,1	0,3	-5,9	0,9	0,0	0,3	4,0	0,0	1,4	-0,6	0,0	0,9	0,5	0,1	2,1
Renewables	3,2	0,8	0,8	0,0	7,0	2,2	4,8	11,9	6,4	1,2	0,4	3,9	0,2	0,1	8,4	0,2	2,7	0,0	0,0	52,7
Others	0,2	0,0	1,1	0,0	0,0	0,0	0,0	0,0	0,2	0,0	-0,1	2,0	0,0	1,5	0,6	0,0	0,0	0,0	1,2	5,7
Total	29,0	58,0	27,0	41,2	346,4	19,8	127,8	267,0	32,3	28,8	25,3	176,9	14,4	75,1	52,9	21,4	234,7	3,4	23,6	1490,1

Notes: Nuclear and hydro electricity is domestically produced
Renewables includes biomass, wind solar and geothermal energy

2001 Primary Energy Consumption by fuel (EU15)



2001 Share of Natural Gas in primary energy consumption



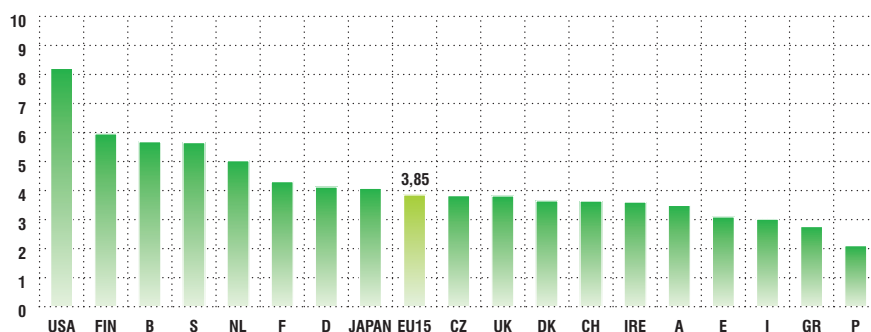
Primary energy consumption

2001 Primary energy consumption (PEC) per capita and per GDP unit

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	I	IRE	NL	S	UK	P	EU15	USA	JAPAN
PEC/CAPITA	3,63	5,59	3,64	3,83	4,22	3,73	3,24	4,56	5,96	2,87	3,10	3,60	5,03	5,65	3,95	2,10	3,96	8,21	4,08
PEC/GDP RATIO	0,14	0,22	0,09	0,64	0,17	0,11	0,20	0,18	0,23	0,23	0,14	0,12	0,18	0,21	0,15	0,17	0,17	0,20	0,11

Notes: GDP expressed in EURO

2001 Primary energy consumption per capita (MTOE)



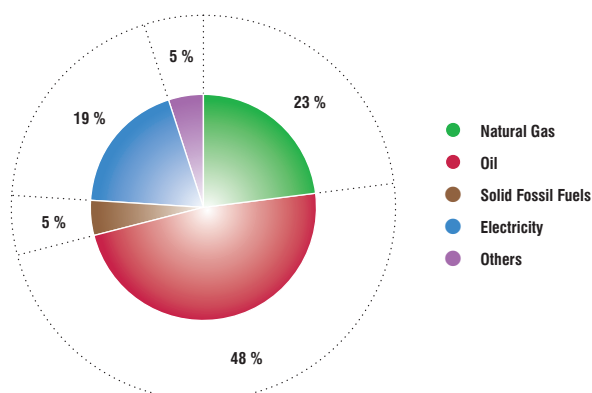
Final energy consumption

2001 Final Energy Consumption (FEC) in EUROGAS Member Countries and EU15

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Oil	10,6	22,0	12,3	5,6	97,6	7,3	57,2	89,2	8,6	13,0	5,5	67,3	6,9	21,1	11,6	5,2	66,0	2,1	12,9	493,4
Solid Fossil Fuels	1,4	3,5	0,7	3,5	15,9	0,3	2,6	6,8	1,1	0,8	1,2	4,3	1,0	2,0	6,5	5,1	5,3	0,1	0,5	52,1
Natural Gas	4,0	11,2	2,4	6,0	51,9	1,7	13,2	34,6	1,6	0,4	7,4	39,3	1,3	22,6	0,5	6,2	61,1	0,7	0,8	244,9
Electricity	4,6	6,7	4,6	4,1	41,3	2,8	17,3	34,1	6,6	10,2	2,6	24,0	1,8	8,4	11,5	2,0	28,6	0,5	3,3	201,7
Others	4,2	0,0	0,9	5,2	12,7	2,9	3,6	10,4	7,4	1,0	1,5	1,6	0,0	5,1	4,1	0,0	0,8	0,0	1,1	54,9
Total	24,8	43,4	20,8	24,3	219,4	15,0	93,9	175,1	25,3	25,5	18,1	136,5	11,0	59,2	34,2	18,5	161,7	3,4	18,6	1047,1

