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Emissions of Nitrogen Oxides from Stationary Combustion Sources in Western Europe in 1980 and 1985

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SUMMARY

Energy consumption data has been used to estimate nitrogen oxide emissions from stationary combustion sources in 1980 and 1985.

The results are compared with results from the OECD MAP project, and information received from countries in connection with the EMEP Programme. Since all estimates are derived basically from the same statistical data, there is generally good correspondence between the figures.

Decreasing consumption of fossil fuels, particularly residual fuel oil, has resulted in a decrease of the nitrogen oxide emissions from stationary sources of approximately 0.7 million tonnes (as NO_2) from 1980 to 1985, corresponding to about 6% of the total emissions in the European OECD countries in 1980.

CONTENTS

EMISSIONS OF NITROGEN OXIDES FROM STATIONARY COMBUSTION IN WESTERN EUROPE IN 1980 AND 1985

1 INTRODUCTION

Available international compilations of fossil fuel consumption data were used by Semb and Amble (1981) to estimate NOx emission data for 1975. Since then, more detailed inventories of SO_2, NOx and VOC emissions have been prepared for Western Europe by OECD with 1980 as the base year (Lübkert, and de Tilly, 1989). Preliminary data reports were used in this study. The OECD survey has since been published as an OECD Environment Monograph. (OECD, 1989).

However, in view of changes in the energy consumption pattern since 1980, it is of interest to see how these changes may have affected the emissions of nitrogen oxides. Estimates for 1985 are also needed in order to conform to estimates of the emissions of nitrogen oxides in Eastern European countries by Pacyna (1988). For this purpose, energy consumption data for 1980 and 1985 are used together with standard emission factors to obtain estimates of NOx emissions from stationary combustion sources within OECD Europe for 1980 and 1985.

2 METHOD

As in Semb and Amble (1981) a set of emission factors have been assigned to correspond to the sector and fuel breakdown in the OECD Energy Statistics (OECD, 1987). The emission factors have been chosen within the ranges reported by Pacyna et al. (1988) for power stations, house heating, and industrial boilers (Tables 1-3). Since the OECD statistics report consumption data in weight units rather than in heat equivalents, corrections for the heat content of indigenous solid fuels have been made for some countries. The heat values are taken from tabulations in UN (1986). Two countries (Finland and Ireland) burn substantial amounts of peat which is not included in the OECD compilation. Other biomass fuels which have not been included are bark

and black liquor used as fuel in wood processing and cellulose plants, and fuelwood and straw used mainly for residential house heating.

Table 1: NOx emission factors for electric power plants.

Type of fuel, type of boiler	Emission factor	
	NO_2 g/GJ	NO_2 kg/t
1) Hard coal (bituminous and subbituminous)		
- Pulverized coal fired		
- Dry bottom	200-400	8.0-12.0
- Wet bottom	300-600	12.0-18.0
- Cyclone furnace	500-800	15.0-25.0
- Grate and stoker burners	180-250	3.0- 7.0
2) Brown coal (incl. lignite)		
- Pulverized coal fired	200-250	4.0- 6.0
- Cyclone furnace	200-300	6.0- 8.0
- Grate and stoker burners	150-200	3.0- 4.0
3) Fuel oil, residual	200-350	(10.0-15.0)
distillate		2.0- 3.0
4) Peat	200-300	
5) Natural gas	100-200	

Table 2: NOx emission factors for heat production (in NO_2 g/GJ).

Type of fuel	District heating	Small domestic boilers
Hard coal	170-280	~ 50
Coke	180-280	50-100
Residual oil	120-180	120-180
Gas oil	~ 70	50- 70
LPG		40- 50
Coke-oven gas	~ 100	
Wood	~ 100	50-100

Table 3: NOx emission factors for combustion of fossil fuels in industrial boilers (in NO_2 g/GJ).

Type of fuel	Emission factor
Hard coal	180-350
Coke	180-280
Residual oil	120-180
LPG	40-110
Coke oven gas	50-120
Blast furnace gas	50-120
Refinery gas	80-180
"Town" gas	30- 60

Table 4: NOx emission factors for industrial processes.

Industrial process	Unit	Emission factor
1. Coke production	kg NO_2/t coal	0.015-0.020
2. Cement production	kg NO_2/t cement	0.9 -1.4
3. Brick production	kg NO_2/t brick	0.2 -0.7
4. Glass production	kg NO_2/t glass	~ 7.0
5. Iron & steel manufacturing	kg NO_2/t steel	
- Electric Arc Furnace		0.1 -0.3
- Open Heart Furnace		0.005-0.05
6. Refineries		
- Boilers and process heaters	kg $NO_2/10^3$ l oil g/GJ	4.0 -8.0 150-300

The energy statistics is not directly applicable to process emissions (Table 4), except for residual fuel oil and refinery gas used in refineries. Emission factors for processes involving high-temperature combustion such as in cement, glass, and brick manufacturing are generally higher than for fuel consumption in boilers. This is due to higher temperatures and longer residence times in the flames, and has partly been taken into account by chosing a high emission factor (600 gNO_2/GJ) for coal consumption by the non-metallic minerals sector.

Process emissions in the iron and steel industry, and emissions from nitric acid manufacturing has not been included. These emissions are highly process- and plant-specific and cannot properly be assessed without more detailed knowledge.

OECD (1989) estimated the total emissions of NOx from industrial processes to 661 000 tonnes (as NO_2) for OECD Europe in 1980. The breakdown for individual countries and industry sectors is not fully completed, but most of the process emissions are associated with chemical industry and with the iron and steel industry. A certain amount of gas oil is used in internal combustion engines, for auxiliary electricity generation, and in certain other applications. An emission factor of 40 gNO_2/kg has been assumed for such use.

Emissions from mobile sources, including road transport, railways, agricultural tractors, and internal navigation, have been estimated by Larssen (1989), and are not included here.

3 RESULTS

Fuel consumption data, emission factors and estimated NOx emissions from stationary combustion sources are listed for each country in Appendix 1. During the period 1980-1985 there has been a substantial reduction in the use of residual fuel oil. This decrease has been compensated in the electric power generation sector by increased use of solid fuel, nuclear power, and in some countries by increased use of natural gas. There has been a reduction in the use of fossil fuels in the industry sector. The calculated emissions of NOx from stationary combustion sources indicate a reduction of approximately 12% from 5.4 million tonnes (as NO_2) in 1980 to 4.7 million tonnes in 1985. The total NOx emissions for OECD Europe in 1980 was a little more than 12 million tonnes (as NO_2).

These numbers agree reasonably well with the preliminary figures from the OECD MAP study (OECD, 1989) for 1980 and with information supplied through EMEP for 1980 and 1985 (Appendix 2). This correspondence is not unexpected, since both emission factors and statistical data are drawn partly from the same sources. However, the OECD inventory is more detailed and based on thorough considerations of both emission factors and detailed statistical data in the individual countries. Also the OECD and the EMEP emission data include emissions of NOx from process emissions both with and without combustion. Only the former

emissions are included to some extent in the estimated emissions from the fossil fuel comsumption data. It is therefore appropriate to use the simplified calculations to estimate only the change from 1980 to 1985. Consequently the stationary combustion emissions of NOx for each country in 1985 has been estimated using both the results from the OECD inventory, information from the countries, and estimated changes from 1980 to 1985. Table 5 summaries the estimated NOx emissions from stationary fuel combustion, the OECD emission survey data for stationary source emissions for 1980, and the estimated national emissions for 1985.

Table 5: Estimated emissions of NOx from stationary sources.

Country	Calculated from fuel consumption 1980	1985	OECD MAP inventory 1980	EMEP 1980	1985	Estimate 1985
Austria	74	69	70	70	n.a.	70
Belgium	200	130	179	n.a.	n.a.	140
Denmark	147	138	161	n.a.	n.a.	150
Finland	107	87	127	132	153	153
France	682	478	797	n.a.	n.a.	585
Federal Republic of Germany	1 252	1 143	1 342	n.a.	n.a.	1 160
Greece	85	104	61	n.a.	n.a.	100
Ireland	34	37	41	n.a.	n.a.	42
Italy	564	512	606	n.a.	n.a.	557
Luxembourg	8	5	11	n.a.	n.a.	6
Netherlands	215	194	203	213	207	207
Norway	40	42	29	33	35	35
Portugal	38	43	59	n.a.	n.a.	64
Spain	333	306	525	n.a.	n.a.	440
Sweden	102	73	131	130	95	95
Switzerland	35	35	50	n.a.	56	56
Turkey	113	164	n.a.	n.a.	n.a.	164
United Kingdom	1 339	1 154	1 174	1 218	1 066	1 065

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APPENDIX 1

Consumption of fossil fuels, emission factors and estimated NOx emissions for individual countries within OECD Europe for 1980 and 1985.

