



Statistics 2000

euro  gas

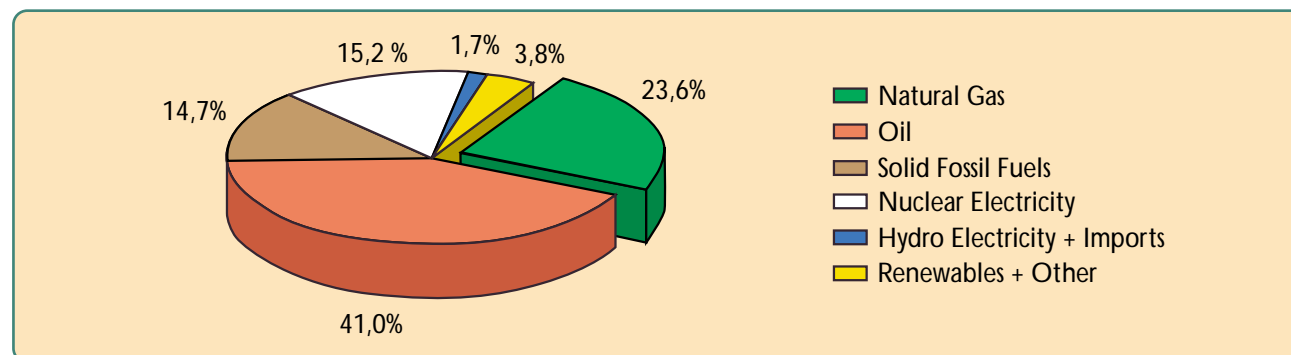
# Primary energy consumption

## 2000 Primary energy consumption in EUROGAS Member Countries and EU15

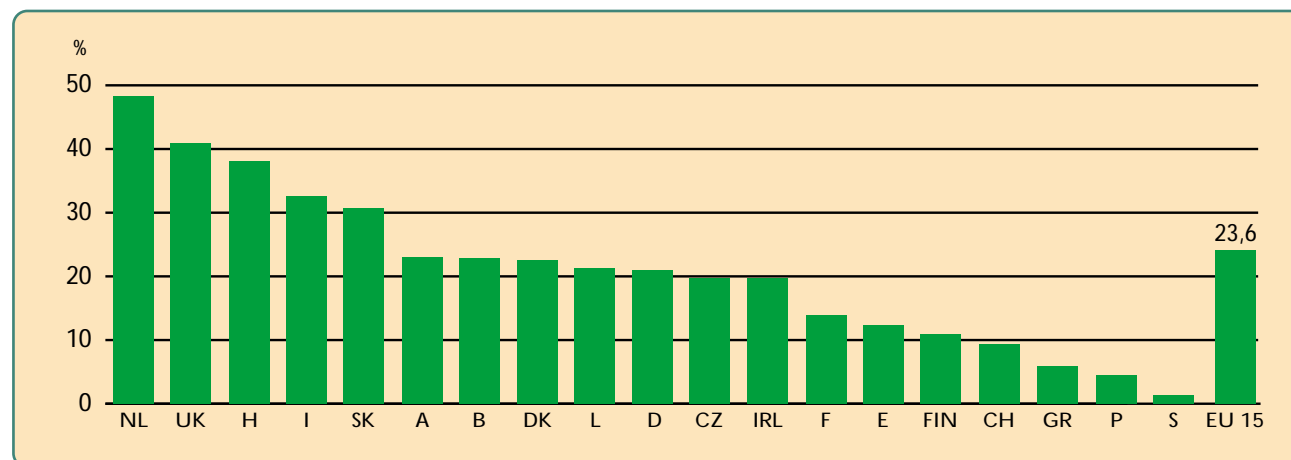
Notes: Nuclear and hydro electricity is domestically produced.  
Renewables includes biomass, wind, solar and geothermal energy.  
1999 figures: SK - 1998 figures: P