Notes: Electricity includes electricity produced by CHP-plants. Heat produced by CHP-plants is included in "Others"
Others includes heat (e.g. district heating) and non-electricity generating renewables (e.g. biomass generated heat).

2001 Final energy consumption by Source (EU 15)

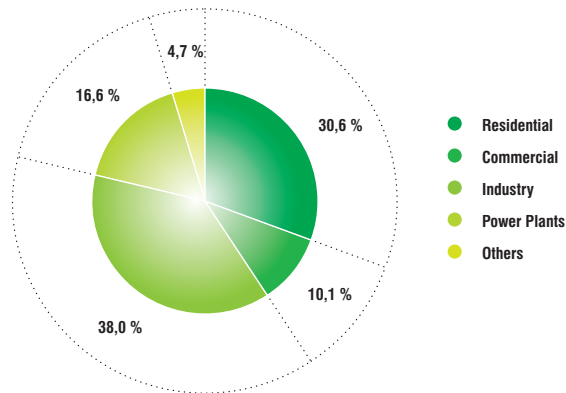


Natural Gas sales and supplies

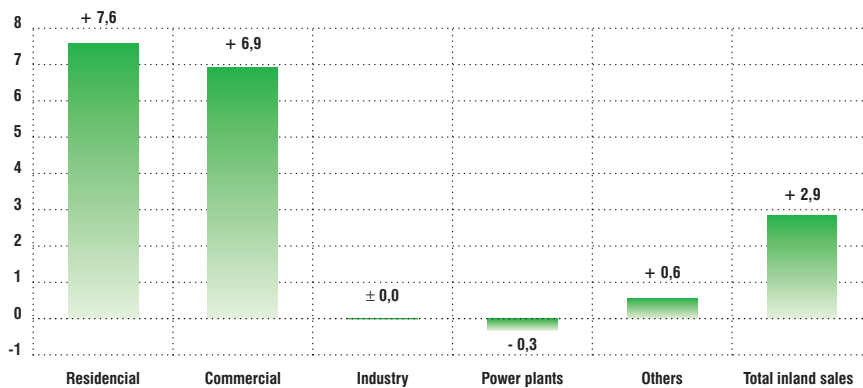
2001 Inland Sales of Natural Gas by Sector in EUROGAS Member Countries and EU15

PJ	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Residential	114,0	168,6	42,2	109,8	1180,0	28,7	110,3	629,3	1,0	0,8	146,1	784,1	22,4	397,4	4,3	78,0	1374,0	9,8	5,4	4830,1
Commercial	0,0	76,0	24,4	72,9	125,0	13,7	34,4	287,2	1,4	0,0	99,1	221,1	13,9	344,7	2,9	14,9	467,0	0,0	2,9	1590,2
Industry	133,0	234,5	43,2	107,3	1380,0	43,5	572,7	804,5	83,4	17,1	82,5	1135,4	42,2	706,9	17,6	185,8	762,0	19,1	38,9	5990,8
Power plants	56,0	134,9	0,0	69,9	250,0	33,4	45,8	0,2	38,3	57,9	121,6	522,0	86,1	239,2	0,0	0,0	1103,0	2,2	46,7	2615,7
Others	0,0	0,0	8,0	7,2	455,0	67,5	0,0	33,3	47,8	0,3	48,9	49,6	2,2	3,5	14,8	0,0	63,0	0,0	11,0	748,0
Total	303,0	614,0	117,8	367,1	3390,0	186,8	763,2	1754,5	171,9	76,1	498,2	2712,2	166,8	1691,7	39,6	278,6	3768,0	31,1	104,9	15774,8

