



Statistics 2002

euro  gas

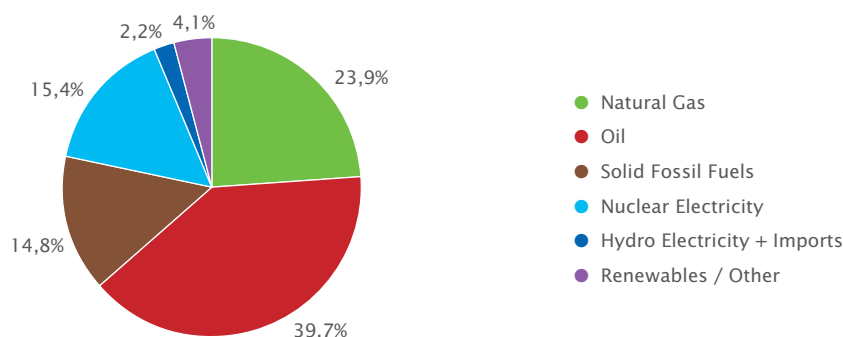
Primary energy consumption

2002 Primary energy consumption in Eurogas Member Countries and EU15

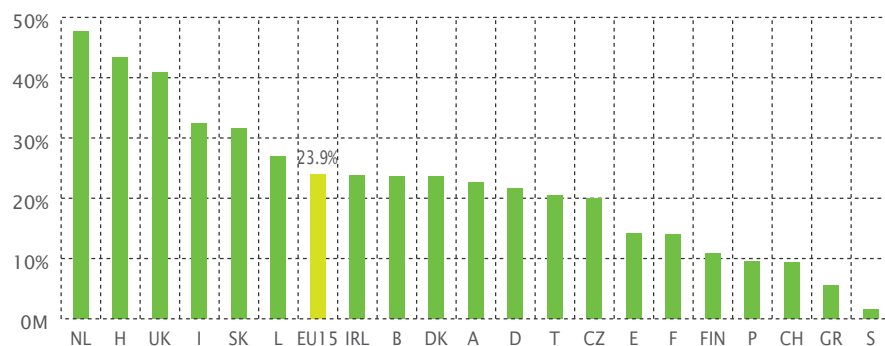
MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Oil	13,1	22,3	12,7	7,6	128,2	8,5	67,6	92,5	8,7	16,4	6,1	90,9	8,6	2,1	26,8	15,9	16,4	5,4	30,8	73,5	591,6
Solid Fossil Fuels	3,7	7,2	0,1	21,9	84,6	4,2	21,9	12,5	6,6	9,3	3,6	14,2	2,9	0,1	8,3	4,8	2,5	4,2	27,2	37,7	220,4
Natural Gas	7,0	13,4	2,5	8,1	74,3	4,6	18,8	37,4	3,7	1,7	10,7	58,1	3,7	1,0	35,8	2,3	0,8	6,8	16,1	94,0	356,5
Nuclear Electricity	0,0	12,3	6,7	3,5	43,0	0,0	16,4	113,8	5,6	0,0	3,6	0,0	0,0	0,0	1,0	0,0	17,3	4,5	0,0	20,3	229,7
Hydro Electricity	3,5	0,1	3,1	0,0	3,2	0,0	2,0	5,7	0,9	0,6	0,0	4,1	0,0	0,0	0,0	1,2	5,8	0,4	2,9	0,5	27,7
Electricity Net Import	0,1	0,6	-0,4	-0,6	0,1	-0,2	0,5	-6,6	1,0	0,6	0,4	5,0	0,0	0,5	1,5	0,0	0,5	0,0	0,3	0,7	4,4
Renewables	3,2	0,6	0,8	0,0	8,5	2,4	5,1	11,7	6,7	1,2	0,4	4,4	0,2	0,0	0,2	0,1	8,4	0,2	1,1	2,8	55,5
Others	0,2	0,0	1,1	0,0	0,0	0,0	0,0	0,0	0,3	0,0	-0,1	2,0	0,0	0,0	1,5	0,0	1,3	0,0	0,0	0,0	5,3
Total	30,8	56,5	26,6	40,4	341,9	19,5	132,3	267,0	33,5	29,9	24,7	178,7	15,5	3,7	75,1	24,3	53,0	21,4	78,4	229,5	1491,1