Units are kilotonnes fuel and kilotonnes NO_2/year

Natural gas consumption figures are in tera calories (Tcal)

Austria				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	14	94	0.0090	0.13	0.85
Power plants-brown coal	2104	2756	0.0050	10.52	13.78
Power plants-gas oil	0	9	0.0300	0.00	0.27
Power plants-residual fuel oil	916	386	0.0100	9.16	3.86
Power plants-natural gas	5527	10929	0.0005	2.54	5.03
				22.35	23.78
Self-producers, hard coal	1	1	0.0070	0.01	0.01
Selfproducers,brown coal	87	127	0.0050	0.44	0.64
Selfproducers,gas oil	7	0	0.0300	0.21	0.00
Selfproducers,res.fuel oil	279	105	0.0080	2.23	0.84
Selfproducers, natural gas	2777	2065	0.0005	1.28	0.95
				4.16	2.43
Industry-coal	67	381	0.0000	0.00	0.00
Iron and steel	22	28	0.0070	0.15	0.20
Chemical, ex feedstock		3	0.0070	0.00	0.02
Non-ferrous metals	3	2	0.0070	0.02	0.01
Non-metallic minerals	37	342	0.0150	0.56	5.13
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco		2	0.0070	0.00	0.01
Machinery	1		0.0070	0.01	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather	1		0.0070	0.01	0.00
Not specified	3	4	0.0070	0.02	0.03
Industry-brown coal	155	288	0.0050	0.78	1.44
Industry-gas oil	0	0	0.0000	0.00	0.00
Iron and steel			0.0050	0.00	0.00
Chemical, ex feedstock			0.0050	0.00	0.00
Non-ferrous metals			0.0050	0.00	0.00
Non-metallic minerals			0.0050	0.00	0.00
Paper, pulp and print			0.0050	0.00	0.00
Mining and quarrying			0.0500	0.00	0.00
Food and tobacco			0.0050	0.00	0.00
Wood and wood products			0.0100	0.00	0.00
Machinery			0.0050	0.00	0.00
Transport equipment			0.0050	0.00	0.00
Construction			0.0500	0.00	0.00
Textiles and leather			0.0050	0.00	0.00
Not specified			0.0050	0.00	0.00
Industry-residual fuel oil	1664	930	0.0080	13.31	7.44
Industry-natural gas	18397	18613	0.0005	8.46	8.56
				23.31	22.84
Refineries-residual fuel oil	195	27	0.0060	1.17	0.16
Refineries-refinery gas	344	326	0.0040	1.38	1.30
				2.55	1.47
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	401	286	0.0020	0.80	0.57
Patent fuel	0	0	0.0020	0.00	0.00
Coke	573	692	0.0020	1.15	1.38
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	941	648	0.0010	0.94	0.65
BKB	304	408	0.0010	0.30	0.41
Natural gas	1062	14089	0.0002	0.22	2.96
Gas works	280	233	0.0000	0.00	0.00
Kerosene	17	17	0.0020	0.03	0.03
Gas oil	1217	1053	0.0020	2.43	2.11
Residual fuel oil	1891	1331	0.0080	15.13	10.65
LPG	0	0	0.0040	0.00	0.00
				21.01	18.76

	Belgium			NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	5170	4746	0.0090	46.53	42.71
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	5	1	0.0300	0.15	0.03
Power plants-residual fuel oil	3839	742	0.0100	38.39	7.42
Power plants-natural gas	10153	3695	0.0005	4.67	1.70
				89.74	51.86
Self-producers, hard coal	317	342	0.0070	2.22	2.39
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0300	0.00	0.00
Selfproducers,res.fuel oil	138	105	0.0080	1.10	0.84
Selfproducers, natural gas	3578	1507	0.0005	1.65	0.69
				4.97	3.93
Industry-coal	2151	1180	0.0000	0.00	0.00
Iron and steel	79	17	0.0070	0.55	0.12
Chemical, ex feedstock	26	48	0.0070	0.18	0.34
Non-ferrous metals	1	3	0.0070	0.01	0.02
Non-metallic minerals	2028	849	0.0150	30.42	12.74
Paper, pulp and print		19	0.0070	0.00	0.13
Food and tobacco	4	211	0.0070	0.03	1.48
Machinery	7	3	0.0070	0.05	0.02
Transport equipment			0.0070	0.00	0.00
Textiles and leather	1	1	0.0070	0.01	0.01
Not specified	5	29	0.0070	0.04	0.20
Industry-brown coal	95	275	0.0020	0.19	0.55
Industry-gas oil	466	304	0.0000	0.00	0.00
Iron and steel	38	28	0.0050	0.19	0.14
Chemical, ex feedstock	36	31	0.0050	0.18	0.16
Non-ferrous metals	13	7	0.0050	0.07	0.04
Non-metallic minerals	166	15	0.0050	0.83	0.08
Paper, pulp and print	11	6	0.0050	0.06	0.03
Mining and quarrying	20	20	0.0500	1.00	1.00
Food and tobacco	90	50	0.0050	0.45	0.25
Wood and wood products			0.0100	0.00	0.00
Machinery	92	56	0.0050	0.46	0.28
Transport equipment			0.0050	0.00	0.00
Construction		78	0.0500	0.00	3.90
Textiles and leather		13	0.0050	0.00	0.07
Not specified			0.0050	0.00	0.00
Industry-residual fuel oil	1844	1474	0.0080	14.75	11.79
Industry-natural gas	44272	32077	0.0005	20.37	14.76
				69.82	48.08
Refineries-residual fuel oil	750	305	0.0060	4.50	1.83
Refineries-refinery gas	586	404	0.0040	2.34	1.62
				6.84	3.45
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	1331	1378	0.0020	2.66	2.76
Patent fuel	148	150	0.0020	0.30	0.30
Coke	30	83	0.0020	0.06	0.17
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	47	97	0.0010	0.05	0.10
Natural gas	40394	44257	0.0002	8.48	9.29
Gas works	10	6	0.0000	0.00	0.00
Kerosene	19	51	0.0020	0.04	0.10
Gas oil	5858	4607	0.0020	11.72	9.21
Residual fuel oil	530	213	0.0080	4.24	1.70
LPG	0	0	0.0040	0.00	0.00
				27.54	23.63

	Denmark			NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	9158	10689	0.0090	82.42	96.20
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	39	6	0.0300	1.17	0.18
Power plants-residual fuel oil	1196	321	0.0100	11.96	3.21
Power plants-natural gas	0	836	0.0005	0.00	0.38
				95.55	99.98
Self-producers, hard coal	59	56	0.0070	0.41	0.39
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0300	0.00	0.00
Selfproducers,res.fuel oil	48	35	0.0080	0.38	0.28
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.80	0.67
Industry-coal	615	468	0.0000	0.00	0.00
Iron and steel			0.0070	0.00	0.00
Chemical, ex feedstock			0.0070	0.00	0.00
Non-ferrous metals			0.0070	0.00	0.00
Non-metallic minerals	436	181	0.0150	6.54	2.72
Paper, pulp and print	67	97	0.0070	0.47	0.68
Food and tobacco	58	117	0.0070	0.41	0.82
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	54	73	0.0070	0.38	0.51
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	704	641	0.0000	0.00	0.00
Iron and steel	42	36	0.0050	0.21	0.18
Chemical, ex feedstock	61	68	0.0050	0.31	0.34
Non-ferrous metals			0.0050	0.00	0.00
Non-metallic minerals	85	47	0.0050	0.43	0.24
Paper, pulp and print	18	16	0.0050	0.09	0.08
Mining and quarrying	6	10	0.0500	0.30	0.50
Food and tobacco	165	152	0.0050	0.83	0.76
Wood and wood products	24	16	0.0100	0.24	0.16
Machinery	139	131	0.0050	0.70	0.66
Transport equipment	39	26	0.0050	0.20	0.13
Construction	98	118	0.0500	4.90	5.90
Textiles and leather	30	16	0.0050	0.15	0.08
Not specified	6	5	0.0050	0.03	0.03
Industry-residual fuel oil	1303	747	0.0080	10.42	5.98
Industry-natural gas	0	1344	0.0005	0.00	0.62
				26.58	20.36
Refineries-residual fuel oil	89	79	0.0060	0.53	0.47
Refineries-refinery gas	201	209	0.0040	0.80	0.84
				1.34	1.31
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	32	699	0.0020	0.06	1.40
Patent fuel	34	1	0.0020	0.07	0.00
Coke	37	32	0.0020	0.07	0.06
Gas coke	1	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	38	49	0.0010	0.04	0.05
Natural gas	0	3422	0.0002	0.00	0.72
Gas works	873	842	0.0000	0.00	0.00
Kerosene	86	88	0.0020	0.17	0.18
Gas oil	3744	2985	0.0020	7.49	5.97
Residual fuel oil	1873	967	0.0080	14.98	7.74
LPG	0	0	0.0040	0.00	0.00
				22.89	16.11

