Technical report No 22

Groundwater quality and quantity in Europe

Data and basic information

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1. Introduction

This technical report contains detailed data which are underlying the information evaluated and presented in the EEA Environmental Assessment Report "Groundwater Quality and Quantity in Europe", European Environment Agency (1999). Data were mainly received from questionnaires distributed to 44 European countries through the EEA´s Environmental Information and Observation Network (EIONET). These countries include the 18 EEA member countries, 13 Phare countries, 7 Tacis countries and 6 other European countries. Responses were received from 37 countries.

The questionnaires were structured as follows:

1. General data on pesticide usage/sales.
2. Nitrate monitoring data.
3. Pesticide monitoring data.
4. Monitoring data on chloride, pH-value, alkalinity and electrical conductivity.
5. Other relevant sources of pollution.
6. Quantity data on inland water/groundwater.
7. Areas with groundwater over-exploitation.
8. Wetlands endangered from groundwater over-exploitation.
9. Most important human interventions affecting groundwater.
10. National strategies to improve groundwater quality and quantity.

Additional information was found in reviews of literature and reports (e.g. National State of the Environment reports), reports prepared by international organisations (including EUROSTAT, FAO, OECD) and on the World Wide Web.

2. Groundwater quality and quantity in Europe

The European Topic Centre on Inland Waters (ETC/IW) has prepared an Environmental Assessment Report on groundwater quality and quantity on behalf of the European Environment Agency (EEA). The report also provides the basis for the groundwater chapter of the updated review of 'Europe's environment — the second assessment, 1998' and for the groundwater aspects of the report 'Environment in the European Union at the turn of the century'. It will also aid the European Commission's review of progress made in implementing the 5th Environmental Action Programme "Towards Sustainability".

The assessment report provides overviews (largely in the form of maps and other geographical applications) of groundwater status using key quality indicators such as nitrate, pesticides, chloride, pH, alkalinity and electrical conductivity. Indicators used for the evaluation of groundwater quantity issues include identification of areas with groundwater over-exploitation, saltwater intrusion and wetlands endangered by groundwater over-exploitation. Important human interventions in the hydrological cycle are also considered. The report follows where possible the, **DPSIR** framework for Integrated Environmental Assessment: **D**riving forces, **P**ressures, **S**tatus, **I**mpacts and **R**esponses.

3. Contents of the technical report

The information used in the assessment report on groundwater quantity and quality is listed below and then presented in the following pages. The questionnaire distributed to EEA National Focal Points through EIONET is also included.

Groundwater quantity and quality questionnaire

Table 1 Usage of commercial nitrogen fertilisers in EU-15 (in 1000 t N)

	Country	1970	1975	1980	1985	1990	1991	1992	1993	1994
	EUR 15	6,826	8,227	9,994	10,869	10,218	9,877	9,058	9,207	9,600
	EUR 12	6,305	7,649	9,393	10,256	9,665	9,404	8,549	8,684	9,069
AT	Austria	126	121	160	165	135	132	124	124	122
BE	Belgium ®	167	169	180	178	166	161	152	169	168
DK	Denmark ®	289	339	374	382	395	370	333	326	316
FI	Finland	169	199	197	202	207	166	174	173	198
FR	France	1,453	1,708	2,147	2,408	2,492	2,569	2,154	2,222	2,308
DE	Germany	1,642	1,906	2,303	2,286	1,788	1,720	1,680	1,612	1,787
GR	Greece ®	201	275	333	450	427	408	393	338	334
IR	Ireland	87	153	275	314	370	358	353	401	429
IT	Italy	595	724	1,006	1,055	879	907	910	918	879
LU	Luxembourg ®	11	14	14	17	20	21	21	:	:
NL	Netherlands	405	453	483	500	390	392	390	370	380
ES	Spain ®	578	722	902	962	1,063	999	818	929	919
SE	Sweden ®	226	258	244	246	212	175	211	226	210
PT	Portugal	77	141	137	137	150	135	127	130	137
UK	United Kingdom ®	801	1,045	1,240	1,568	1,525	1,365	1,219	1,268	1,412

Source: FAO = FAOSTAT PC, ~04/1995

Remarks:
- Data include estimates
- Data refer to the total amounts included in both straight and compound fertilisers, and are related to the apparent usage during the fertiliser year (generally 1 July to 30 June) if not stated otherwise. Thus data for, e.g., 1980, refer to apparent usage during the twelve-months period from 1 July 1980 to 30 June 1981
- FAO data for Belgium include Luxembourg; therefore the data on fertilisers provided by the "Ministère de l'agriculture" of Luxembourg (where available = 1970-1992) have been subtracted from FAO data for Belgium.