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Oil	11,2	23,6	12,7	7,7	130,8	8,8	63,8	96,8	8,3	15,5	6,8	91,3	9,0	25,1	21,2	5,6	74,6	2,1	15,6	597,7
Solid Fossil Fuels	3,6	8,4	0,1	20,1	82,8	4,0	21,6	14,1	4,9	8,8	4,2	12,7	2,3	7,9	2,2	5,1	38,1	0,1	3,2	214,8
Natural Gas	6,5	13,4	2,4	7,7	71,5	4,4	15,2	35,6	3,4	1,7	9,5	58,1	2,9	35,0	0,7	6,5	94,8	0,7	1,0	344,9
Nuclear Electric.	0,0	11,9	6,5	3,5	44,2	0,0	16,2	108,2	5,6	0,0	3,7	0,0	0,0	1,0	14,5	3,4	20,2	0,0	0,0	221,8
Hydro Electric.	3,6	0,1	3,3	0,2	2,5	0,0	2,5	6,3	1,2	0,9	0,0	3,6	0,1	0,0	7,9	0,4	0,5	0,0	1,1	30,4
Electr. Net Import	0,1	1,0	-0,6	-0,9	0,2	0,1	0,4	-18,1	1,0	0,4	0,3	4,0	0,0	1,6	2,7	0,1	0,6	0,5	0,0	-5,5
Renewables	3,0	0,0	0,8	0,0	6,6	2,1	4,4	11,8	6,1	1,0	0,3	3,6	0,2	0,1	7,9	0,0	2,5	0,0	1,2	50,4
Others	0,2	0,0	1,0	0,0	0,0	0,0	0,0	0,0	0,2	0,0	-0,1	2,0	0,0	1,5	0,5	0,0	0,0	0,0	0,0	4,4
<b>Total</b>	<b>28,2</b>	<b>58,4</b>	<b>26,2</b>	<b>38,2</b>	<b>338,6</b>	<b>19,4</b>	<b>124,1</b>	<b>254,7</b>	<b>30,8</b>	<b>28,3</b>	<b>24,8</b>	<b>175,3</b>	<b>14,4</b>	<b>72,2</b>	<b>57,6</b>	<b>21,1</b>	<b>231,4</b>	<b>3,4</b>	<b>22,1</b>	<b>1459,0</b>

## 2000 Primary energy consumption by fuel (EU15)



## 2000 Share of Natural Gas in Primary energy consumption

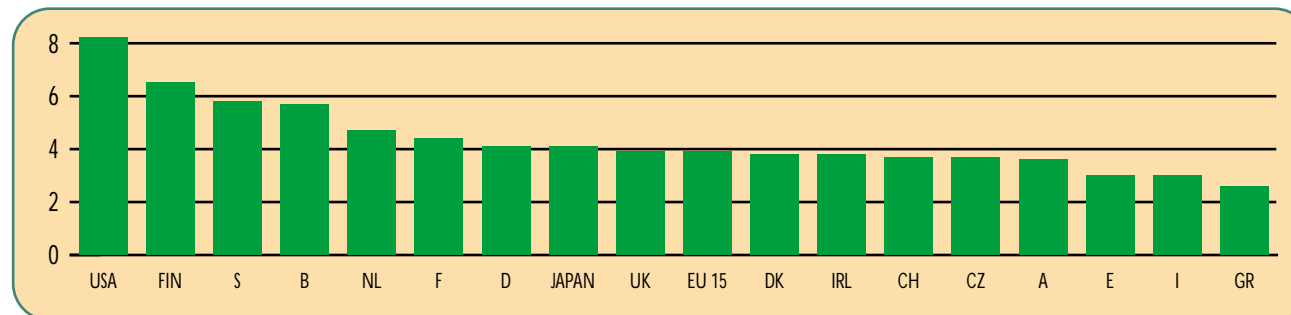


# Primary energy consumption

2000 Primary energy consumption (PEC)  
per capita and per GPD unit

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	P	S	UK	EU15
PEC/CAPITA	3,49	5,68	3,64	3,83	4,12	3,65	3,10	4,31	5,96	2,76	2,50	3,02	3,60	5,03	2,10	5,65	3,82	3,85
PEC/GDP RATIO	0,14	0,24	0,10	0,28	0,17	0,11	0,20	0,18	0,23	0,24	0,23	0,15	0,13	0,20	0,18	0,20	0,15	0,17

2000 Primary energy consumption  
per capita (MTOE)



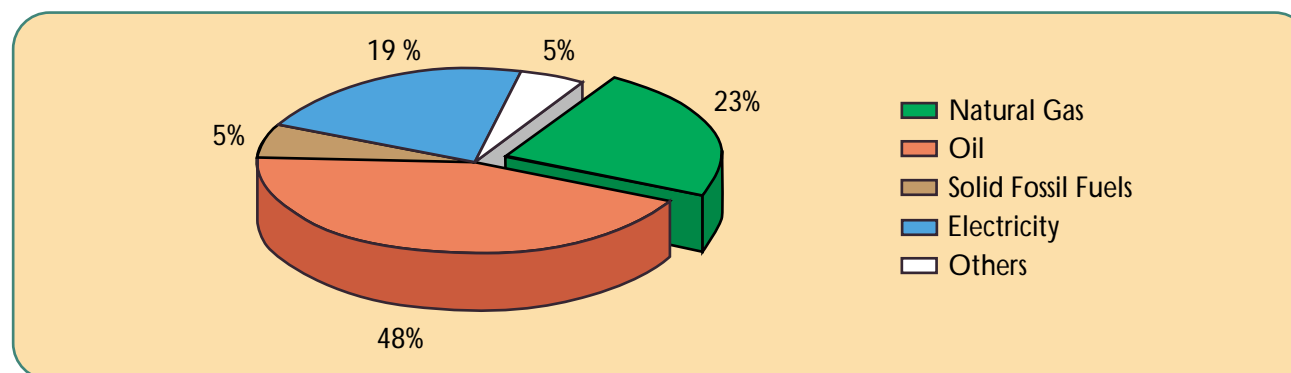
# Final energy consumption

1999 Final energy consumption (FEC)  
in EUROGAS Member Countries and EU15

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 gen-  
erated heat).  
1999 figures: CZ, DK, FIN - 1998 figures: GR, P