2001 Final energy consumption by Source (EU 15)



2001 Natural Gas Demand Growth Rate by Sector (EU 15) over 2000 (%)



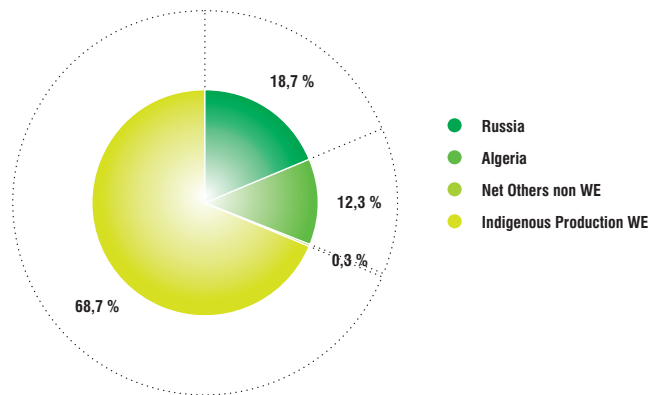
Natural Gas sales and supplies

2001 Supplies of Natural Gas in EUROGAS Member Countries and EU15

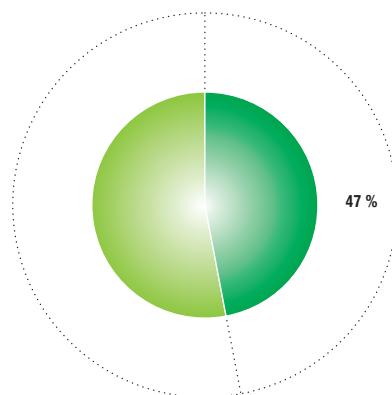
PJ	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Indigenous production	68,0	0,0	0,0	1,8	740,0	324,8	21,1	71,3	0,0	0,0	115,2	590,1	30,6	2609,6	0,0	3,7	4206,0	0,0	0,0	8661,5
Total Net-Import EU	25,0	289,8	103,2	0,1	800,0	-141,9	0,0	297,9	0,0	0,0	42,7	266,9	136,1	-1287,3	40,4	0,0	-388,0	31,1	0,0	70,0
Total Net-Import non-EU	217,0	321,1	14,7	359,8	1875,0	0,0	736,6	1292,3	172,5	77,9	319,4	1817,7	0,0	369,4	0,0	263,8	0,0	0,0	104,7	6984,1
Changes in stocks	-7,0	3,1	0,0	5,5	-25,0	3,9	5,5	93,0	-0,4	-2,0	21,0	37,5	0,0	0,0	-0,8	11,2	-49,0	0,0	0,3	59,2
Total Net Supplies	303,0	614,0	117,9	367,1	3390,0	186,8	763,2	1754,5	172,0	75,9	498,3	2712,2	166,7	1691,7	39,7	278,6	3769,0	31,1	105,0	15774,8

Changes in stocks: (-) Injection, (+) Withdrawal

2001 Breakdown of Western Europe's Natural Gas Supplies



Share of EU 15 Net Natural Gas Trade of World Gas Trade



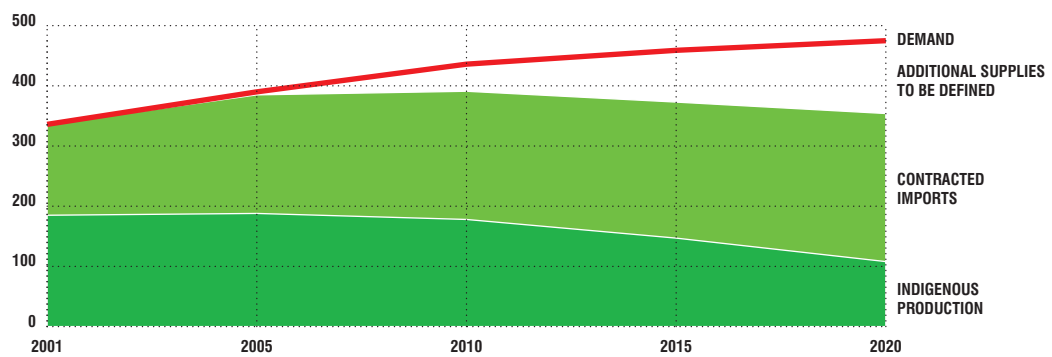
Source : Eurogas and Cedigaz

Natural Gas demand and supply outlook to 2020

Eurogas Long-Term Natural Gas Demand & Supply Outlook / EU15

MTOE	2001	2005	2010	2015	2020
Total demand	338	390	436	459	475
Indigenous production	185	188	178	147	108
Net contracted imports	151	197	213	226	246
Additional supplies to be defined	0	5	45	86	121
Share of natural gas in PEC	23%	23%	25%	27%	28%