®:
BE 1993 data include Luxembourg
DK Fertiliser year: August-July.
GR Fertiliser year: calendar year
ES Fertiliser year: calendar year.
LU Fertiliser year: July-June.
SE Fertiliser year: June-May. Data include quantities used for forest fertilisation.
UK Fertiliser year: June-May.

Table 2 Usage of N-fertiliser related to agricultural area (1994, 1995)

Sources: N-Fertiliser Usage 1994, Land Area 1994: FAO; Land Area 1995: EUROSTAT

code	country	N-Fertiliser Usage (t)	Land Area (km²)	Agricultural Area (km²)	Agric. area / Land area	kg N-fert. / ha agric. area
EEA 18						
AT	Austria	122,000	82,748	34,490	42%	35.4
BE	Belgium+Luxembourg	168,000	32,820	14,820	45%	113.4
DK	Denmark	316,000	42,394	27,150	64%	116.4
FI	Finland	198,470	304,600	27,040	9%	73.4
FR	France	2,308,400	537,578	300,560	56%	76.8
DE	Germany	1,787,000	349,172	173,440	50%	103.0
GR	Greece	334,000	128,837	87,520	68%	38.2
IS	Iceland	13,000	100,250	22,800	23%	5.7
IE	Ireland	429,000	68,894	43,910	64%	97.7
IT	Italy	879,200	294,123	156,730	53%	56.1
LI	Liechtenstein		160	100	63%	
LU	Luxembourg		2,558	1,270	50%	
NL	Netherlands	380,000	38,106	19,630	52%	193.6
NO	Norway	110,000	306,830	10,300	3%	106.8
PT	Portugal	137,000	91,469	39,810	44%	34.4
ES	Spain	918,700	500,220	250,930	50%	36.6
SE	Sweden	210,230	411,614	34,380	8%	61.1
UK	United Kingdom	1,412,000	240,824	158,520	66%	89.1
PHARE 13						
AL	Albania	14,980	27,400	11,260	41%	13.3
BA	Bosnia Herzegovina	4,400	51,000	20,000	39%	2.2
BG	Bulgaria	162,628	110,550	60,180	54%	27.0
CZ	Czech Republic	254,000	77,280	42,760	55%	59.4
EE	Estonia	26,068	42,270	14,540	34%	17.9
MK	FYROM	3,000	25,430	12,960	51%	2.3
HU	Hungary	242,000	92,340	61,220	66%	39.5
LV	Latvia	40,000	62,050	25,400	41%	15.7
LT	Lithuania	6,000	64,800	35,200	54%	1.7
PL	Poland	836,149	304,420	186,970	61%	44.7
RO	Romania	227,552	230,340	147,970	64%	15.4
SK	Slovak Republic	80,250	48,080	24,490	51%	32.8
SI	Slovenia	44,900	20,120	7,880	39%	57.0
TACIS 7						
AM	Armenia	7,000	28,200	12,880	46%	5.4
AZ	Azerbaijan	34,000	86,600	42,000	48%	8.1
BY	Belarus	250,000	207,480	92,490	45%	27.0
GE	Georgia	26,000	69,700	30,130	43%	8.6
MD	Moldova Republic	60,000	32,970	26,140	79%	23.0
RU	Russian Fed.	980,000	1,6888,500	2,196,090	13%	4.5
UA	Ukraine	840,000	579,350	418,610	72%	20.1
OTHERS						
HR	Croatia	95,000	55,920	23,120	41%	41.1
CY	Cyprus	14,404	9,240	1,470	16%	98.0
MT	Malta	1,000	320	130	41%	76.9
YU	Federal Republic of Yugoslavia	70,000	102,000	62,020	61%	
CH	Switzerland	60,000	39,550	15,810	40%	38.0
TR	Turkey	1,007,000	769,630	401,490	52%	25.1

Table 3 Trends in nitrate fertiliser usage related to agricultural area in kg/ha. (Source: FAO)