MTOE	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Oil	10,0	21,4	12,2	6,1	97,6	7,6	54,5	89,9	8,7	12,9	5,3	65,9	7,2	20,7	11,6	12,1	66,0	2,1	14,1	490,3
Solid Fossil Fuels	1,4	3,0	0,1	3,5	15,9	0,3	2,5	7,4	1,2	0,9	1,4	4,6	0,8	1,9	6,5	6,5	4,1	0,1	4,6	55,3
Natural Gas	3,8	10,8	2,3	6,0	51,9	1,8	12,2	33,3	1,6	0,4	6,7	38,3	1,1	21,8	0,5	0,5	59,5	0,7	1,7	239,4
Electricity	4,5	6,5	4,5	4,0	41,3	2,8	16,2	37,2	6,5	9,6	2,5	23,3	1,7	8,4	11,1	10,9	28,0	0,5	1,1	198,7
Others	4,0	0,0	1,3	5,5	12,7	2,9	3,6	10,4	7,0	1,0	1,5	1,3	0,0	5,0	3,6	3,9	1,6	0,0	0,0	53,1
<b>Total</b>	<b>23,7</b>	<b>41,7</b>	<b>20,4</b>	<b>25,1</b>	<b>219,4</b>	<b>15,4</b>	<b>89,0</b>	<b>178,2</b>	<b>24,9</b>	<b>24,8</b>	<b>17,4</b>	<b>133,4</b>	<b>10,9</b>	<b>57,8</b>	<b>33,3</b>	<b>33,9</b>	<b>159,3</b>	<b>3,4</b>	<b>21,5</b>	<b>1036,8</b>