Finland				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	4550	3372	0.0090	40.95	30.35
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	1	0	0.0300	0.03	0.00
Power plants-residual fuel oil	615	0	0.0100	6.15	0.00
Power plants-natural gas	2742	2552	0.0005	1.26	1.17
				48.39	31.52
Self-producers, hard coal	95	175	0.0070	0.67	1.23
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0300	0.00	0.00
Selfproducers,res.fuel oil	270	95	0.0080	2.16	0.76
Selfproducers, natural gas	736	917	0.0005	0.34	0.42
				3.16	2.41
Industry-coal	834	1131	0.0000	0.00	0.00
Iron and steel	87	108	0.0070	0.61	0.76
Chemical, ex feedstock	14	80	0.0070	0.10	0.56
Non-ferrous metals	0	0	0.0070	0.00	0.00
Non-metallic minerals	540	770	0.0150	8.10	11.55
Paper, pulp and print	0	0	0.0070	0.00	0.00
Food and tobacco	118	50	0.0070	0.83	0.35
Machinery	0	5	0.0070	0.00	0.04
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	75	118	0.0070	0.53	0.83
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	530	539	0.0000	0.00	0.00
Iron and steel	34	41	0.0050	0.17	0.21
Chemical, ex feedstock	50	48	0.0050	0.25	0.24
Non-ferrous metals	6	3	0.0050	0.03	0.02
Non-metallic minerals	51	47	0.0050	0.26	0.24
Paper, pulp and print	18	18	0.0050	0.09	0.09
Mining and quarrying	18	21	0.0500	0.90	1.05
Food and tobacco	56	59	0.0050	0.28	0.30
Wood and wood products	35	31	0.0100	0.35	0.31
Machinery	73	78	0.0050	0.37	0.39
Transport equipment	26	26	0.0050	0.13	0.13
Construction	113	152	0.0500	5.65	7.60
Textiles and leather	15	15	0.0050	0.08	0.08
Not specified	35	0	0.0050	0.18	0.00
Industry-residual fuel oil	2022	1762	0.0080	16.18	14.10
Industry-natural gas	4555	4937	0.0005	2.10	2.27
				37.15	41.08
Refineries-residual fuel oil	0	0	0.0060	0.00	0.00
Refineries-refinery gas	515	480	0.0040	2.06	1.92
				2.06	1.92
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	260	529	0.0020	0.52	1.06
Patent fuel	0	0	0.0020	0.00	0.00
Coke	12	20	0.0020	0.02	0.04
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	0	0	0.0010	0.00	0.00
Natural gas	403	473	0.0002	0.08	0.10
Gas works	37	20	0.0000	0.00	0.00
Kerosene	7	10	0.0020	0.01	0.02
Gas oil	2718	2066	0.0020	5.44	4.13
Residual fuel oil	1212	788	0.0080	9.70	6.30
LPG	26	26	0.0040	0.10	0.10
				15.88	11.76

France				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	18580	9548	0.0090	167.22	85.93
Power plants-brown coal	980	632	0.0030	2.94	1.90
Power plants-gas oil	29	0	0.0300	0.87	0.00
Power plants-residual fuel oil	9510	581	0.0100	95.10	5.81
Power plants-natural gas	10582	7180	0.0005	4.87	3.30
				271.00	96.94
Self-producers, hard coal	5910	6554	0.0070	41.37	45.88
Selfproducers,brown coal	1380	1573	0.0030	4.14	4.72
Selfproducers,gas oil	0	5	0.0400	0.00	0.20
Selfproducers,res.fuel oil	1096	780	0.0080	8.77	6.24
Selfproducers, natural gas	4075	3500	0.0005	1.87	1.61
				56.15	58.65
Industry-coal	3349	4761	0.0000	0.00	0.00
Iron and steel	708	723	0.0070	4.96	5.06
Chemical, ex feedstock	532	820	0.0070	3.72	5.74
Non-ferrous metals	1	727	0.0070	0.01	5.09
Non-metallic minerals	1705	1763	0.0150	25.58	26.45
Paper, pulp and print	72	141	0.0070	0.50	0.99
Food and tobacco	120	304	0.0070	0.84	2.13
Machinery	126	3	0.0070	0.88	0.02
Transport equipment	0	163	0.0070	0.00	1.14
Textiles and leather	114	98	0.0070	0.80	0.69
Not specified	662	11	0.0070	4.63	0.08
Industry-brown coal	163	164	0.0020	0.33	0.33
Industry-gas oil	6770	4065	0.0000	0.00	0.00
Iron and steel	125	67	0.0050	0.63	0.34
Chemical, ex feedstock	63	0	0.0050	0.32	0.00
Non-ferrous metals	75	227	0.0050	0.38	1.14
Non-metallic minerals	25	33	0.0050	0.13	0.17
Paper, pulp and print	132	70	0.0050	0.66	0.35
Mining and quarrying	0	1	0.0500	0.00	0.05
Food and tobacco	247	132	0.0050	1.24	0.66
Wood and wood products	137	53	0.0100	1.37	0.53
Machinery	334	291	0.0050	1.67	1.46
Transport equipment	235	124	0.0050	1.18	0.62
Construction	384	1312	0.0500	19.20	65.60
Textiles and leather	227	134	0.0050	1.14	0.67
Not specified	574	27	0.0050	2.87	0.14
Industry-residual fuel oil	12514	4798	0.0080	100.11	38.38
Industry-natural gas	106215	119389	0.0005	48.86	54.92
				221.97	212.71
Refineries-residual fuel oil	3094	1184	0.0060	18.56	7.10
Refineries-refinery gas	2314	1650	0.0040	9.26	6.60
				27.82	13.70
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	2670	2307	0.0020	5.34	4.61
Patent fuel	1820	1485	0.0020	3.64	2.97
Coke	263	269	0.0020	0.53	0.54
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	50	29	0.0010	0.05	0.03
BKB	160	132	0.0010	0.16	0.13
Natural gas	107869	139040	0.0002	22.65	29.20
Gas works	118	8	0.0000	0.00	0.00
Kerosene	59	20	0.0020	0.12	0.04
Gas oil	21897	17536	0.0020	43.79	35.07
Residual fuel oil	2410	1791	0.0080	19.28	14.33
LPG	2305	2156	0.0040	9.22	8.62
				104.78	95.55

Federal Republic of Germany				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	29503	35735	0.0090	265.53	321.61
Power plants-brown coal	110400	100881	0.0030	331.20	302.64
Power plants-gas oil	3	7	0.0300	0.09	0.21
Power plants-residual fuel oil	3700	1474	0.0100	37.00	14.74
Power plants-natural gas	126521	45973	0.0005	58.20	21.15
				692.02	660.36
Self-producers, hard coal	14028	12753	0.0070	98.20	89.27
Selfproducers,brown coal	4231	4557	0.0030	12.69	13.67
Selfproducers,gas oil	25	20	0.0300	0.75	0.60
Selfproducers,res.fuel oil	1841	835	0.0080	14.73	6.68
Selfproducers, natural gas	18673	17247	0.0005	8.59	7.93
				134.96	118.16
Industry-coal	4101	5860	0.0000	0.00	0.00
Iron and steel	128	147	0.0070	0.90	1.03
Chemical, ex feedstock	1901	2757	0.0070	13.31	19.30
Non-ferrous metals	182	243	0.0070	1.27	1.70
Non-metallic minerals	930	1568	0.0150	13.95	23.52
Paper, pulp and print	301	527	0.0070	2.11	3.69
Food and tobacco	267	212	0.0070	1.87	1.48
Machinery	92	89	0.0070	0.64	0.62
Transport equipment	177	161	0.0070	1.24	1.13
Textiles and leather	80	131	0.0070	0.56	0.92
Not specified	1	0	0.0070	0.01	0.00
Industry-brown coal	3618	4293	0.0020	7.24	8.59
Industry-gas oil	4927	4055	0.0000	0.00	0.00
Iron and steel	58	214	0.0050	0.29	1.07
Chemical, ex feedstock	6	207	0.0050	0.03	1.04
Non-ferrous metals	119	116	0.0050	0.60	0.58
Non-metallic minerals	547	235	0.0050	2.74	1.18
Paper, pulp and print	13	121	0.0050	0.07	0.61
Mining and quarrying	16	78	0.0500	0.80	3.90
Food and tobacco	782	526	0.0050	3.91	2.63
Wood and wood products	194	102	0.0100	1.94	1.02
Machinery	558	942	0.0050	2.79	4.71
Transport equipment	305	285	0.0050	1.53	1.43
Construction	0	0	0.0500	0.00	0.00
Textiles and leather	189	220	0.0050	0.95	1.10
Not specified	1792	301	0.0050	8.96	1.51
Industry-residual fuel oil	12711	6359	0.0080	101.69	50.87
Industry-natural gas	163841	158844	0.0005	75.37	73.07
				244.73	206.67
Refineries-residual fuel oil	3872	1824	0.0060	23.23	10.94
Refineries-refinery gas	3628	2278	0.0040	14.51	9.11
				37.74	20.06
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	2383	2040	0.0020	4.77	4.08
Patent fuel	1107	893	0.0020	2.21	1.79
Coke	1650	1380	0.0020	3.30	2.76
Gas coke	327	0	0.0020	0.65	0.00
Brown coal	37	22	0.0010	0.04	0.02
BKB	3674	3008	0.0010	3.67	3.01
Natural gas	152595	202942	0.0002	32.04	42.62
Gas works	7922	3425	0.0000	0.00	0.00
Kerosene	24	17	0.0020	0.05	0.03
Gas oil	38347	35021	0.0020	76.69	70.04
Residual fuel oil	1968	1362	0.0080	15.74	10.90
LPG	885	804	0.0040	3.54	3.22
				142.72	138.46