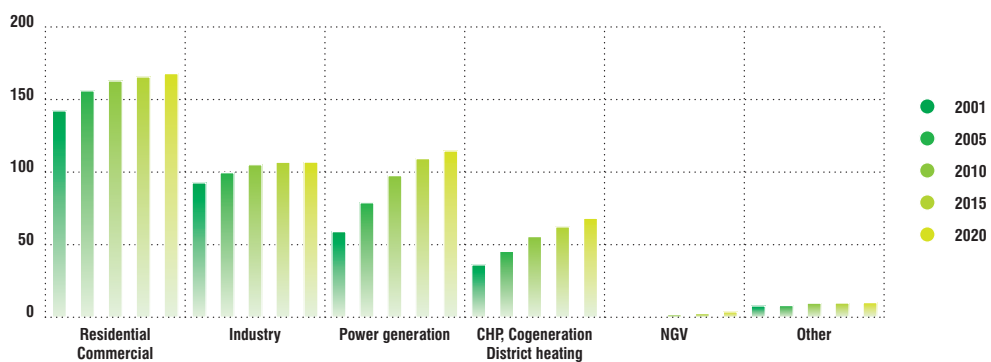
EU Natural Gas Demand & Supply Outlook 2001-2020



Maximum expected import dependency EU15 / Western Europe

	2001	2005	2010	2015	2020
EU import dependency	45%	52%	59%	68%	77%
WE import dependency	33%	36%	43%	53%	63%

EU Natural Gas Demand Outlook by sector, EU 15 (MTOE)



The European Natural Gas industry in key figures

Number of Gas Customers (in thousands rounded) at 1 January 2002

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Domestic	1260,7	2462,0	422,0	2489,4	17160,0	326,7	4516,8	10367,2	33,4	6,5	2884,0	14800,0	380,4	0,0	52,0	1372,8	20768,0	0,0	518,7	72652,3
Non-Domestic	1,5	100,0	28,0	159,1	740,0	7,4	89,5	522,5	1,6	2,1	166,0	940,0	14,8	0,0	3,0	6501,0	397,0	0,0	15,5	2834,9
Total	1262,2	2562,0	450,0	2648,5	17900,0	334,1	4606,3	10889,7	35,0	8,5	3050,0	15740,0	395,2	6700,0	55,0	7873,8	21165,0	73,0	534,1	82260,1

Number of Employees at 1 January 2002 (in thousands)

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Number of employees	n.a.	3755	1600	7421	36000	1300	4436	28000	345	865	6839	30000	723	9500	150	6501	51700	180	803	167757

Pipeline Lengths at 1 January 2002 (km)

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Transmission	5213	3701	2204	3638	59000	1439	12295	34400	1000	961	5190	30500	1250	11600	530	6094	19005	320	960	182174
Distribution	24099	49046	13361	61053	311000	19243	27818	165100	1280	1940	62754	190000	7500	119000	1900	21850	261765	1700	7936	1189327
Total	29312	52747	15565	64691	370000	20682	40113	199500	2280	2901	67944	220500	8750	130600	2430	27944	280770	2020	8896	1371501