1999 Final energy consumption by Source  
(EU 15)

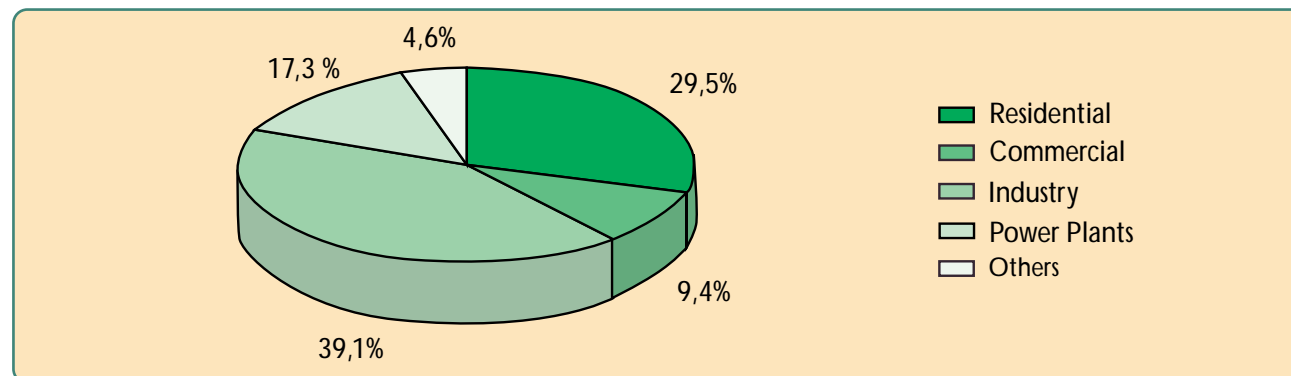


# Natural Gas sales and supplies

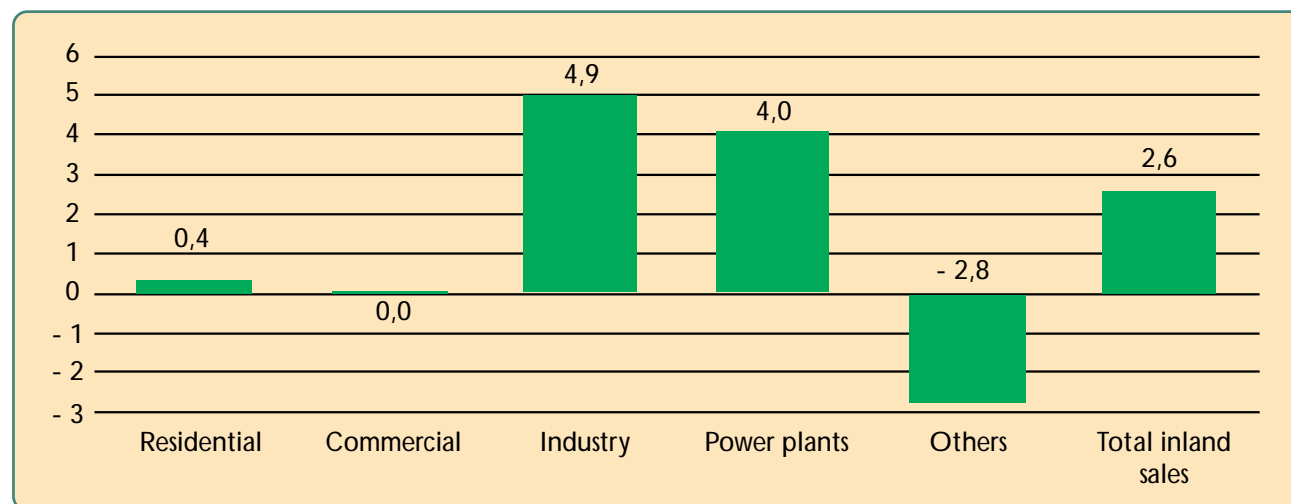
2000 Inland Sales of Natural Gas by Sector in EUROGAS Member Countries and EU15

PJ	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Residential	101,0	153,0	42,3	101,2	1040,0	26,2	94,0	578,3	1,1	0,6	133,1	746,8	20,4	386,9	4,0	79,6	1344,0	9,8	14,0	4520,1
Commercial	0,0	72,2	22,9	72,6	120,0	13,1	29,4	265,0	1,3	0,0	78,8	210,6	13,1	277,8	2,9	15,9	440,0	0,0	0,0	1445,4
Industry	134,0	252,8	40,4	126,6	1415,0	44,4	544,2	788,5	80,8	18,2	82,0	1126,7	39,2	706,9	15,4	183,0	776,0	19,1	30,9	5992,1
Power plants	48,0	143,7	0,0	49,2	235,0	32,3	37,4	0,2	30,2	58,1	109,0	552,5	85,7	218,1	0,0	0,0	1164,0	2,2	49,3	2656,7
Others	0,0	0,0	7,4	6,1	440,0	63,6	0,0	23,0	45,3	0,5	44,7	45,9	1,4	3,5	15,3	7,9	65,0	0,0	0,0	703,5
<b>Total</b>	<b>283,0</b>	<b>621,7</b>	<b>113,0</b>	<b>355,7</b>	<b>3250,0</b>	<b>179,6</b>	<b>705,0</b>	<b>1655,0</b>	<b>158,7</b>	<b>77,4</b>	<b>447,6</b>	<b>2682,5</b>	<b>159,8</b>	<b>1593,2</b>	<b>37,6</b>	<b>286,4</b>	<b>3789,0</b>	<b>31,1</b>	<b>94,2</b>	<b>15317,8</b>