		N-fertiliser / agricultural area [in kg/ha]			Trend
code	country	1985	1990	1994	1990-94
EEA18					
AT	Austria	47	39	35.4	-9.3 %
BE	Belgium + Luxembourg	128	125	113.4	-9.3 %
DK	Denmark	135	142	116.4	-18.0 %
FI	Finland	79	81	73.4	-9.4 %
FR	France	77	81	76.8	-5.2 %
DE	Germany			103.0	
GR	Greece	49	47	38.2	-18.8 %
IS	Iceland	6	5	5.7	14.0 %
IE	Ireland	55	66	97.7	48.0 %
IT	Italy	62	52	56.1	7.9 %
LI	Liechtenstein			0.0	
NL	Netherlands	248	194	193.6	-0.2 %
NO	Norway	112	113	106.8	-5.5 %
PT	Portugal	34	37	34.4	-7.0 %
ES	Spain	31	35	36.6	4.6 %
SE	Sweden	70	62	61.1	-1.4 %
UK	United Kingdom	86	85	89.1	4.8 %
PHARE 13					
AL	Albania	67	66	13.3	-79.8 %
BA	Bosnia Herzegovina		12	2.2	-81.7 %
BG	Bulgaria	77	73	27.0	-63.0 %
CZ	Czech Republic			59.4	
EE	Estonia		50	17.9	-64.1 %
MK	FYROM			2.3	
HU	Hungary	85	55	39.5	-28.1 %
LV	Latvia		46	15.7	-65.8 %
LT	Lithuania		61	1.7	-97.2 %
PL	Poland	71	39	44.7	14.7 %
RO	Romania	47	44	15.4	-65.0 %
SK	Slovak Republic			32.8	
SI	Slovenia		25	57.0	127.9 %
TACIS 7					
AM	Armenia			5.4	
AZ	Azerbaijan			8.1	
BY	Belarus		72	27.0	-62.5 %
GE	Georgia			8.6	
MD	Moldova		51	23.0	-55.0 %
RU	Russian Federation		20	4.5	-77.7 %
UA	Ukraine	53	44	20.1	-54.4 %
OTHERS					
HR	Croatia		46	41.1	-10.7 %
CY	Cyprus	61	77	98.0	27.3 %
MT	Malta	40	54	76.9	
YU	Federal Republic of Yugoslavia				
CH	Switzerland	36	31	38.0	22.4 %
TR	Turkey	25	33	25.1	-24.0 %

Table 4 Total pesticides sales (tonnes of active ingredients)

Code	Country	notes	1988	1989	1990	1991	1992	1993	1994	1995	1996
	EEA18										
AT	Austria	1	:	4,615	4,246	4,489	3,897	3,983	3,620	*3403*	:
BE	Belgium		9,818	10,086	10,264	9,969	10,426	10,286	:		:
DK	Denmark		5,253	5,795	5,650	4,628	4,566	4,103	3,919	*4809*	:
FI	Finland		1,874	2,229	2,055	1,742	1,430	1,280	1,317	*1078*	:
FR	France		99,167	100,433	97,701	103,434	84,709	91,953	:	*84,006*	:
DE	Germany		36,774	34,625	33,146	36,944	33,570	28,930	29,769	*34,531*	:
GR	Greece		6,754	8,151	:	:	8,595	8,595	:	:	:
IS	Iceland		:	:	:	:	:	:	*7*	:	:
IE	Ireland		:	:	1,745	1,916	1,942	:	:	:	:
IT	Italy		100,579	91,070	91,680	:	:	:	*157,981*	:	:
LI	Liechtenstein		:	:	:	:	:	:	:		:
LU	Luxembourg		:	:	:	253	:	:	:	*384*	:
NL	Netherlands		18,172	19,146	18,835	17,306	15,921	11,761	*12,876*	:	:
NO	Norway		:	:	:	:	:	750	:	*903.2*	:
PT	Portugal		21,570	:	:	9,355	6,117	8,984	9,581	:	:
ES	Spain	1	128,839	134,150	112,735	111,532	86,666	79,551	84,341	*70,965*	:
SE	Sweden		2,865	2,423	2,344	1,837	1,511	1,464	1,961	:	:
UK	United Kingdom	1	31,672	:	31,073	:	27,746	:	*29,152*	:	:
	PHARE 13										
AL	Albania		:	:	:	:	:	*120*	*200*	*250*	:
BA	Bosnia & Herzegovina		:	:	***1658***	:	:	:	:	:	:
BG	Bulgaria	3	:	:	:	:	:	:	:	:	*6768*
CZ	Czech Republic		:	:	:	:	:	:	:	*3908*	:
EE	Estonia	1	:	:	:	:	:	:	:	*143.8*	:
MK	FYROM		:	:	:	:	:	:	:	:	:
HU	Hungary	1	:	:	*24500*	*17700*	*17900*	*18800*	*17100*	*14200*	:
LV	Latvia	1	:	:	:	:	:	:	:	*12000*	:
LT	Lithuania	1	:	:	:	:	:	:	:	:	*896.4*
PL	Poland	5	:		7548	5217	6755	6792	7335	6962	9420
RO	Romania		:	:	:	:	:	:	:	:	:
SK	Slovak Republic	1	:	:	:	:	:	:	:	*39876*	:
SI	Slovenia		:	:	:	:	:	:	:	*1495*	:
	TACIS 7										
AM	Armenia		:	:	:	:	:	:	:	:	:
AZ	Azerbaijan		:	:	:	:	:	:	:	:	:
BY	Belarus		:	:	***7400***	:	:	:	:	:	:
GE	Georgia		:	:	:	:	:	:	:	:	:
MD	Moldova, Rep. of	1	:	:	*22000*	:	:	:	:	*4981*	*2850*
RU	Russian Fed.		:	:	***50600***	:	:	:	:	:	:
UA	Ukraine		:	:	***43700***	:	:	:	:	:	:
	OTHERS										
HR	Croatia		:	:	***6120***	:	:	:	:	:	:
CY	Cyprus		:	***2093***	:	:	:	:	:	:	:
MT	Malta	1	:	:	:	:	:	:	:	53	:
YU	Serbia Montenegro		:	:	:	:	:	:	:	:	:
CH	Switzerland	2	*2455*	*2464*	*2283*	*2056*	*2022*	*1935*	*1921*	*1827*	:
TR	Turkey	4	:	:	*5198*	*28220*	*27593*	*32363*	*28962*	*33949*	:

Footnotes

1 *Usage data from questionnaire response*
2 *Switzerland + Liechtenstein*
3 *Formulations, usage data*
4 *Usage data except '90*
5 *Data from Polish Central Statistical Office*

Source: *Boxed italics: questionnaire, 1997*
Underlined: OECD, 1995
Normal text: EUROSTAT
italics: DOBRIS

Table 5 Herbicides sales (tonnes of active ingredients)

Country	notes	1988	1989	1990	1991	1992	1993	1994	1995	1996
EEA18										
Austria	1	:	2,577	1,945	2,167	1,859	1,873	1,549	*1607*	:
Belgium		5,145	5,264	5,213	5,091	5,120	5,560	5,971	:	:
Denmark		3,762	3,969	3,128	2,867	2,824	2,632	2,685	*3281*	:
Finland		1,429	1,726	1,580	1,375	1,007	843	929	*791*	:
France		36,073	36,189	37,429	33,713	27,281	25,982	:	*27,416*	:
Germany		21,754	18,892	16,970	18,999	15,707	12,696	14,834	*16,065*	:
Greece		2,212	3,020	:	:	2,135	2,308	:	:	:
Ireland		:	:	985	1,097	1,001	:	:	:	:
Italy		10,843	10,566	10,267	:	:	:	*24,917*	:	:
Luxembourg	1	:	:	:	121	:	:	:	*188*	:
Netherlands		3,639	3,330	3,468	3,312	2,987	2,796	*3,481*	:	:
Portugal		5,000	:	:	1,801	1,192	1,307	1,572	:	:
Spain	1	19,062	20,342	21,884	22,459	19,610	17,283	19,941	*16,423*	:
Sweden		2,009	1,852	1,631	1,054	937	1,093	1,507	:	:
United Kingdom	1	22,403	:	21,266	:	18,376	:	*20,165*	:	:
Iceland				*2*	*2*	*2*	*3*	*4*		:
Liechtenstein										:
Norway		**919**	**857**	**965**	**564**	**561**	**510**	**626**	*689.2*	:
PHARE13										
Albania		:	:	:	:	:	*5*	*7*	*8*	:
Bosnia & Herzegovina		:	:	***610***	:	:	:	:	:	:
Bulgaria	3	:	:	:	:	:	:	:	:	*3465*
Czech Republic		:	:	:	:	:	:	:	*2348*	:
Estonia	1	:	:	:	:	:	:	:	*108.7*	:
FYROM		:	:	:	:	:	:	:	:	:
Hungary	1	:	:	*11600*	*9800*	*10000*	*10400*	*8300*	*7000*	:
Latvia	1	:	:	:	:	:	:	:	:	:
Lithuania	1	:	:	:	:	:	:	:	:	*630.9*
Poland	5	:		:	2948	4189	4295	4270	*3940*	5534
Romania		:	:	:	:	:	:	:	:	:
Slovak Republic	1	:	:	:	:	:	:	:	*19713*	:
Slovenia		:	:	:	:	:	:	:	*418*	:
TACIS 7										
Armenia		:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:
Belarus		:	:	***3700***	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:
Moldova, Republic of	1	:	:	*4100*	:	:	:	:	*648*	*439*
Russian Federation		:	:	***2530***	:	:	:	:	:	:
Ukraine		:	:	***21850***	:	:	:	:	:	:
REST 6										
Croatia		:	:	***3221***	:	:	:	:	:	:
Cyprus		:	***132***	:	:	:	:	:	:	:
Malta	1	:	:	:	:	:	:	:	*2*	:
Serbia Montenegro		:	:	:	:	:	:	:	:	:
Switzerland	2	*885*	*925*	*824*	*782*	*750*	*676*	*668*	*657*	:
Turkey		:	:	*463*	*7191*	*5861*	*9133*	*8511*	*7583*	:

Footnotes:
1 *Usage data of questionnaire response*
2 *Switzerland + Liechtenstein*
3 *Formulations, usage data*
4 *Usage data except '90*
5 *Data from Polish Central Statistical Office*

Source *Boxed italics: questionnaire, 1997*
Shaded bold: Yearbook of Nordic Statistics, 1996
Underlined: OECD, 1995
Normal text: EUROSTAT
Italics: DOBRIS

Table 6 Fungicides sales (tonnes of active ingredients)

Country	notes	1988	1989	1990	1991	1992	1993	1994	1995	1996
EEA 18										
Austria	1	:	1,497	1,683	1,843	1,483	1,580	1,560	*1409*	:
Belgium		2,583	2,637	2,743	2,837	3,292	2,789	:	*:*	:
Denmark		1,082	1,270	1,396	1,426	1,333	1,033	892	*1055*	:
Finland		144	178	163	146	194	210	209	*114*	:
France		49,774	46,193	41,514	55,565	44,786	54,254	:	*42,578*	:
Germany		10,299	10,809	10,984	9,760	9,368	7,660	7,698	*9,652*	:
Greece		1,638	1,925	:	:	2,734	2,467	:	:	:
Iceland		:	:	*0*	*1*	*1*	*1*	*3*	:	:
Ireland		:	:	460	535	663	:	:	:	:
Italy		65,571	57,088	58,473	:	:	:	*83,350*	:	:
Liechtenstein		:	:	:	:	:	:	:	:	:
Luxembourg	1	:	:	:	113	:	:	:	*157*	:
Netherlands		4,147	4,052	4,140	4,281	4,192	4,007	*4,576*	:	:
Norway		**108**	**119**	**153**	**133**	**133**	**164**	**145**	*167.3*	:
Portugal		12,870	:	:	6,511	3,932	6,707	7,133	:	:
Spain	1	27,494	29,011	26,251	24,695	21,851	19,924	22,077	*18,605*	:
Sweden		679	499	643	723	516	318	369	:	:
United Kingdom	1	6,416	:	6,435	:	6,104	:	*5,437*	:	:
PHARE13										
Albania		:	:	:	:	:	*43*	*73*	*93*	:
Bosnia & Herzegovina		:	:	***403***	:	:	:	:	:	:
Bulgaria	3	:	:	:	:	:	:	:	:	*2600*
Czech Republic		:	:	:	:	:	:	:	*1121*	:
Estonia	1	:	:	:	:	:	:	:	*13.9*	:
FYROM		:	:	:	:	:	:	:	:	:
Hungary	1	:	:	*7200*	*4200*	*4200*	*4800*	*5200*	*3800*	:
Latvia	1	:	:	:	:	:	:	:	:	:
Lithuania	1	:	:	:	:	:	:	:	:	*139*
Poland	5	:		:	1362	1941	1853	2328	*2272*	2986
Romania		:	:	:	:	:	:	:	:	:
Slovak Republic	1	:	:	:	:	:	:	:	*10776*	:
Slovenia		:	:	:	:	:	:	:	*693*	:
TACIS 7										
Armenia		:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:
Belarus		:	:	***814***	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:
Moldova, Republic of	1	:	:	*12500*	:	:	:	:	*3320*	*2850*
Russian Federation		:	:	***5566***	:	:	:	:	:	:
Ukraine		:	:	***4807***	:	:	:	:	:	:
OTHERS 6										
Croatia		:	:	***1396***	:	:	:	:	:	:
Cyprus		:	***1532***	:	:	:	:	:	:	:
Malta	1	:	:	:	:	:	:	:	*44.6*	:
Serbia Montenegro		:	:	:	:	:	:	:	:	:
Switzerland	2	*1120*	*1112*	*988*	*912*	*953*	*982*	*973*	*949*	:
Turkey	4	:	:	*744*	*5599*	*5910*	*5868*	*4862*	*4937*	:

Footnotes:

1 *Usage data from questionnaire response*
2 *Switzerland + Liechtenstein*
3 *Formulations, usage data*
4 *Usage data except '90*
5 *Data from Polish Central Statistical Office*

Source: *Boxed italics: questionnaire, 1997*
Shaded bold: Yearbook of Nordic Statistics, 1996
Underlined: OECD, 1995
Normal text: EUROSTAT
italics: DOBRIS

Table 7 Insecticides sales (tonnes of active ingredients)