Greece				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	0	307	0.0090	0.00	2.76
Power plants-brown coal	20634	34431	0.0012	24.76	41.32
Power plants-gas oil	308	118	0.0300	9.24	3.54
Power plants-residual fuel oil	1871	1514	0.0100	18.71	15.14
Power plants-natural gas	0	0	0.0005	0.00	0.00
				52.71	62.76
Self-producers, hard coal	0	0	0.0070	0.00	0.00
Selfproducers,brown coal	0	0	0.0012	0.00	0.00
Selfproducers,gas oil	0	0	0.0300	0.00	0.00
Selfproducers,res.fuel oil	70	79	0.0080	0.56	0.63
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.56	0.63
Industry-coal	139	1436	0.0000	0.00	0.00
Iron and steel			0.0070	0.00	0.00
Chemical, ex feedstock			0.0070	0.00	0.00
Non-ferrous metals		102	0.0070	0.00	0.71
Non-metallic minerals	133	1332	0.0150	2.00	19.98
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco			0.0070	0.00	0.00
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	6	2	0.0070	0.04	0.01
Industry-brown coal	1439	1408	0.0012	1.73	1.69
Industry-gas oil	245	246	0.0050	1.22	1.23
Iron and steel					
Chemical, ex feedstock					
Non-ferrous metals					
Non-metallic minerals					
Paper, pulp and print					
Mining and quarrying					
Food and tobacco					
Wood and wood products					
Machinery					
Transport equipment					
Construction					
Textiles and leather					
Not specified					
Industry-residual fuel oil	2462	1205	0.0080	19.70	9.64
Industry-natural gas	0	587	0.0005	0.00	0.27
				24.68	33.54
Refineries-residual fuel oil	265	199	0.0060	1.59	1.19
Refineries-refinery gas	177	132	0.0040	0.71	0.53
				2.30	1.72
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	2	4	0.0020	0.00	0.01
Patent fuel	0	0	0.0020	0.00	0.00
Coke	7	4	0.0020	0.01	0.01
Gas coke	2	0	0.0020	0.00	0.00
Brown coal	0	112	0.0010	0.00	0.11
BKB	97	55	0.0010	0.10	0.06
Natural gas	0	0	0.0002	0.00	0.00
Gas works	22	28	0.0000	0.00	0.00
Kerosene	36	33	0.0020	0.07	0.07
Gas oil	1436	1833	0.0020	2.87	3.67
Residual fuel oil	148	149	0.0080	1.18	1.19
LPG	149	105	0.0040	0.60	0.42
				4.84	5.53

Ireland				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	47	57	0.0090	0.42	0.51
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	2	5	0.0300	0.06	0.15
Power plants-residual fuel oil	1475	553	0.0100	14.75	5.53
Power plants-natural gas	4318	14125	0.0005	1.99	6.50
				17.22	12.69
Self-producers, hard coal	0	22	0.0070	0.00	0.15
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0400	0.00	0.00
Selfproducers,res.fuel oil	30	2	0.0080	0.24	0.02
Selfproducers, natural gas	0	130	0.0005	0.00	0.06
				0.24	0.23
Industry-coal	137	338	0.0000	0.00	0.00
Iron and steel		7	0.0070	0.00	0.05
Chemical, ex feedstock			0.0070	0.00	0.00
Non-ferrous metals			0.0070	0.00	0.00
Non-metallic minerals			0.0150	0.00	0.00
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco			0.0070	0.00	0.00
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	137	331	0.0070	0.96	2.32
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	453	377	0.0000	0.00	0.00
Iron and steel			0.0050	0.00	0.00
Chemical, ex feedstock	12	8	0.0050	0.06	0.04
Non-ferrous metals		2	0.0050	0.00	0.01
Non-metallic minerals	5		0.0050	0.03	0.00
Paper, pulp and print	3	13	0.0050	0.02	0.07
Mining and quarrying	3	8	0.0500	0.15	0.40
Food and tobacco	61	61	0.0050	0.31	0.31
Wood and wood products	4	1	0.0100	0.04	0.01
Machinery	19	12	0.0050	0.10	0.06
Transport equipment			0.0050	0.00	0.00
Construction		182	0.0500	0.00	9.10
Textiles and leather		22	0.0050	0.00	0.11
Not specified	346	68	0.0050	1.73	0.34
Industry-residual fuel oil	938	563	0.0080	7.50	4.50
Industry-natural gas	3838	5534	0.0005	1.77	2.55
				12.65	19.86
Refineries-residual fuel oil	8	0	0.0060	0.05	0.00
Refineries-refinery gas	39	28	0.0040	0.16	0.11
				0.20	0.11
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	812	1169	0.0020	1.62	2.34
Patent fuel	0	0	0.0020	0.00	0.00
Coke	0	0	0.0020	0.00	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	308	420	0.0010	0.31	0.42
Natural gas	0	181	0.0002	0.00	0.04
Gas works	746	461	0.0000	0.00	0.00
Kerosene	76	107	0.0020	0.15	0.21
Gas oil	411	346	0.0020	0.82	0.69
Residual fuel oil	119	69	0.0080	0.95	0.55
LPG	0	0	0.0040	0.00	0.00
				3.86	4.25

Italy				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	4918	8935	0.0090	44.26	80.42
Power plants-brown coal	1286	1898	0.0030	3.86	5.69
Power plants-gas oil	249	59	0.0300	7.47	1.77
Power plants-residual fuel oil	19039	14208	0.0100	190.39	142.08
Power plants-natural gas	16687	50757	0.0005	7.68	23.35
				253.66	253.31
Self-producers, hard coal	41	11	0.0070	0.29	0.08
Selfproducers,brown coal	0	6	0.0030	0.00	0.02
Selfproducers,gas oil	0	143	0.0400	0.00	5.72
Selfproducers,res.fuel oil	4000	1950	0.0080	32.00	15.60
Selfproducers, natural gas	5341	5311	0.0005	2.46	2.44
				34.74	23.86
Industry-coal	605	2623	0.0000	0.00	0.00
Iron and steel	50	330	0.0070	0.35	2.31
Chemical, ex feedstock	14	3	0.0070	0.10	0.02
Non-ferrous metals	60	49	0.0070	0.42	0.34
Non-metallic minerals	430	2225	0.0150	6.45	33.38
Paper, pulp and print	40		0.0070	0.28	0.00
Food and tobacco		11	0.0070	0.00	0.08
Machinery	11	5	0.0070	0.08	0.04
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified			0.0070	0.00	0.00
Industry-brown coal	48	114	0.0020	0.10	0.23
Industry-gas oil	1133	1180	0.0000	0.00	0.00
Iron and steel	65	39	0.0050	0.33	0.20
Chemical, ex feedstock	30	19	0.0050	0.15	0.10
Non-ferrous metals	20	11	0.0050	0.10	0.06
Non-metallic minerals	55	57	0.0050	0.28	0.29
Paper, pulp and print	25	20	0.0050	0.13	0.10
Mining and quarrying			0.0500	0.00	0.00
Food and tobacco	90	40	0.0050	0.45	0.20
Wood and wood products			0.0100	0.00	0.00
Machinery	260	218	0.0050	1.30	1.09
Transport equipment			0.0050	0.00	0.00
Construction			0.0500	0.00	0.00
Textiles and leather	100	33	0.0050	0.50	0.17
Not specified	160	96	0.0050	0.80	0.48
Industry-residual fuel oil	13697	7309	0.0080	109.58	58.47
Industry-natural gas	123382	108334	0.0005	56.76	49.83
				178.13	147.36
Refineries-residual fuel oil	2626	1814	0.0060	15.76	10.88
Refineries-refinery gas	1516	1688	0.0040	6.06	6.75
				21.82	17.64
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	220	160	0.0020	0.44	0.32
Patent fuel	10	0	0.0020	0.02	0.00
Coke	260	150	0.0020	0.52	0.30
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	51	0	0.0010	0.05	0.00
BKB	54	0	0.0010	0.05	0.00
Natural gas	93027	128114	0.0002	19.54	26.90
Gas works	4771	3880	0.0000	0.00	0.00
Kerosene	778	390	0.0020	1.56	0.78
Gas oil	13518	12640	0.0020	27.04	25.28
Residual fuel oil	3260	2068	0.0080	26.08	16.54
LPG			0.0040	0.00	0.00
				75.29	70.13