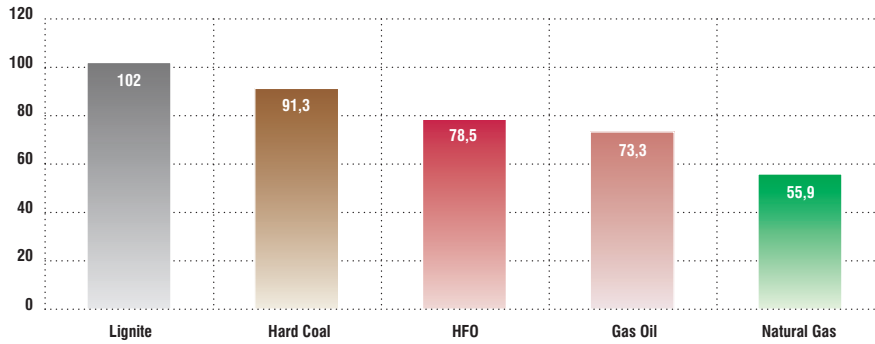
Natural Gas Storages at 1 January 2002

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU 15
Number of storage facilities	5	2	1	7	42	2	2	15	0	1	5	10	0	3	0	3	9	n.a.	n.a.	91
Maximum working volume [million m³]	2200	580	72	2140	19099	810	1500	11100	0	75	3400	15500	0	2500	0	2030	3660	n.a.	n.a.	57024
Maximum withdrawal capacity [million m³/day]	24	22	2	46	438	25	11	0	0	5	44	280	0	145	0	27	140	n.a.	n.a.	1090

Energy Efficiency and Greenhouse Gas Emissions

CO₂ Formed by the Combustion of Fossil Fuels (Kg CO₂/GJ)

For a same amount of energy supplied, Natural Gas generates less CO₂ than other fossil fuels.

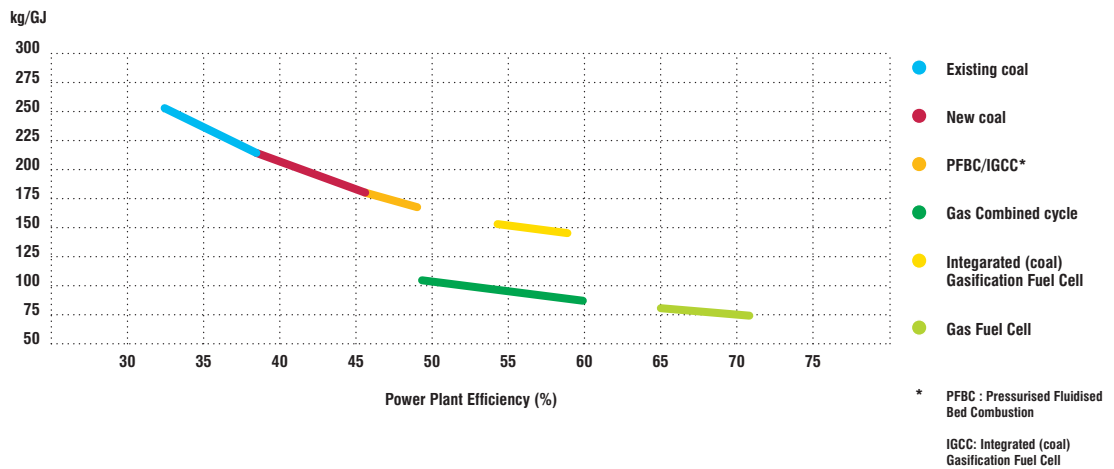


Source : IGU

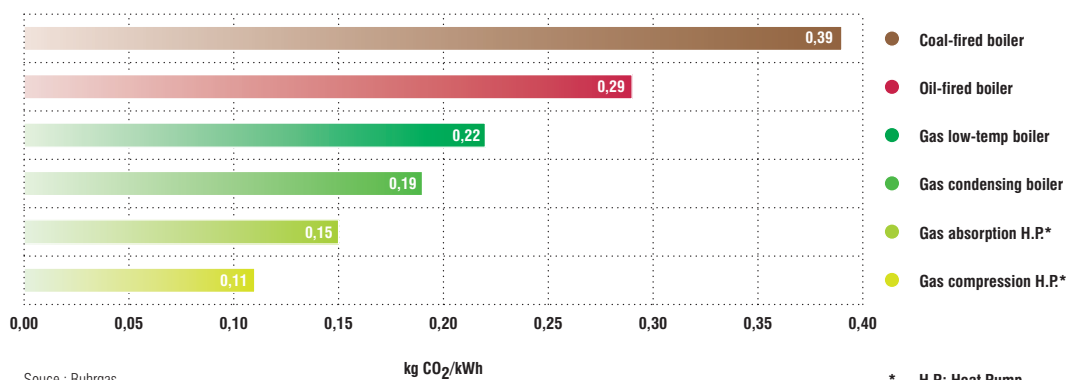
Efficiencies and CO₂ Emissions from Fossil-Fuelled Power Plants

For a given energy performance, less energy supply is required with natural gas owing to the high energy efficiency of natural gas fired technologies :