Country	notes	1988	1989	1990	1991	1992	1993	1994	1995	1996
EEA18										
Austria	1	:	243	285	158	144	141	137	*123*	:
Belgium		1,398	1,383	1,295	1,167	1,269	1,128	1,003	:	:
Denmark		150	226	259	146	128	107	95	*163*	:
Finland		184	196	101	69	105	138	87	*69*	:
France		9,658	10,726	11,039	10,326	7,945	6,676	:	*7,091*	:
Germany		1,350	1,469	1,638	3,968	4,114	4,361	*4,006*	*4,925*	:
Greece		2,731	2,844	:	:	2,292	2,375	:	:	:
Iceland		:	:	*0*	*0*	*0*	*0*	*0*	:	:
Ireland		:	:	149	163	144	:	:	:	:
Italy		11,481	10,744	10,943	:	:	:	*31,574*	:	:
Liechtenstein		:	:	:	:	:	:	:	:	:
Luxembourg	1	:	:	:	10	:	:	:	*12*	:
Netherlands		9,153	10,575	9,668	8,273	7,319	3,058	*533*	:	:
Norway		**38**	**27**	**19**	**19**	**27**	**17**	**19**	*19.5*	:
Portugal		2,700	:	:	831	754	776	728	:	:
Spain	1	53,019	52,754	32,169	47,191	25,528	21,948	22,372	*18,123*	:
Sweden		103	39	26	19	29	15	41	:	:
United Kingdom	1	804	:	760	:	625	:	*646*	:	:
PHARE 13										
Albania		:	:	:	:	:	*70*	*116*	*145*	:
Bosnia & Herzegovina		:	:	***555***	:	:	:	:	:	:
Bulgaria	3	:	:	:	:	:	:	:	:	*703*
Czech Republic		:	:	:	:	:	:	:	*119*	:
Estonia	1	:	:	:	:	:	:	:	*2.1*	:
FYROM		:	:	:	:	:	:	:	:	:
Hungary	1	:	:	*4800*	*3200*	*3000*	*4800*	*2400*	*2000*	:
Latvia	1	:	:	:	:	:	:	:	:	:
Lithuania	1	:	:	:	:	:	:	:	:	*2.6*
Poland		:		:	334	363	401	300	445	434
Romania		:	:	:	:	:	:	:	:	:
Slovak Republic	1	:	:	:	:	:	:	:	9387	:
Slovenia		:	:	:	:	:	:	:	260	:
TACIS 7										
Armenia		:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:
Belarus		:	:	***2442***	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:
Moldova, Republic of	1	:	:	*4600*	:	:	:	:	*641*	*605*
Russian Federation		:	:	***16798***	:	:	:	:	:	:
Ukraine		:	:	***14421***	:	:	:	:	:	:
OTHERS										
Croatia		:	:	***1229***	:	:	:	:	:	:
Cyprus		:	***305***	:	:	:	:	:	:	:
Malta	1	:	:	:	:	:	:	:	*6.4*	:
Serbia Montenegro		:	:	:	:	:	:	:	:	:
Switzerland	2	*385*	*359*	*390*	*289*	*269*	*238*	*246*	*186*	:
Turkey	4	:	:	*2996*	*10412*	*13125*	*12265*	*11229*	*14850*	:

Footnotes:

1 Usage data from questionnaire response
2 Switzerland + Liechtenstein
3 Formulations, usage data
4 Usage data except '90
5 Data from Polish Central Statistical Office

Source: Boxed italics: questionnaire, 1997
Shaded bold: Yearbook of Nordic Statistics, 1996
Underlined: OECD, 1995
Normal text: EUROSTAT
italics: DOBRIS

Table 8 Other pesticides sales (tonnes of active ingredients)