Luxembourg				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	0	0	0.0090	0.00	0.00
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	0	0	0.0300	0.00	0.00
Power plants-residual fuel oil	0	0	0.0100	0.00	0.00
Power plants-natural gas	0	0	0.0005	0.00	0.00
				0.00	0.00
Self-producers, hard coal	15	23	0.0070	0.11	0.16
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0400	0.00	0.00
Selfproducers,res.fuel oil	24	5	0.0080	0.19	0.04
Selfproducers, natural gas	743	12	0.0005	0.34	0.01
				0.64	0.21
Industry-coal	325	173	0.0000	0.00	0.00
Iron and steel	217	56	0.0070	1.52	0.39
Chemical, ex feedstock			0.0070	0.00	0.00
Non-ferrous metals			0.0070	0.00	0.00
Non-metallic minerals			0.0150	0.00	0.00
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco			0.0070	0.00	0.00
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	108	117	0.0070	0.76	0.82
Industry-brown coal	28	0	0.0020	0.06	0.00
Industry-gas oil	63	45	0.0000	0.00	0.00
Iron and steel	20	10	0.0050	0.10	0.05
Chemical, ex feedstock	2	3	0.0050	0.01	0.02
Non-ferrous metals			0.0050	0.00	0.00
Non-metallic minerals			0.0050	0.00	0.00
Paper, pulp and print			0.0050	0.00	0.00
Mining and quarrying			0.0500	0.00	0.00
Food and tobacco	6	6	0.0050	0.03	0.03
Wood and wood products			0.0100	0.00	0.00
Machinery			0.0050	0.00	0.00
Transport equipment			0.0050	0.00	0.00
Construction	35	14	0.0500	1.75	0.70
Textiles and leather			0.0050	0.00	0.00
Not specified		12	0.0050	0.00	0.06
Industry-residual fuel oil	93	81	0.0080	0.74	0.65
Industry-natural gas	2730	1657	0.0005	1.26	0.76
				6.22	3.48
Refineries-residual fuel oil	0	0	0.0060	0.00	0.00
Refineries-refinery gas	0	0	0.0040	0.00	0.00
				0.00	0.00
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	6	3	0.0020	0.01	0.01
Patent fuel	1	1	0.0020	0.00	0.00
Coke	2	2	0.0020	0.00	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	38	39	0.0010	0.04	0.04
Natural gas	1242	1701	0.0002	0.26	0.36
Gas works	0	0	0.0000	0.00	0.00
Kerosene	0	0	0.0020	0.00	0.00
Gas oil	343	285	0.0020	0.69	0.57
Residual fuel oil	11	3	0.0080	0.09	0.02
LPG			0.0040	0.00	0.00
				1.09	1.00

Netherlands				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	2255	4529	0.0090	20.30	40.76
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	5	6	0.0300	0.15	0.18
Power plants-residual fuel oil	5185	154	0.0100	51.85	1.54
Power plants-natural gas	52534	79891	0.0005	24.17	36.75
				96.46	79.23
Self-producers, hard coal	143	4	0.0070	1.00	0.03
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	2	0.0400	0.00	0.08
Selfproducers,res.fuel oil	194	234	0.0080	1.55	1.87
Selfproducers, natural gas	10990	10195	0.0005	5.06	4.69
				7.61	6.67
Industry-coal	76	676	0.0000	0.00	0.00
Iron and steel	6	372	0.0070	0.04	2.60
Chemical, ex feedstock	59	225	0.0070	0.41	1.58
Non-ferrous metals		3	0.0070	0.00	0.02
Non-metallic minerals		48	0.0150	0.00	0.72
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco		25	0.0070	0.00	0.18
Machinery	4	1	0.0070	0.03	0.01
Transport equipment			0.0070	0.00	0.00
Textiles and leather		2	0.0070	0.00	0.01
Not specified	7		0.0070	0.05	0.00
Industry-brown coal	131	98	0.0020	0.26	0.20
Industry-gas oil	1168	417	0.0000	0.00	0.00
Iron and steel	56	7	0.0050	0.28	0.04
Chemical, ex feedstock	216	176	0.0050	1.08	0.88
Non-ferrous metals		1	0.0050	0.00	0.01
Non-metallic minerals	10	7	0.0050	0.05	0.04
Paper, pulp and print	6	1	0.0050	0.03	0.01
Mining and quarrying		10	0.0500	0.00	0.50
Food and tobacco	19	19	0.0050	0.10	0.10
Wood and wood products		18	0.0100	0.00	0.18
Machinery		26	0.0050	0.00	0.13
Transport equipment		11	0.0050	0.00	0.06
Construction		110	0.0500	0.00	5.50
Textiles and leather		2	0.0050	0.00	0.01
Not specified		10	0.0050	0.00	0.05
Industry-residual fuel oil	918	631	0.0080	7.34	5.05
Industry-natural gas	93467	99336	0.0005	42.99	45.69
				52.67	63.53
Refineries-residual fuel oil	1696	604	0.0060	10.18	3.62
Refineries-refinery gas	1049	734	0.0040	4.20	2.94
				14.37	6.56
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	99	94	0.0020	0.20	0.19
Patent fuel	4	8	0.0020	0.01	0.02
Coke	2	0	0.0020	0.00	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	25	5	0.0010	0.03	0.01
BKB	36	42	0.0010	0.04	0.04
Natural gas	175741	168577	0.0002	36.91	35.40
Gas works	0	0	0.0000	0.00	0.00
Kerosene	240	162	0.0020	0.48	0.32
Gas oil	2147	1238	0.0020	4.29	2.48
Residual fuel oil	304	48	0.0080	2.43	0.38
LPG			0.0040	0.00	0.00
				44.38	38.84

Norway				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	11	28	0.0090	0.10	0.25
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	4	13	0.0300	0.12	0.39
Power plants-residual fuel oil	0	0	0.0100	0.00	0.00
Power plants-natural gas	0	0	0.0005	0.00	0.00
				0.22	0.64
Self-producers, hard coal	0	0	0.0070	0.00	0.00
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	23	52	0.0400	0.92	2.08
Selfproducers,res.fuel oil	0	0	0.0080	0.00	0.00
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.92	2.08
Industry-coal	514	717	0.0000	0.00	0.00
Iron and steel	313	372	0.0070	2.19	2.60
Chemical, ex feedstock	121	200	0.0070	0.85	1.40
Non-ferrous metals	2		0.0070	0.01	0.00
Non-metallic minerals	78	135	0.0150	1.17	2.03
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco		10	0.0070	0.00	0.07
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified			0.0070	0.00	0.00
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	763	780	0.0000	0.00	0.00
Iron and steel	14	10	0.0050	0.07	0.05
Chemical, ex feedstock	62	49	0.0050	0.31	0.25
Non-ferrous metals	24	29	0.0050	0.12	0.15
Non-metallic minerals	37	38	0.0050	0.19	0.19
Paper, pulp and print	19	9	0.0050	0.10	0.05
Mining and quarrying	46	39	0.0500	2.30	1.95
Food and tobacco	116	95	0.0050	0.58	0.48
Wood and wood products	34	20	0.0100	0.34	0.20
Machinery	61	39	0.0050	0.31	0.20
Transport equipment	41	25	0.0050	0.21	0.13
Construction	292	417	0.0500	14.60	20.85
Textiles and leather	15	8	0.0050	0.08	0.04
Not specified	2	1	0.0050	0.01	0.01
Industry-residual fuel oil	1291	578	0.0080	10.33	4.62
Industry-natural gas	0	0	0.0005	0.00	0.00
				33.75	35.24
Refineries-residual fuel oil	43	32	0.0060	0.26	0.19
Refineries-refinery gas	193	293	0.0040	0.77	1.17
				1.03	1.36
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	10	23	0.0020	0.02	0.05
Patent fuel	0	0	0.0020	0.00	0.00
Coke	35	27	0.0020	0.07	0.05
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	0	0	0.0010	0.00	0.00
Natural gas	0	0	0.0002	0.00	0.00
Gas works	34	0	0.0000	0.00	0.00
Kerosene	359	200	0.0020	0.72	0.40
Gas oil	1243	907	0.0020	2.49	1.81
Residual fuel oil	55	36	0.0080	0.44	0.29
LPG			0.0040	0.00	0.00
				3.73	2.60