2000 Natural Gas Sales by Sector (EU15)



2000 Gas Demand Growth Rate by Sector (EU15) over 1999 (%)



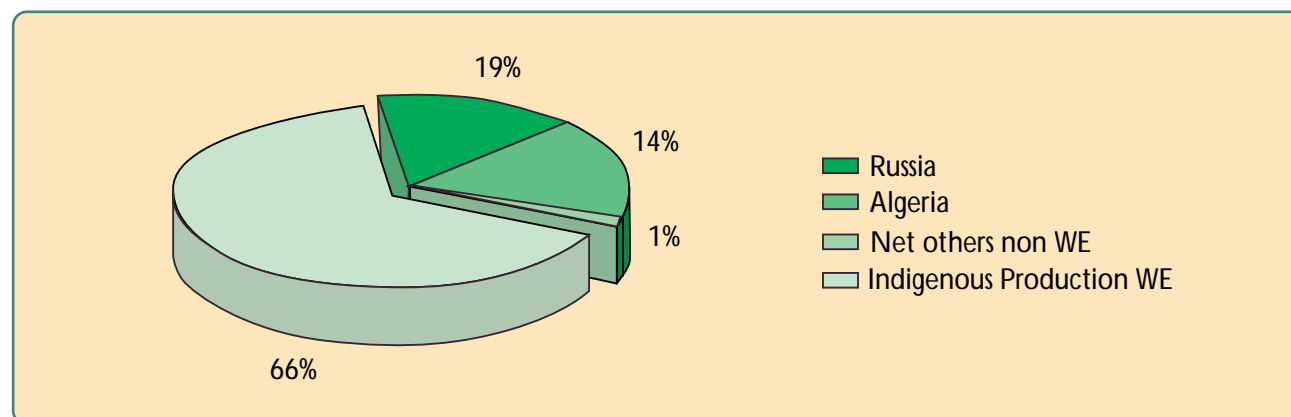
# Natural gas sales and supplies

## 2000 Supplies of Natural Gas in EUROGAS Member Countries and EU15

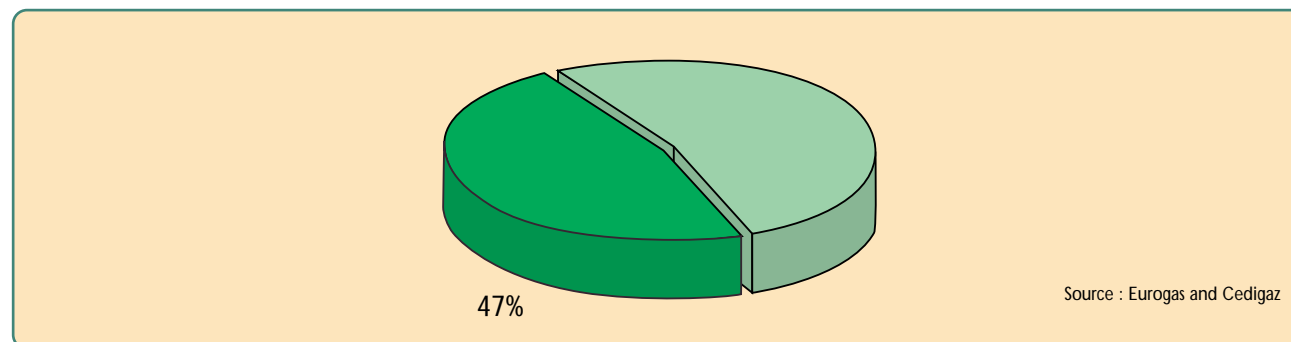
Changes in stocks: (-) Injection, (+) Withdrawal

PJ	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Indigenous Production	72,0	0,0	0,0	3,1	730,0	316,6	6,1	67,8	0,0	0,0	115,1	618,7	44,6	2395,1	0,0	8,0	4295,0	0,0	0,0	8545,9
Total																				
Net-Import EU	20,0	227,7	100,5	0,0	710,0	-133,9	0,0	258,9	0,0	0,0	42,7	230,0	115,3	-1065,7	36,7	4,0	-527,0	31,1	0,0	-96,9
Total Net-Import non-EU	228,0	388,9	12,7	347,2	1930,0	0,0	718,4	1384,7	158,7	78,4	294,6	1956,7	0,0	263,8	0,0	274,5	94,0	0,0	95,0	7296,6
Changes in stocks	-37,0	5,1	-0,2	5,4	-120,0	-3,1	-19,5	-56,4	0,0	-1,0	-4,8	-122,9	-0,1	0,0	0,9	0,0	-73,0	0,0	-0,8	-427,8
Total																				
Net Supplies	283,0	621,7	113,0	355,7	3250,0	179,6	705,0	1655,0	158,7	77,4	447,6	2682,5	159,8	1593,2	37,6	286,4	3789,0	31,1	94,2	15317,8

## 2000 Breakdown of Western Europe's Natural Gas Supplies



## Share of EU15 Net Natural Gas Trade of World Gas Trade



Source : Eurogas and Cedigaz

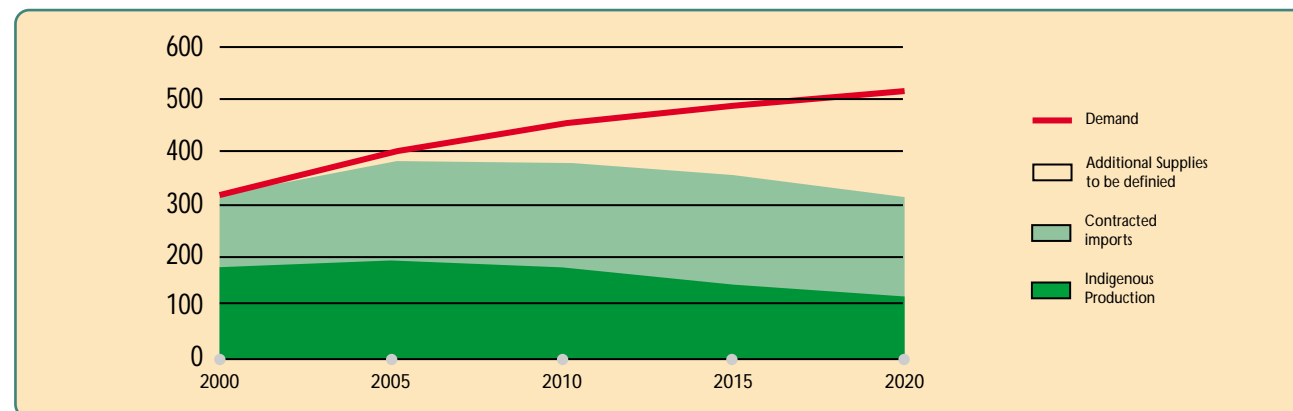
# Natural Gas demand and supply outlook to 2020