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

2002 Primary energy consumption by fuel (EU15)



2002 Share of Natural Gas in primary energy consumption



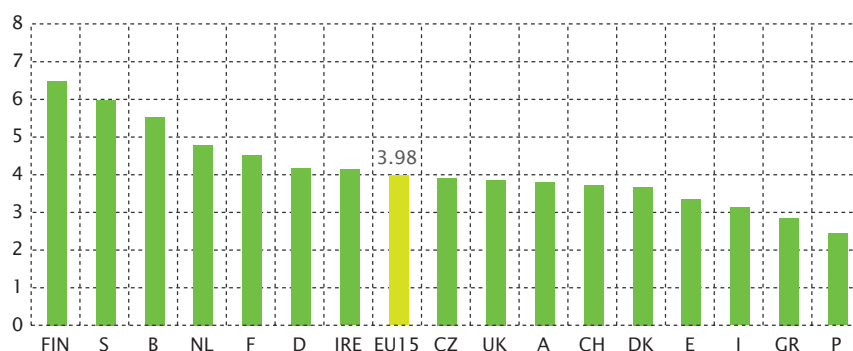
Primary energy consumption

2002 Primary energy consumption (PEC) per capita and per GDP unit

TOE	A	B	CH	CZ	DK	FIN	F	D	GR	IRE	I	NL	P	E	S	UK	EU15
PEC/CAPITA	3.81	5.54	3.72	3.91	3.67	6.48	4.52	4.17	2.85	4.14	3.13	4.78	2.44	3.36	5.99	3.87	3.98
PEC/GDP RATIO	0.15	0.22	0.10	0.65	0.11	0.25	0.18	0.17	0.23	0.14	0.15	0.18	0.20	0.20	0.23	0.14	0.17

Note: GPD expressed on EURO.

2002 Primary energy consumption per capita (TOE)



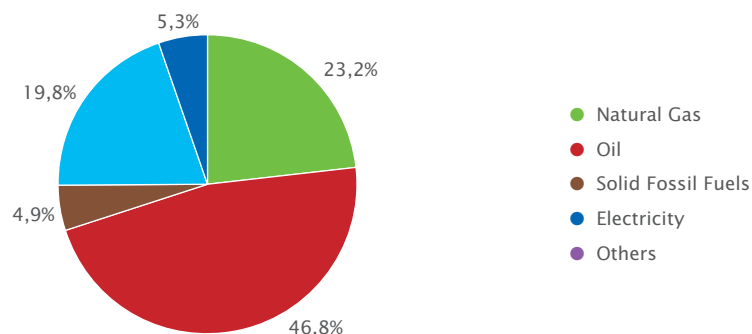
Final energy consumption

2002 Final energy consumption (FEC) in Eurogas Member Countries and EU15

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Oil	12,1	22,0	11,9	5,7	100,0	7,3	57,6	73,0	8,5	13,5	5,4	66,9	7,4	2,1	21,3	11,2	11,9	5,5	n.a.	66,1	480,8
Solid Fossil Fuels	1,8	3,6	0,6	3,7	16,0	0,3	2,5	6,9	1,2	0,9	1,2	4,0	0,8	0,1	1,9	0,2	6,3	1,4	n.a.	3,9	50,3
Natural Gas	4,3	10,8	2,3	6,7	54,8	1,8	14,1	31,1	1,7	0,4	7,4	39,1	1,2	0,7	22,0	1,1	0,5	4,3	n.a.	54,7	238,3
Electricity	4,9	6,7	4,7	4,3	41,6	2,8	17,8	33,9	6,7	10,3	2,7	24,3	1,9	0,5	8,4	3,5	11,4	2,0	n.a.	28,8	203,6
Others	3,7	0,5	0,9	5,0	13,6	3,2	3,6	9,1	7,5	1,1	1,5	1,4	0,2	0,0	4,9	1,0	4,4	0,2	n.a.	0,6	54,8
Total	26,8	43,6	20,4	25,3	226,0	15,4	95,6	154,0	25,6	26,2	18,1	135,7	11,4	3,4	58,5	17,0	34,5	13,4	n.a.	154,1	1027,8

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).