Portugal				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	212	376	0.0090	1.91	3.38
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	56	8	0.0300	1.68	0.24
Power plants-residual fuel oil	1407	1431	0.0100	14.07	14.31
Power plants-natural gas	0	0	0.0005	0.00	0.00
				17.66	17.93
Self-producers, hard coal	0	0	0.0070	0.00	0.00
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0400	0.00	0.00
Selfproducers,res.fuel oil	104	109	0.0080	0.83	0.87
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.83	0.87
Industry-coal	84	315	0.0000	0.00	0.00
Iron and steel	2		0.0070	0.01	0.00
Chemical, ex feedstock	3		0.0070	0.02	0.00
Non-ferrous metals	51	35	0.0070	0.36	0.25
Non-metallic minerals	23	241	0.0150	0.35	3.62
Paper, pulp and print			0.0070	0.00	0.00
Food and tobacco	2	1	0.0070	0.01	0.01
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	3	38	0.0070	0.02	0.27
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	131	132	0.0000	0.00	0.00
Iron and steel	2	2	0.0050	0.01	0.01
Chemical, ex feedstock	4	3	0.0050	0.02	0.02
Non-ferrous metals	1		0.0050	0.01	0.00
Non-metallic minerals	15	18	0.0050	0.08	0.09
Paper, pulp and print	4	6	0.0050	0.02	0.03
Mining and quarrying	6	7	0.0500	0.30	0.35
Food and tobacco	12	16	0.0050	0.06	0.08
Wood and wood products		11	0.0100	0.00	0.11
Machinery	1	1	0.0050	0.01	0.01
Transport equipment	15	2	0.0050	0.08	0.01
Construction	61	64	0.0500	3.05	3.20
Textiles and leather		2	0.0050	0.00	0.01
Not specified	10		0.0050	0.05	0.00
Industry-residual fuel oil	1926	1705	0.0080	15.41	13.64
Industry-natural gas	0	0	0.0005	0.00	0.00
				19.85	21.68
Refineries-residual fuel oil	286	130	0.0060	1.72	0.78
Refineries-refinery gas	1	63	0.0040	0.00	0.25
				1.72	1.03
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	8	5	0.0020	0.02	0.01
Patent fuel	0	0	0.0020	0.00	0.00
Coke	1	0	0.0020	0.00	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	0	0	0.0010	0.00	0.00
Natural gas	0	0	0.0002	0.00	0.00
Gas works	525	520	0.0000	0.00	0.00
Kerosene	56	31	0.0020	0.11	0.06
Gas oil	346	441	0.0020	0.69	0.88
Residual fuel oil	72	75	0.0080	0.58	0.60
LPG			0.0040	0.00	0.00
				1.40	1.55

SPAIN				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	9434	16391	0.0070	66.04	114.74
Power plants-brown coal	14579	23132	0.0030	43.74	69.40
Power plants-gas oil	70	50	0.0300	2.10	1.50
Power plants-residual fuel oil	8856	1827	0.0100	88.56	18.27
Power plants-natural gas	6475	5926	0.0005	2.98	2.73
				203.41	206.63
Self-producers, hard coal	64	82	0.0070	0.45	0.57
Selfproducers,brown coal	1	0	0.0030	0.00	0.00
Selfproducers,gas oil	4	0	0.0400	0.16	0.00
Selfproducers,res.fuel oil	226	174	0.0080	1.81	1.39
Selfproducers, natural gas	48	171	0.0005	0.02	0.08
				2.44	2.04
Industry-coal	897	2902	0.0000	0.00	0.00
Iron and steel	213	258	0.0050	1.07	1.29
Chemical, ex feedstock	257	124	0.0050	1.29	0.62
Non-ferrous metals	4	14	0.0050	0.02	0.07
Non-metallic minerals	349	2440	0.0100	3.50	24.40
Paper, pulp and print	18	46	0.0050	0.09	0.23
Food and tobacco	4		0.0050	0.02	0.00
Machinery	42	14	0.0050	0.21	0.07
Transport equipment			0.0050	0.00	0.00
Textiles and leather			0.0050	0.00	0.00
Not specified	10	6	0.0050	0.05	0.03
Industry-brown coal	52	72	0.0020	0.10	0.14
Industry-gas oil	568	384	0.0000	0.00	0.00
Iron and steel	36	24	0.0050	0.18	0.12
Chemical, ex feedstock	162	48	0.0050	0.81	0.24
Non-ferrous metals	26	9	0.0050	0.13	0.05
Non-metallic minerals	47	22	0.0050	0.24	0.11
Paper, pulp and print	11	7	0.0050	0.06	0.04
Mining and quarrying	38	50	0.0500	1.90	2.50
Food and tobacco	139	132	0.0050	0.70	0.66
Wood and wood products	8	4	0.0100	0.08	0.04
Machinery	25	19	0.0050	0.13	0.10
Transport equipment	23	20	0.0050	0.12	0.10
Construction	8	11	0.0500	0.40	0.55
Textiles and leather	27	27	0.0050	0.14	0.14
Not specified	18	11	0.0050	0.09	0.06
Industry-residual fuel oil	10591	5184	0.0080	84.73	41.47
Industry-natural gas	6716	13237	0.0005	3.09	6.09
				99.11	79.10
Refineries-residual fuel oil	1539	1205	0.0060	9.23	7.23
Refineries-refinery gas	760	979	0.0040	3.04	3.92
				12.27	11.15
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	401	669	0.0020	0.80	1.34
Patent fuel	25	11	0.0020	0.05	0.02
Coke	47	2	0.0020	0.09	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	53	42	0.0010	0.05	0.04
BKB	0	0	0.0010	0.00	0.00
Natural gas	1279	2000	0.0002	0.27	0.42
Gas works	3634	4098	0.0000	0.00	0.00
Kerosene	21	24	0.0020	0.04	0.05
Gas oil	3562	3817	0.0020	7.12	7.63
Residual fuel oil	198	277	0.0080	1.58	2.22
LPG	1973	1932	0.0040	7.89	7.73
				17.91	19.45

Sweden				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	83	1378	0.0090	0.75	12.40
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	20	39	0.0300	0.60	1.17
Power plants-residual fuel oil	2702	1162	0.0100	27.02	11.62
Power plants-natural gas	0	0	0.0005	0.00	0.00
				28.37	25.19
Self-producers, hard coal	0	13	0.0070	0.00	0.09
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0400	0.00	0.00
Selfproducers,res.fuel oil	0	0	0.0080	0.00	0.00
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.00	0.09
Industry-coal	367	716	0.0000	0.00	0.00
Iron and steel	29	25	0.0070	0.20	0.18
Chemical, ex feedstock	70	77	0.0070	0.49	0.54
Non-ferrous metals	50	70	0.0070	0.35	0.49
Non-metallic minerals	213	340	0.0150	3.20	5.10
Paper, pulp and print	5	120	0.0070	0.04	0.84
Food and tobacco		43	0.0070	0.00	0.30
Machinery			0.0070	0.00	0.00
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified		41	0.0070	0.00	0.29
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	806	599	0.0000	0.00	0.00
Iron and steel	65	39	0.0050	0.33	0.20
Chemical, ex feedstock	41	35	0.0050	0.21	0.18
Non-ferrous metals	25	18	0.0050	0.13	0.09
Non-metallic minerals	71	44	0.0050	0.36	0.22
Paper, pulp and print	31	18	0.0050	0.16	0.09
Mining and quarrying	13	8	0.0500	0.65	0.40
Food and tobacco	64	50	0.0050	0.32	0.25
Wood and wood products	38	25	0.0100	0.38	0.25
Machinery	178	114	0.0050	0.89	0.57
Transport equipment	54	36	0.0050	0.27	0.18
Construction			0.0500	0.00	0.00
Textiles and leather	25	21	0.0050	0.13	0.11
Not specified	201	191	0.0050	1.01	0.96
Industry-residual fuel oil	3880	1989	0.0080	31.04	15.91
Industry-natural gas	0	651	0.0005	0.00	0.30
				40.12	27.42
Refineries-residual fuel oil	348	288	0.0060	2.09	1.73
Refineries-refinery gas	0	0	0.0040	0.00	0.00
				2.09	1.73
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	3	416	0.0020	0.01	0.83
Patent fuel	0	0	0.0020	0.00	0.00
Coke	16	2	0.0020	0.03	0.00
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	2	0	0.0010	0.00	0.00
Natural gas	0	65	0.0002	0.00	0.01
Gas works	723	428	0.0000	0.00	0.00
Kerosene	24	10	0.0020	0.05	0.02
Gas oil	5736	3660	0.0020	11.47	7.32
Residual fuel oil	2596	1300	0.0080	20.77	10.40
LPG	14	20	0.0040	0.06	0.08
				32.38	18.67