## Eurogas Long-term Natural Gas Demand & Supply Outlook / EU15

MTOE (Million Tonnes of Oil Equivalent), 1 MTOE = 41.86 PJ (NCV)

MTOE	2000	2005	2010	2015	2020
Total demand	332	392	431	454	471
Indigenous production	181	191	179	142	118
Net contracted imports	159	191	198	210	221
Additional supplies to be defined	0	11	54	102	132
Share of Natural Gas in PEC	22%	23%	26%	27%	28%

## EU Natural Gas Demand & Supply Outlook 2000-2020 (MTOE)

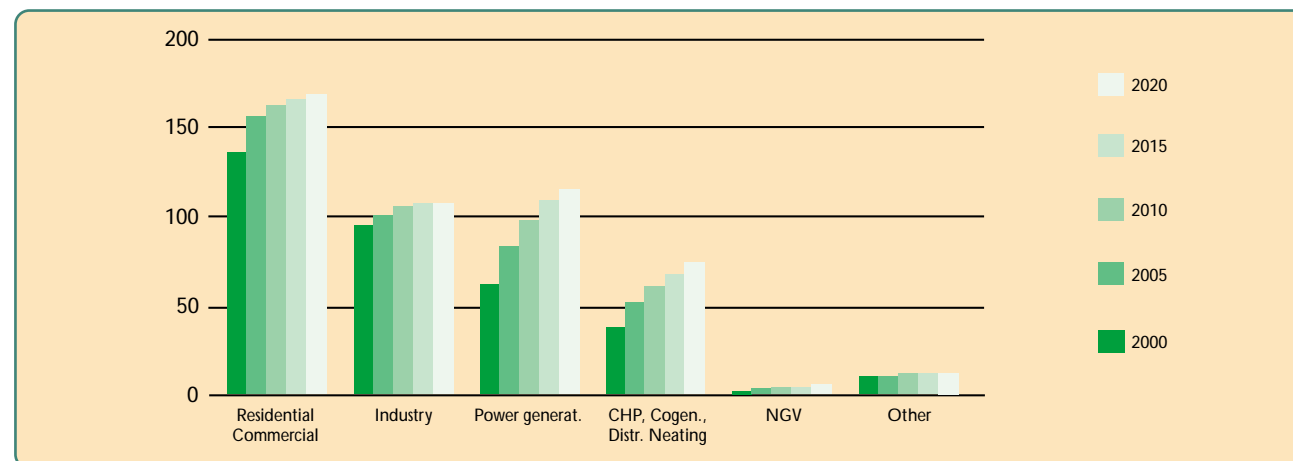


## Maximum expected import dependency EU15/Western Europe

Note: Western Europe = EU + Norway + Switzerland

	2000	2005	2010	2015	2020
EU import dependency	46%	51%	58%	69%	75%
WE import dependency	34%	35%	43%	54%	60%

## 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 2001

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Domestic	1260,7	2420,3	418,0	2456,8	16680,0	315,2	4121,8	10158,0	33,0	6,4	2821,2	14700,0	352,5	n.a.	52,0	n.a.	20670,0	n.a.	n.a.	70770,0
Non-Domestic	1,5	90,8	27,0	161,8	720,0	7,2	81,6	513,0	1,6	1,9	169,2	930,0	13,4	n.a.	3,0	n.a.	381,0	n.a.	n.a.	2745,0
Total	1262,3	2511,1	445,0	2618,6	17400,0	322,4	4203,4	10671,0	34,5	8,3	2990,4	15630,0	366,0	6638,0	55,0	n.a.	21051,0	73,0	n.a.	80226,0

## Number of Employees at 1 January 2001 (in thousands)

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Number of employees	2908	4021	1600	7811	41165	1200	4371	28000	343	455	8114	30000	712	9550	200	n.a.	43138	180	n.a.	166243

## Investments in 2000 (mio EURO-average July 2000 rates)

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
"Investments[million Euro]"	169	208	361	176	2617	64	967	1000	34	93	n.a.	1820	190	57	10	n.a.	1487	n.a.	n.a.	8715