2002 Final energy consumption by source (EU15)

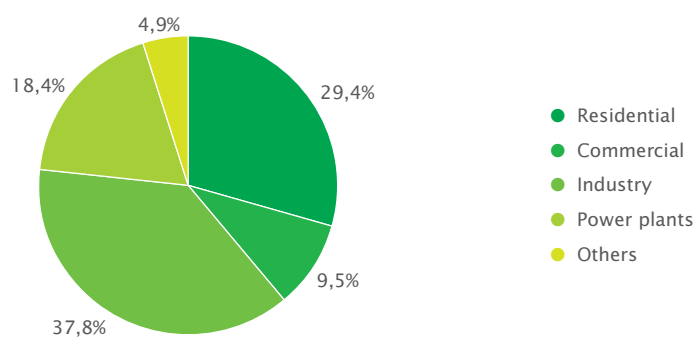


Natural Gas sales and supplies

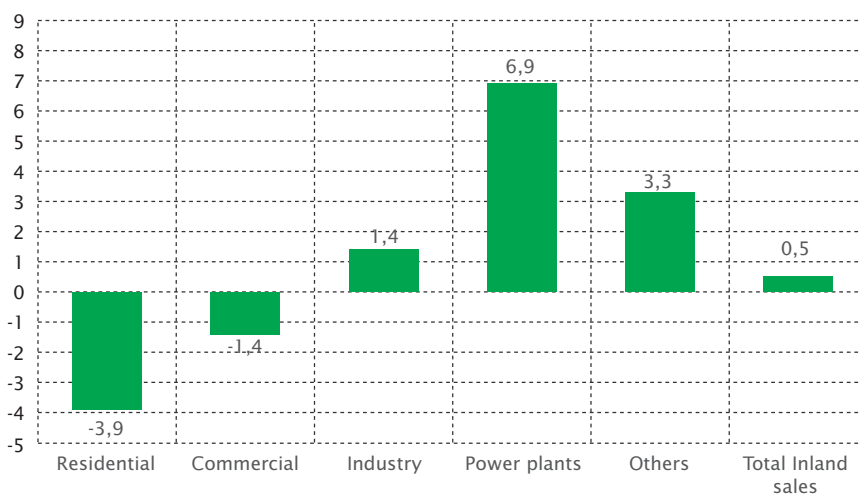
2002 Inland Sales of Natural Gas by sector in Eurogas Member Countries and EU15

PJ - GCV	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Residential	112,0	161,9	42,0	107,2	1120,0	29,2	117,6	597,0	1,2	1,5	150,9	754,8	22,0	14,8	393,9	6,6	4,2	74,4	111,5	1310,0	4646,7
Commercial	0,0	72,7	23,9	70,4	125,0	14,9	36,7	276,0	1,5	0,0	91,5	212,9	14,7	0,0	348,2	1,5	2,6	14,9	0,0	394,0	1500,8
Industry	137,0	251,3	41,8	104,0	1380,0	40,9	622,1	820,0	80,2	19,3	84,5	1169,7	37,2	17,1	699,9	59,7	17,8	174,9	152,9	638,0	5990,2
Power plants	59,0	139,4	0,0	67,7	275,0	36,6	98,6	0,1	38,6	61,0	129,6	506,7	99,8	16,6	246,2	58,1	0,0	0,0	403,9	1273,0	2908,6
Others	0,0	0,0	8,5	7,1	470,0	62,9	0,0	56,0	49,9	0,2	43,1	39,3	2,7	0,0	3,5	1,3	15,7	0,0	11,0	82,0	783,4
Total	308,0	625,3	116,2	356,4	3370,0	184,5	875,0	1749,1	171,4	82,0	499,6	2683,4	176,4	48,5	1691,7	127,2	40,3	264,2	679,3	3697,0	15829,8