Switzerland				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	16	32	0.0090	0.14	0.29
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	2	0	0.0300	0.06	0.00
Power plants-residual fuel oil	110	28	0.0100	1.10	0.28
Power plants-natural gas	344	241	0.0005	0.16	0.11
				1.46	0.68
Self-producers, hard coal	7	14	0.0070	0.05	0.10
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	0	0	0.0400	0.00	0.00
Selfproducers,res.fuel oil	0	0	0.0080	0.00	0.00
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				0.05	0.10
Industry-coal	279	582	0.0000	0.00	0.00
Iron and steel	0		0.0070	0.00	0.00
Chemical, ex feedstock	30	12	0.0070	0.21	0.08
Non-ferrous metals	5		0.0070	0.04	0.00
Non-metallic minerals	179	441	0.0150	2.69	6.62
Paper, pulp and print	42	83	0.0070	0.29	0.58
Food and tobacco	7	1	0.0070	0.05	0.01
Machinery	11	45	0.0070	0.08	0.32
Transport equipment			0.0070	0.00	0.00
Textiles and leather			0.0070	0.00	0.00
Not specified	5		0.0070	0.04	0.00
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	1120	1051	0.0000	0.00	0.00
Iron and steel		3	0.0050	0.00	0.02
Chemical, ex feedstock		21	0.0050	0.00	0.11
Non-ferrous metals		11	0.0050	0.00	0.06
Non-metallic minerals		5	0.0050	0.00	0.03
Paper, pulp and print			0.0050	0.00	0.00
Mining and quarrying		5	0.0500	0.00	0.25
Food and tobacco		24	0.0050	0.00	0.12
Wood and wood products		1	0.0100	0.00	0.01
Machinery		92	0.0050	0.00	0.46
Transport equipment			0.0050	0.00	0.00
Construction		18	0.0500	0.00	0.90
Textiles and leather		22	0.0050	0.00	0.11
Not specified	1120	849	0.0050	5.60	4.25
Industry-residual fuel oil	964	593	0.0080	7.71	4.74
Industry-natural gas	4045	5662	0.0005	1.86	2.60
				18.56	21.25
Refineries-residual fuel oil	47	37	0.0060	0.28	0.22
Refineries-refinery gas	150	127	0.0040	0.60	0.51
				0.88	0.73
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	13	12	0.0020	0.03	0.02
Patent fuel	7	13	0.0020	0.01	0.03
Coke	78	31	0.0020	0.16	0.06
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	46	31	0.0010	0.05	0.03
Natural gas	4935	8185	0.0002	1.04	1.72
Gas works	123	56	0.0000	0.00	0.00
Kerosene	4	6	0.0020	0.01	0.01
Gas oil	5460	5030	0.0020	10.92	10.06
Residual fuel oil	150	0	0.0080	1.20	0.00
LPG	42	78	0.0040	0.17	0.31
				13.57	12.25

Turkey				NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	801	570	0.0080	6.41	4.56
Power plants-brown coal	6144	19580	0.0040	24.58	78.32
Power plants-gas oil	188	55	0.0300	5.64	1.65
Power plants-residual fuel oil	941	1050	0.0100	9.41	10.50
Power plants-natural gas	0	165	0.0005	0.00	0.08
				46.03	95.11
Self-producers, hard coal	0	0	0.0070	0.00	0.00
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	41	15	0.0400	1.64	0.60
Selfproducers,res.fuel oil	356	350	0.0080	2.85	2.80
Selfproducers, natural gas	0	0	0.0005	0.00	0.00
				4.49	3.40
Industry-coal	462	624	0.0000	0.00	0.00
Iron and steel			0.0060	0.00	0.00
Chemical, ex feedstock			0.0060	0.00	0.00
Non-ferrous metals	6	3	0.0060	0.04	0.02
Non-metallic minerals			0.0150	0.00	0.00
Paper, pulp and print			0.0050	0.00	0.00
Food and tobacco	98	245	0.0050	0.49	1.23
Machinery	1		0.0050	0.01	0.00
Transport equipment			0.0050	0.00	0.00
Textiles and leather	11		0.0050	0.06	0.00
Not specified	346	376	0.0050	1.73	1.88
Industry-brown coal	3622	3158	0.0020	7.24	6.32
Industry-gas oil	67	110	0.0000	0.00	0.00
Iron and steel	8	35	0.0050	0.04	0.18
Chemical, ex feedstock	2	2	0.0050	0.01	0.01
Non-ferrous metals	15	2	0.0050	0.08	0.01
Non-metallic minerals			0.0050	0.00	0.00
Paper, pulp and print		3	0.0050	0.00	0.02
Mining and quarrying			0.0500	0.00	0.00
Food and tobacco		2	0.0050	0.00	0.01
Wood and wood products			0.0100	0.00	0.00
Machinery	1		0.0050	0.01	0.00
Transport equipment			0.0050	0.00	0.00
Construction			0.0500	0.00	0.00
Textiles and leather	18	24	0.0050	0.09	0.12
Not specified	23	42	0.0050	0.12	0.21
Industry-residual fuel oil	3406	3432	0.0080	27.25	27.46
Industry-natural gas	0	319	0.0005	0.00	0.15
				37.14	37.59
Refineries-residual fuel oil	635	661	0.0060	3.81	3.97
Refineries-refinery gas	211	359	0.0040	0.84	1.44
				4.65	5.40
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	164	465	0.0020	0.33	0.93
Patent fuel	0	0	0.0020	0.00	0.00
Coke	6	204	0.0020	0.01	0.41
Gas coke	108	70	0.0020	0.22	0.14
Brown coal	5331	6968	0.0010	5.33	6.97
BKB	29	47	0.0010	0.03	0.05
Natural gas	0	0	0.0002	0.00	0.00
Gas works	396	426	0.0000	0.00	0.00
Kerosene	433	251	0.0020	0.87	0.50
Gas oil	897	1430	0.0020	1.79	2.86
Residual fuel oil	1122	945	0.0080	8.98	7.56
LPG	732	913	0.0040	2.93	3.65
				20.48	23.07