Country	notes	1988	1989	1990	1991	1992	1993	1994	1995	1996
EEA18										
Austria	1	:	298	333	321	412	390	374	*264*	:
Belgium		692	802	1,012	874	745	809	863	:	:
Denmark		259	330	867	189	281	331	247	*310*	:
Finland		117	129	211	152	124	89	92	*103*	:
France		3,662	7,325	7,719	3,830	4,697	5,041	:	*6,921*	:
Germany		3,371	3,455	3,554	4,217	4,381	4,213	*3,231*	*3,889*	:
Greece		173	362	:	:	1,432	1,444	:	:	:
Iceland		:	:	*0*	*1*	*0*	*0*	*0*	:	:
Ireland		:	:	151	121	134	:	:	:	:
Italy		12,686	12,673	11,998	:	:	:	*18,140*	:	:
Liechtenstein		:	:	:	:	:	:	:	:	:
Luxembourg	1	:	:	:	9	:	:	:	*27*	:
Netherlands		1,233	1,189	1,559	1,440	1,423	1,900	*4,286*	:	:
Norway		**129**	**31**	**46**	**45**	**44**	**58**	**58**	*54.2*	:
Portugal		1,000	:	:	212	239	194	148	:	:
Spain	1	29,264	32,043	32,431	17,187	19,677	20,396	19,951	*17,814*	:
Sweden		74	33	44	41	29	38	44	:	:
United Kingdom	1	2,049	:	2,612	:	2,642	:	*2,905*	:	:
PHARE 13										
Albania		:	:	:	:	:	*2*	*3*	*4*	:
Bosnia & Herzegovina		:	:	***90***	:	:	:	:	:	:
Bulgaria		:	:	:	:	:	:	:	:	:
Czech Republic		:	:	:	:	:	:	:	*320*	:
Estonia	1	:	:	:	:	:	:	:	*19.1*	:
FYROM		:	:	:	:	:	:	:	:	:
Hungary	1	:	:	*900*	*600*	*700*	*800*	*1200*	*1400*	:
Latvia	1	:	:	:	:	:	:	:	:	:
Lithuania	1	:	:	:	:	:	:	:	:	*123.9*
Poland	5	:		:	574	263	242	437	306	466
Romania		:	:	:	:	:	:	:	:	:
Slovak Republic	1	:	:	:	:	:	:	:	:	:
Slovenia		:	:	:	:	:	:	:	*124*	:
TACIS 7										
Armenia		:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:
Belarus		:	:	***444***	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:
Moldova, Republic of	1	:	:	*800*	:	:	:	:	*186*	*160*
Russian Federation		:	:	***3086***	:	:	:	:	:	:
Ukraine		:	:	***2622***	:	:	:	:	:	:
OTHER 6										
Croatia		:	:	***274***	:	:	:	:	:	:
Cyprus		:	***124***	:	:	:	:	:	:	:
Malta	1	:	:	:	:	:	:	:	*0*	:
Serbia Montenegro		:	:	:	:	:	:	:	:	:
Switzerland	2	*65*	*68*	*81*	*73*	*49*	*39*	*33*	*34*	:
Turkey	3	:	:	*1715*	*5018*	*2697*	*5097*	*4360*	*5792*	:

Footnotes:

1 *Usage data from questionnaire response*
2 *Switzerland + Liechtenstein*
3 *Formulations, usage data*
4 *Usage data except '90*
5 *Data from Polish Central Statistical Office*

Source: *Boxed italics: questionnaire, 1997*
Shaded bold: Yearbook of Nordic Statistics, 1996
Underlined: OECD, 1995
Normal text: EUROSTAT
italics: DOBRIS

Table 9 Number of approved active ingredients. (EUROSTAT 1997 and ETC/IW questionnaire)

Country	Code	year	approved active ingredients
Albania	AL	1995	50
Armenia	AM		:
Austria	AT	1995	271
Azerbaijan	AZ		:
Belarus	BY		:
Belgium	BE	1993	339
Bosnia & Herzegovina	BA		:
Bulgaria	BG	1996	288
Croatia	HR		:
Cyprus	CY		:
Czech Republic	CZ	1995	227
Denmark	DK	1995	206
Estonia	EE		:
Finland	FI	1997	162
France	FR	1993	525
FYROM	MK		:
Georgia	GE		:
Germany	DE	1993	227
Greece	GR	1993	403
Hungary	HU	1995	310
Iceland	IS		:
Ireland	IE	1993	350

Country	Code	year	approved active ingredients
Italy	IT	1993	391
Latvia	LV		:
Liechtenstein	LI		:
Lithuania	LT		:
Luxembourg	LU	1993	214
Malta	MT	1995	4
Republic of Moldova	MD	1995	145
Netherlands	NL	1994	302
Norway	NO	1995	118
Poland	PL	1995	250
Portugal	PT	1993	250
Romania	RO	1997	530
Russian Federation	RU		:
Federal Republic of Yugoslavia	YU		:
Slovak Republic	SK	1995	350 (1)
Slovenia	SI		:
Spain	ES	1993	531
Sweden	SE	1993	123
Switzerland	CH		:
Turkey	TR	1995	374
Ukraine	UA		:
United Kingdom	UK	1995	450

(1) Data from Ministry of Environment of the Slovak Republic

Table 10 Pesticide usage related to arable land and permanent crop land (in kg/ha)