2002 Natural Gas Sales by sector (EU15)



2002 Natural Gas demand growth rate by sector (EU15) over 2001 (%)



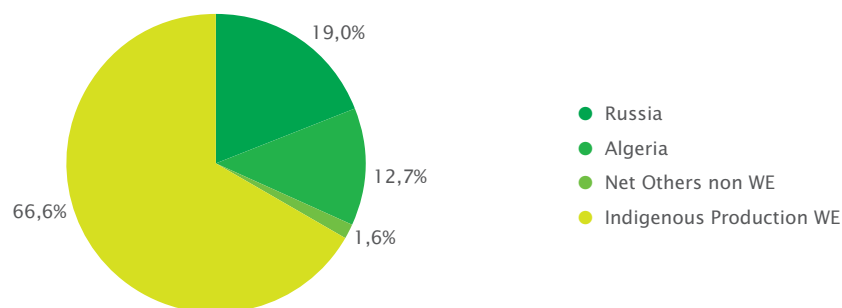
Natural Gas sales and supplies

2002 Supplies of Natural Gas in Eurogas Member Countries and EU15

PJ - GCV	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Indigenous Production	75,0	0,0	0,0	1,8	740,0	322,0	21,0	67,0	0,0	0,0	109,6	555,4	31,5	0,0	2525,2	0,0	0,0	7,4	n.a.	4031,0	8368,1
Total Net-Import EU	-8,5	300,0	101,7	0,0	753,0	-138,5	0,0	249,0	0,0	0,0	42,7	321,5	139,0	48,5	-1403,1	0,0	41,1	0,0	n.a.	-325,0	-23,0
Total Net-Import non-EU	238,3	340,8	13,9	368,0	2007,0	0,0	874,8	1491,0	171,5	81,7	362,2	1935,5	0,0	0,0	569,8	127,9	0,0	267,9	n.a.	0,0	7838,2
Changes in stocks	3,2	-15,5	0,6	-13,4	-130,0	1,0	-20,8	-57,9	-0,1	0,3	-14,9	-129,0	5,9	0,0	-0,2	-0,7	-0,8	-11,2	n.a.	-9,0	-353,7
Total Net Supplies	308,0	625,3	116,2	356,4	3370,0	184,5	875,0	1749,1	171,4	82,0	499,6	2683,4	176,4	48,5	1691,7	127,2	40,3	264,2	679,3	3697,0	15829,8

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

2002 Breakdown of Western Europe's Natural Gas Supplies

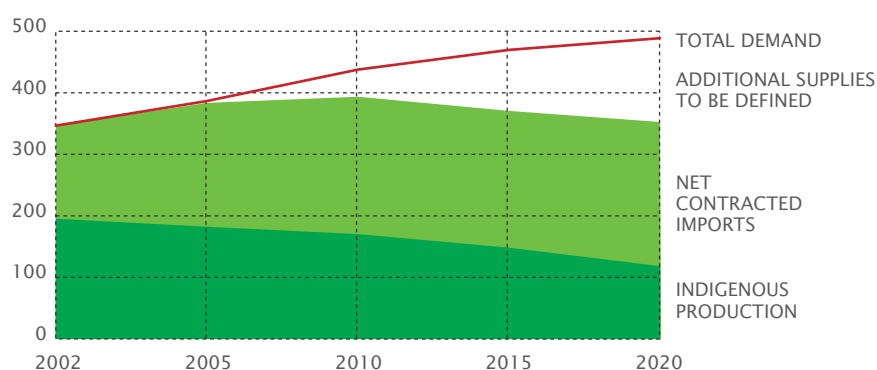


Natural Gas demand and supply outlook to 2020

Eurogas long-term Natural Gas demand & supply outlook / EU15

MTOE - NCV	2002	2005	2010	2015	2020
Total demand	343	387	437	470	489
Indigenous production	196	183	171	149	119
Net contracted imports	151	201	223	222	234
Additional supplies to be defined	0	3	44	99	136
Share of Natural Gas in PEC	23%	23%	25%	27%	28%

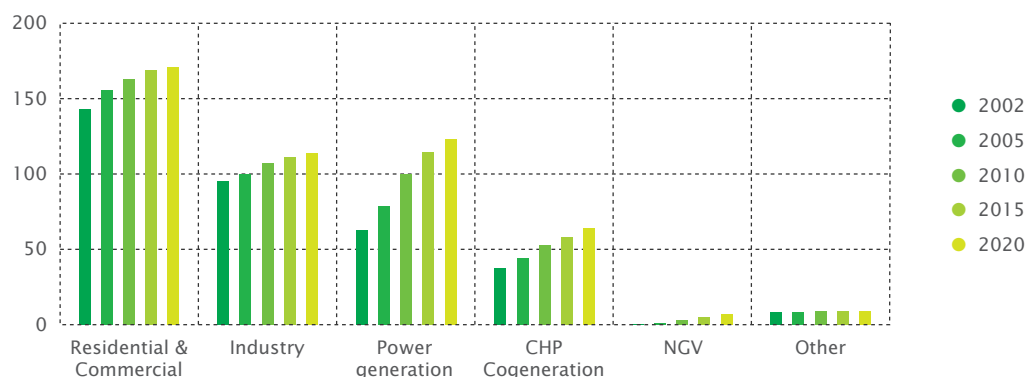
EU Natural Gas demand & supply outlook 2002-2020



Maximum expected import dependency EU15 / Western Europe

	2002	2005	2010	2015	2020
EU import dependency	43%	53%	61%	68%	75%
WE import dependency	31%	36%	45%	54%	61%