	United Kingdom			NO_x	
Consumption,ktonnes:	1980	1985	Factor	1980	1985
Power plants-coal	89569	73940	0.0090	806.12	665.46
Power plants-brown coal	0	0	0.0030	0.00	0.00
Power plants-gas oil	198	212	0.0300	5.94	6.36
Power plants-residual fuel oil	6375	9822	0.0100	63.75	98.22
Power plants-natural gas	1377	3175	0.0005	0.63	1.46
				876.44	771.50
Self-producers, hard coal	2409	1714	0.0070	16.86	12.00
Selfproducers,brown coal	0	0	0.0030	0.00	0.00
Selfproducers,gas oil	354	225	0.0400	14.16	9.00
Selfproducers,res.fuel oil	1522	1247	0.0080	12.18	9.98
Selfproducers, natural gas	4787	5302	0.0005	2.20	2.44
				45.40	33.41
Industry-coal	5472	5777	0.0000	0.00	0.00
Iron and steel	121	27	0.0070	0.85	0.19
Chemical, ex feedstock	20	598	0.0070	0.14	4.19
Non-ferrous metals	151	195	0.0070	1.06	1.37
Non-metallic minerals	3026	1995	0.0150	45.39	29.93
Paper, pulp and print	181	242	0.0070	1.27	1.69
Food and tobacco	633	365	0.0070	4.43	2.56
Machinery	0	143	0.0070	0.00	1.00
Transport equipment	484	231	0.0070	3.39	1.62
Textiles and leather	382	205	0.0070	2.67	1.44
Not specified	474	1776	0.0070	3.32	12.43
Industry-brown coal	0	0	0.0020	0.00	0.00
Industry-gas oil	3554	3251	0.0000	0.00	0.00
Iron and steel	232	185	0.0050	1.16	0.93
Chemical, ex feedstock	166	91	0.0050	0.83	0.46
Non-ferrous metals	95	42	0.0050	0.48	0.21
Non-metallic minerals	222	235	0.0050	1.11	1.18
Paper, pulp and print	76	4	0.0050	0.38	0.02
Mining and quarrying	318	320	0.0500	15.90	16.00
Food and tobacco	346	225	0.0050	1.73	1.13
Wood and wood products	49	25	0.0100	0.49	0.25
Machinery	552	343	0.0050	2.76	1.72
Transport equipment	208	163	0.0050	1.04	0.82
Construction	814	702	0.0500	40.70	35.10
Textiles and leather	119	61	0.0050	0.60	0.31
Not specified	357	328	0.0050	1.79	1.64
Industry-residual fuel oil	8637	3373	0.0080	69.10	26.98
Industry-natural gas	150003	145797	0.0005	69.00	67.07
				269.56	210.18
Refineries-residual fuel oil	3526	2188	0.0060	21.16	13.13
Refineries-refinery gas	2046	1949	0.0040	8.18	7.80
				29.34	20.92
Nonindustrial combustion					
Hard coal-res.,comm.,agr.	10698	10340	0.0020	21.40	20.68
Patent fuel	1006	687	0.0020	2.01	1.37
Coke	2242	1984	0.0020	4.48	3.97
Gas coke	0	0	0.0020	0.00	0.00
Brown coal	0	0	0.0010	0.00	0.00
BKB	0	0	0.0010	0.00	0.00
Natural gas	263944	311094	0.0002	55.43	65.33
Gas works	655	378	0.0000	0.00	0.00
Kerosene	1728	1427	0.0020	3.46	2.85
Gas oil	5783	4777	0.0020	11.57	9.55
Residual fuel oil	2458	1745	0.0080	19.66	13.96
LPG	228	334	0.0040	0.91	1.34
				118.92	119.06

APPENDIX 2

Emissions of NOx from stationary emission sources according to OECD (1988) for 1980, information supplied through EMEP, calculated from consumption of fossil fuels for 1980 and 1985, and estimated emissions from stationary sources in 1985 taking into account all available information.

Unit: kilotonnes per year (kt/a, as NO_2)

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Austria.

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	20	20	No information was available until the mid 1988	22.4	23.8	20
Industry						
- combustion	30	50		30.0	26.7	35
- process	10			-	-	
Non-industrial combustion	10			21.0	18.8	15
Sum stationary sources	70	70		73.4	69.3	70

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Belgium

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	74.7			90	52	50
Industry						
- combustion	46.2			82	54	54
- process	19.8			-	-	
Non-industrial combustion	38.1			28	24	36
Sum stationary sources	178.8			200	130	140

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Denmark

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	121.1			95.6	100.0	120
Industry						
- combustion	16.0			28.3	22.1	14
- process	1.0			-	-	
Non-industrial combustion	22.4			23.6	16.1	16
Sum stationary sources	160.5			147.5	138	150

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Finland

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	79.7	106.3[1]	68.7[1]	48.4	31.5	
Industry						
- combustion	11.2	-		≈ 9 + Peat 42.4	≈ 20 kt + Peat 43.4	
- process	9.2	25.7[2]	25.6[2]	-	-	
Non-industrial combustion	26.6	-		15.9	11.8	
Sum stationary sources	126.7	132.0	153.4	106.7	86.7	153

1 Includes all energy production
2 Includes other anthropogenic sources
3 1983 data

Combination of information from different sources. National emissions in kt NO_2/a.
Country: France

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	280			271	97	100
Industry						
- combustion	242.4			306	285	} 285
- processes	61.9					
Non-industrial combustion	213			105	96	200
Sum stationary sources	797.3			682	478	585

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Federal Republic of Germany

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	609.0			692	660	600
Industry						
- combustion	354.6			417	345	} 390
- process	195.8			-	-	
Non-industrial combustion	183.3			143	138	170
Sum stationary sources	1342.1			1252	1143	1160

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Greece

	OECD (1980)	EMEP Questionnaire 1980	1985	Calculated from fuel consumption 1980	1985	Estimated 1985
Electricity generation	21.3			52.7	62.8	60
Industry						
- combustion	28.7			27.5	35.9	35
- processes	5.6			-	-	
Non-industrial combustion	5.3			4.8	5.5	5
Sum stationary sources	60.9			85.0	104.1	100

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Ireland

	OECD (1980)	EMEP Questionnaire 1980	1985	Calculated from fuel consumption 1980	1985	Estimated 1985
Electricity generation	26.7			17.2 (+19)	12.7 (+22)	27
Industry						
- combustion	7.6			13.1	20.2	10
- processes	2.4			-	-	
Non-industrial combustion	4.4			3.9	4.3	5
Sum stationary sources	41.1			34.2	37.1	42

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Italy

	OECD (1980)	EMEP Questionnaire 1980	1985	Calculated from fuel consumption 1980	1985	Estimated 1985
Electricity generation	287.0			254	253	287
Industry						
- combustion	190.4			235	189	200
- processes	50.0			-	-	
Non-industrial combustion	79.3			75	70	70
Sum stationary sources	606.3			564	512	557

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Luxembourg

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	1.8			0	0	
Industry						
- combustion	3.6			6.9	3.7	5
- processes	3.6			-	-	
Non-industrial combustion	2.1			1.1	1.0	1
Sum stationary sources	11.1			8	4.7	6

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Netherlands

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	80.3	80.0	80.0	96.32	78.23	82
Industry						
- combustion	66.0	133.0	127.0	74.7	76.8	75
- processes	21.9			-	-	20
Non-industrial combustion	34.3			44.4	38.8	30
Sum stationary sources	202.5	213	207	215.4	193.8	207

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Norway

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	0		0.3	0.2	0.6	0.6
Industry						
- combustion	13.4	33.4	34.2	35.8*	38.7*	31
- processes	10.6			-	-	
Non-industrial combustion	4.7			3.7	2.6	3
Sum stationary sources	28.7	33.4	34.5	39.7	41.9	34.6

* 14.6 and 20.9 due to gas oil cons. in construction sector

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Portugal

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	19.7			14.1	17.9	22
Industry						
- combustion	13.1			22.4	23.6	40
- processes	26.6					
Non-industrial combustion				1.4	1.6	1.6
Sum stationary sources	59.4			37.9	43.1	63.6

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Spain

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	190			203	207	200
Industry						
- combustion	163			113	92	120
- processes	157			-	-	100
Non-industrial combustion	15.1			18	19	19
Sum stationary sources	525			333	306	440

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Sweden

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	10	10	7	28	25	7
Industry						
- combustion	39	120.2	88.3	42	29	58
- processes	33.7			-	-	
Non-industrial combustion	48			32	19	30
Sum stationary sources	130.7	130.2	95.3	102	73	95

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Switzerland

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	0.4			1.4	0.7	-
Industry						
- combustion	18.4		16.0	19.5	22.1	16
- processes	22.2		32.0	-	-	32
Non-industrial combustion	8.6		8.5	13.6	12.3	8.5
Sum stationary sources	49.6		56.5	34.5	35.0	56

1 1984

Combination of information from different sources. National emissions in kt NO_2/a.
Country: Turkey

	OECD (1980)	EMEP Questionnaire[1] 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation				46	95	
Industry						
- combustion				46	46	
- processes				-	-	
Non-industrial combustion				21	23	
Sum stationary sources				113	164	

1 Turkey reported no data available for NOx yet.

Combination of information from different sources. National emissions in kt NO_2/a.
Country: United Kingdom

	OECD (1980)	EMEP Questionnaire 1980	EMEP Questionnaire 1985	Calculated from fuel consumption 1980	Calculated from fuel consumption 1985	Estimated 1985
Electricity generation	851	851	735	876	771	735
Industry						
- combustion	228	367	331	344	264	260
- processes	30			-	-	
Non-industrial combustion	65			119	119	70
Sum stationary sources	1174	1218	1066	1339	1154	1065

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Emissions of NOx have been estimated for 18 countries in Western Europe on the basis of fuel consumption in stationary sources and emission factors. The calculations are performed for 1980 and 1985, and the results compared with the OECD MAP emisssion survey.

* Kategorier: Åpen - kan bestilles fra NILU A
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