- easy processing
- efficient combustion
- clean combustion gas for high heat recovery and protection of process equipment



CO₂ Emissions from Heat Supply Systems

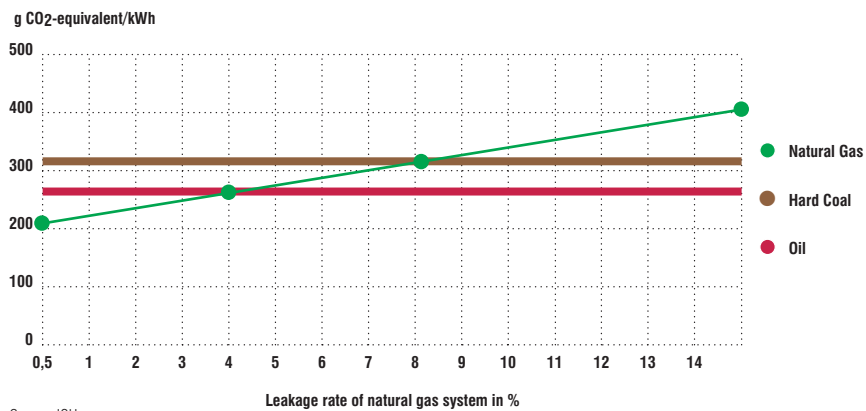


Source : Ruhrgas

Methane emissions

Though methane is the main component of natural gas, methane leakages from the total natural gas chain operations (from production to final distribution) are so low that natural gas clearly maintains its “greenhouse” advantage over other fossil fuels. From a comparison among fossil fuels of total greenhouse gas emissions from the overall fuel chain in terms of CO₂ equivalent, it is possible to determine the theoretical leakage rates of methane from gas supply operations at which gas would break even with coal or oil regarding global warming impact:

Break-Even Leakage Rates – Gas vs Oil and Coal



A “virtual” leakage rate between 4% and 6% of consumption would be required to negate the gas advantage over fuel oil (depending on the fuel composition). For coal, the virtual leakage rate would have to be above 8%. These virtual rates are several times higher than the estimated European leakage rate which is only 0.7% of gas consumption. On a business as usual basis, improvements to systems and other measures will continue to reduce methane from operations still further.

Definitions and Conversion Factors

Internationally agreed statistical methods and definitions have been applied. Primary Energy Consumption is defined as the total gross energy supply (indigenous production plus net imports) before any conversion of the primary energy into final energy forms has taken place. Final Energy Consumption is the Primary Energy Consumption less net energy losses in the production of electricity and synthetic gas, refinery use and other energy sector uses and losses. Natural Gas sales and supplies have been stated in PJ because of different national gas qualities. With an assumed energy content of 1 m³ of natural gas of 39 MJ (Gross Calorific Value), 1 PJ corresponds to approx. 25.6 mill. m³ of natural gas.

Conversion Factors

1PJ (GCV)	=	25.6 million m ³ gas	
1 m ³ of natural gas	=	39 megajoules (MJ – GCV)	= 10.8 kWh
1 Mtoe	=	1 million tones of oil equivalent	= 41.86 PJ (NCV)
1000 m ³ of natural gas	=	0.9 ton oil equivalent (toe – crude oil)	
1 BCM	=	1 billion cubic meters	
1 cubic meter (m ³)	=	35.315 cubic feet (cf)	
1 million m ³ of LNG	=	593 million m ³ of gas	
Net calorific value (NCV)	=	0.9 Gross calorific value (GCV)	
1 megajoule	=	10 ⁶ joules (MJ)	
1 gigajoule	=	10 ⁹ joules (GJ)	
1 terajoule	=	10 ¹² joules (TJ)	
1 petajoule	=	10 ¹⁵ joules (PJ)	

Heat units

Equivalent to :	GJ	kWh	MBtu	th	therm
1 gigajoule (GJ)	1	277.8	0.948	238.9	9.479
1 kilowatt-hour (kWh)	3.6 10 ⁻³	1	3.411 10 ⁻³	0.86	3.411 10 ⁻²
1 million British Thermal Units (MBtu)	1.055	293.2	1	252	10
1 thermie (th)	4.186 10 ⁻³	1.162	3.968 10 ⁻³	1	3.968 10 ⁻²
1 therm	0.1055	29.32	1 10 ⁻¹	25.2	1