Natural Gas demand outlook by sector, EU15 (MTOE)



The European Natural Gas industry in key figures

Number of Gas Customers (in thousands rounded) at 1 January 2003

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Domestic	1280,0	2502,8	426,0	2530,7	17500,0	327,6	4840,4	10535,9	34,2	9,4	2970,0	15000,0	411,5	n.a.	n.a.	653,3	52,0	1402,4	n.a.	20958	n.a.
Non-Domestic	n.a.	105,0	29,0	166,1	750,0	17,4	95,4	530,6	1,5	2,5	176,0	950,0	15,7	n.a.	n.a.	17,6	3,0	6501,0	n.a.	402	n.a.
Total	1280,0	2607,8	455,0	2696,8	18250,0	344,9	4935,8	11066,5	35,7	11,9	3146,0	15950,0	427,2	73,0	6800,0	670,9	55,0	7903,4	n.a.	21360	83869

Number of Employees at 1 January 2003

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Number of employees	2724	3712	1600	6912	36570	1300	4424	28000	345	958	6051	30000	726	180	9300	792	150	6344	n.a.	49950	169218

Pipeline Lengths at 1 January 2003 (km)

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Transmission	5339	3700	2220	3638	60000	1439	13188	35130	1000	961	5214	30500	1838	320	11600	1458	530	6141	n.a.	19322	186325
Distribution	25042	50000	13550	65763	315000	16897	31123	171330	1375	2014	71522	195000	7953	1700	120500	8472	1900	22865	n.a.	262000	1210306
Total	30381	53700	15770	69401	375000	18336	44311	206460	2375	2975	76736	225500	9791	2020	132100	9930	2430	29006	n.a.	281322	1396631

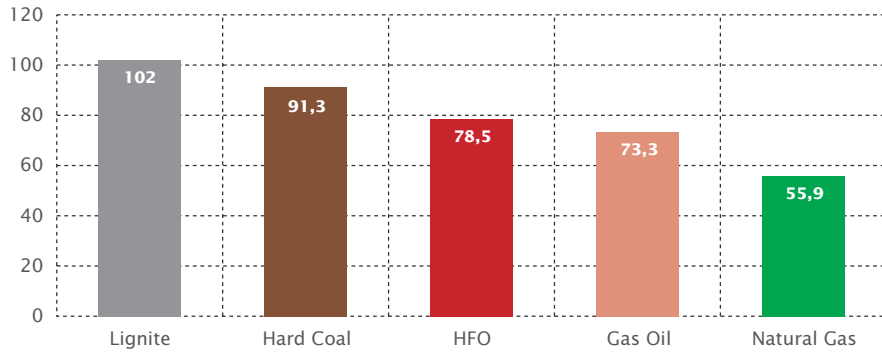
Natural Gas Storages at 1 January 2003

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	L	NL	P	S	SK	T	UK	EU 15
Number of storage facilities	5	2	1	9	43	2	2	16	0	1	5	10	0	0	3	0	1	3	n.a.	9	94
Maximum working volume [million m ³]	2200	605	72	3136	18830	700	1500	11100	0	75	3400	16800	0	0	2500	0	10	2018	n.a.	3660	57980
Maximum withdrawal capacity [million m ³ /day]	24	22	2	47	445	25	11	0	0	5	44	282	0	0	145	0	1	25	n.a.	140	1099

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.

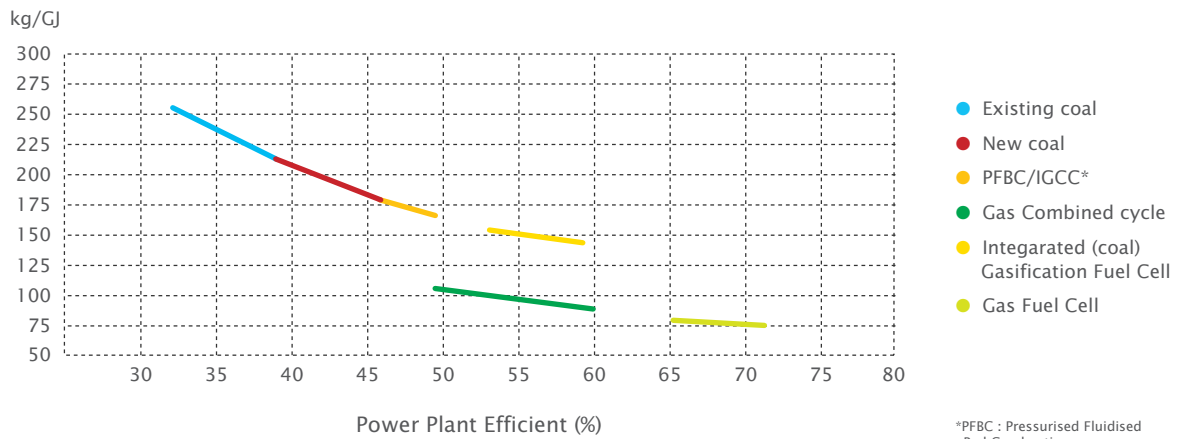


Source : IGU

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 :