## Pipeline Lengths at 1 January 2000 (km)

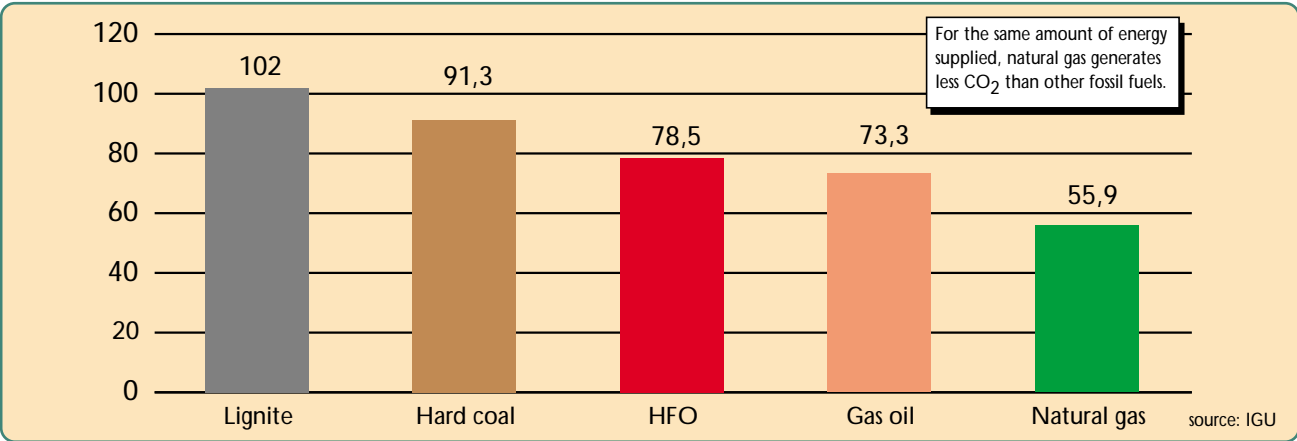
	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
Transmission	5213	3731	2147	3350	57000	1415	11989	34232	955	961	5214	30500	1199	11600	530	n.a.	18600	n.a.	n.a.	177925
Distribution	24099	47000	13050	50958	299000	16889	25033	159020	1245	1870	58754	180000	6944	117500	1900	n.a.	260700	n.a.	n.a.	1141200
Total	29312	50731	15197	54308	356000	18304	37022	193252	2200	2831	63968	210500	8143	129100	2430	n.a.	279300	2000	n.a.	1321125

## Natural Gas Storages at 1 January 2001

	A	B	CH	CZ	D	DK	E	F	FIN	GR	H	I	IRL	NL	S	SK	UK	L	P	EU15
"Number of storage facilities"	5	3	1	6	42	2	2	15	0	1	5	8	0	3	0	1	8	n.a.	n.a.	89
Maximum working volume [million m <sup>3</sup> ]	2295	675	72	2047	18556	810	1000	11100	0	75	3420	15100	0	2500	0	1285	3577	n.a.	n.a.	55688
"Maximum withdrawal capacity [million m <sup>3</sup> /day]"	24	19	2	34	425	25	8	180	0	5	43	265	0	145	0	n.a.	137	n.a.	n.a.	1233

# Energy Efficiency and Greenhouse Gas Emissions

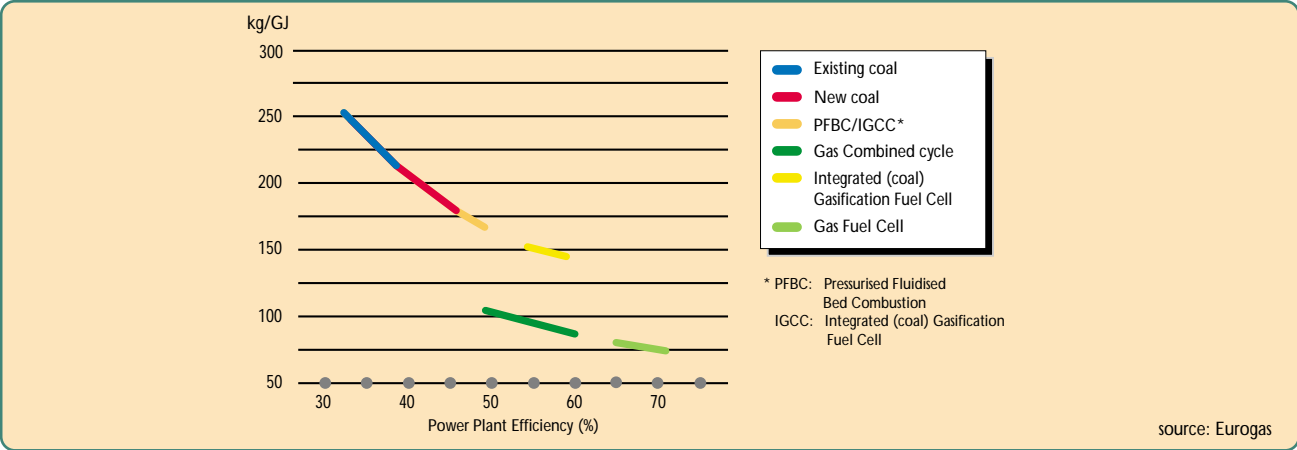
## CO<sub>2</sub> Formed by the Combustion of Fossil Fuels (Kg CO<sub>2</sub>/GJ)