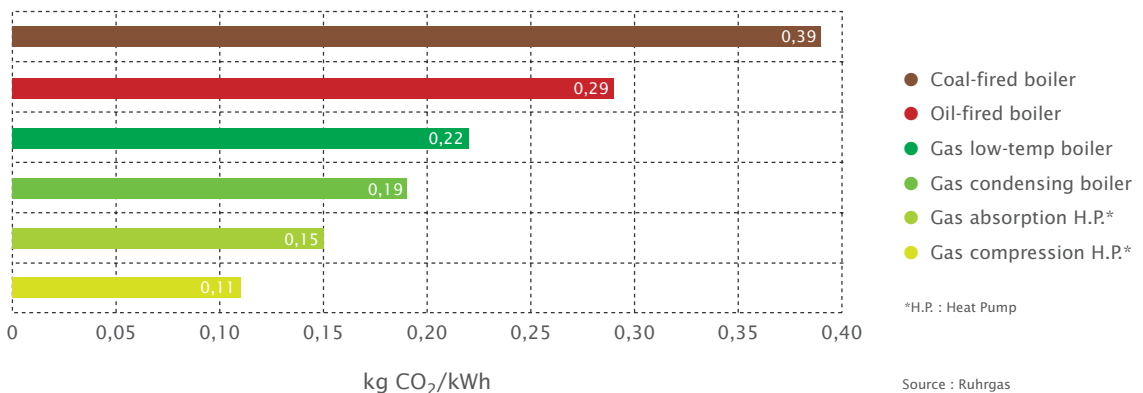
- easy processing,
- efficient combustion,
- clean combustion gas for high heat recovery and protection of process equipment.



*PFBC : Pressurised Fluidised Bed Combustion

*IGCC : Integrated (coal) Gasification Fuel Cell

CO₂ emissions from Heat Supply Systems



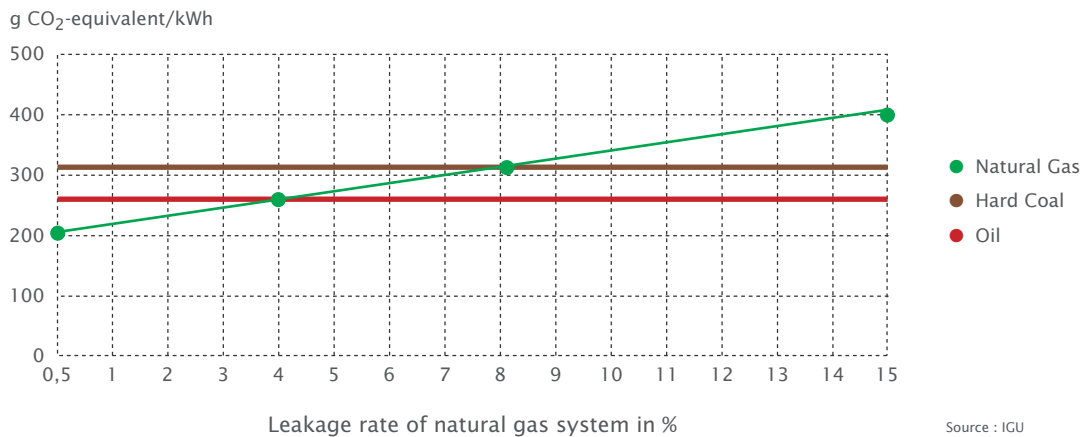
*H.P. : Heat Pump

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 supplied 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 million m³ of natural gas.

Conversion factors

1 PJ (GCV)	=	25.6 million m ³ gas	
1 m ³ of natural gas	=	39 mega joules (MJ – GCV)	= 1.8 kWh
1 Mtoe	=	1 million tones of oil equivalent	= 41.86 PJ (NCV)
1 000 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 Caloric 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