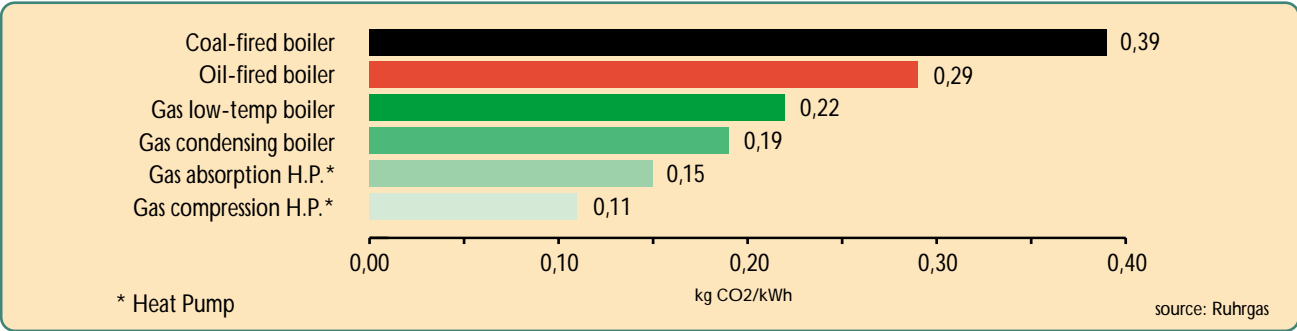
## Efficiencies and CO<sub>2</sub> Emissions from Fossil-Fuelled Power Plants

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



## CO<sub>2</sub> Emissions from Heat Supply Systems



## Methane Emissions

Though methane is the main component of natural gas, methane leakages from the total natural gas chain operations (from production to final distri-

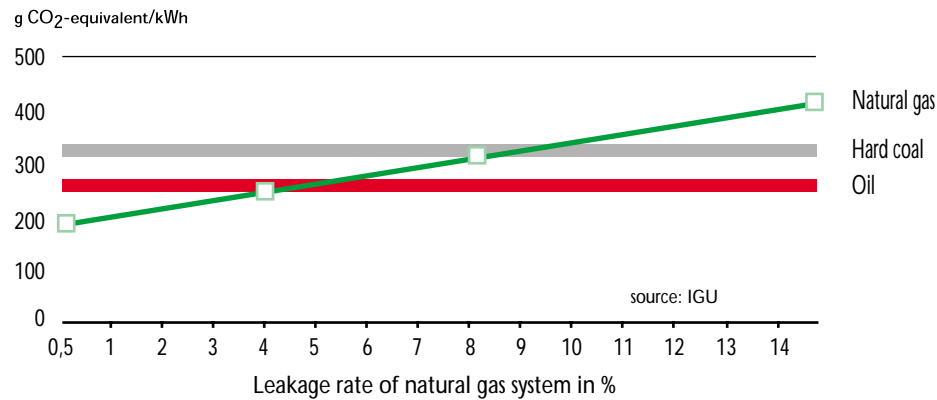
bution) are so low that natural gas clearly maintains its “greenhouse” advantage over other fossil fuels.

From a comparison among fossil

fuels of total greenhouse gas emissions from the overall fuel chain in terms of CO<sub>2</sub> 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 dif-

ferent national gas qualities. With an assumed energy content of 1 m<sup>3</sup> of natural gas of 39 MJ (Gross Calorific Value), 1 PJ corresponds to approx. 25.6 mill. m<sup>3</sup> of natural gas.

### Conversion Factors

1PJ (GCV)	=	25.6 million m <sup>3</sup> gas	
1 m <sup>3</sup> of natural gas	=	39 megajoules (MJ - GCV)	= 10.8 kWh
1 Mtoe	=	1 million tonnes of oil equivalent	= 41.86 PJ (NCV)
1000 m <sup>3</sup> of natural gas	=	0.9 ton oil equivalent (toe - crude oil)	
1 BCM	=	1 billion cubic meters	
1 cubic meter (m <sup>3</sup> )	=	35.315 cubic feet (cf)	
1 million m <sup>3</sup> of LNG	=	593 million m <sup>3</sup> of gas	

Net calorific value (NCV)	=	0.9 Gross calorific value (GCV)
1 megajoule	=	10 <sup>6</sup> joules (MJ)
1 gigajoule	=	10 <sup>9</sup> joules (GJ)
1 terajoule	=	10 <sup>12</sup> joules (TJ)
1 petajoule	=	10 <sup>15</sup> 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 <sup>-3</sup>	1	3.411 10 <sup>-3</sup>	0.86	3.411 10 <sup>-2</sup>
1 million British Thermal Units (MBtu)	1.055	293.2	1	252	10
1 thermie (th)	4.186 10 <sup>-3</sup>	1.162	3.968 10 <sup>-3</sup>	1	3.968 10 <sup>-2</sup>
1 therm	0.1055	29.32	1 10 <sup>-1</sup>	25.2	1

### Sources

IGU: International Gas Union

Cedigaz: Natural Gas in the World, 2000 Survey

IEA: International Energy Agency, Energy Balances and National Accounts of OECD Countries

BP: British Petroleum Statistical Review of World Energy 2000