Code	Country	Reference year	Total pesticides (t)	Arable land + perm. crop land (km²)	Pesticides / arable + crop kg/ha
EEA18					
AT	Austria	1995	3,403	14,790	2.30
BE	Belgium+Luxembourg	1994	10,286	8,620	11.93
DK	Denmark	1995	4,809	25,027	1.92
FI	Finland	1995	1,078	21,460	0.50
FR	France	1995	84,006	192,850	4.36
DE	Germany	1995	34,531	120,440	2.87
GR	Greece	1993	8,595	33,310	2.58
IS	Iceland	1994	7	60	1.17
IE	Ireland	1992	1,942	9,610	2.02
IT	Italy	1994	157,981	111,430	14.18
LI	Liechtenstein			40	
LU	Luxembourg	1995	384	590	6.51
NL	Netherlands	1994	12,876	9,185	14.02
NO	Norway	1995	903.2	9,010	1.00
PT	Portugal	1994	9,581	23,942	4.00
ES	Spain	1995	70,965	148,340	4.78
SE	Sweden	1994	1,961	27,700	0.71
UK	United Kingdom	1994	29,152	60,110	4.85
PHARE 13					
AL	Albania	1995	250	7,020	0.36
BA	Bosnia Herzegovina	1990	1,658	8,000	2.07
BG	Bulgaria	1996	6,768*	42,190	1.60
CZ	Czech Republic	1995	3,908	33,860	1.15
EE	Estonia	1995	143.8	11,440	0.13
MK	FYROM			6,610	
HU	Hungary	1995	14,200	49,740	2.85
LV	Latvia	1995	12,000	17,400	6.90
LT	Lithuania	1996	896.4	30,460	0.29
PL	Poland	1995	19,687	146,420	1.34
RO	Romania			99,250	
SK	Slovak Republic	1995	4,500(1)	-	1.8(1)
SI	Slovenia	1995	1,495	2,860	5.23
TACIS 7					
AM	Armenia			6,000	
AZ	Azerbaijan			20,000	
BY	Belarus			62,030	
GE	Georgia			11,270	
MD	Republic of Moldova	1996	2,850	21,800	1.31
RU	Russian Federation	1990	50,600	1,323,020	0.38
UA	Ukraine	1990	43,700	343,570	1.27
OTHERS					
HR	Croatia	1990	6,120	12,210	5.01
CY	Cyprus	1989	2,093	1,430	14.64
MT	Malta	1995	53	130	4.08
YU	Federal Republic of Yugoslavia			40,850	
CH	Switzerland	1995	1,827	4,340	4.21
TR	Turkey	1995	33,949	277,710	1.22

Source: FAO, EUROSTAT, OECD, questionnaire *…usage data of pesticide formulations

(1) Data from Ministry of Environment of the Slovak Republic

Table 11 Average long term annual atmospheric precipitation, evapotranspiration, inflow and outflow (in Mio m³/year)

Country	Date*	precipitation (p)	evaporation (e)	internal resources (p-e)	inflow (i)	outflow (o)	total fresh water resource (p-e+i)
EEA18							
Austria		98000	43000	55000	29000	84000	84000
Belgium		27100	14700	12400	4100	:	16500
Denmark		28761	22646	6115	0	15624	6115
Finland		222000	115000	107000	3200	110000	110200
France	1994	440000	270000	170000	18000	180000	188000
Germany		274000	179000	95000	69000	:	164000
Greece		112000	65000	47000	13500	:	60500
Iceland		200000	30000	170000	0	170000	170000
Ireland		80825	31627	49198	3000	*40000*	52198
Italy		296000	129000	167000	8000	*155000*	175000
Liechtenstein		:	:	:	:	:	:
Luxembourg		2030	1125	905	2300	:	3205
Netherlands		30100	19500	10600	80400	*86000*	91000
Norway		458460	76140	382320	9720	392000	392040
Portugal	1996	81190	40595	40595	24710	53833	65305
Spain		342000	231000	111000	0	:	111000
Sweden		314975	144000	170975	3000	178000	173975
United Kingdom		263645	118617	145028	10	:	145038
PHARE 13							
Albania		:	:	:	:	:	:
Bosnia & Herzegovina		:	:	:	:	:	:
Bulgaria	1995	65268	50106	15162	329	15491	15491
Czech Republic	1995	54650	41800	12850	690	15710	13540
Estonia	1995	28576	:	:	:	12344	:
FYROM		:	:	:	:	:	:
Hungary	1994	58000	52000	6000	114000	120000	120000
Latvia	1995	:	:	:	:	:	:
Lithuania	1995	44010	28500	15510	8900	24400	24410
Poland (1)	1995	205054	151667	53387	7213	61600	60600
Romania	®	150186	166873	-16687	:	:	:
Slovak Republic	1995	37000	24000	13000	79000	91000	92000
Slovenia	1994	31800	13200	18600	13700	30000	32300
TACIS 7							
Armenia		:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:
Belarus		:	:	:	:	:	:
Georgia		:	:	:	:	:	:
Moldova, Republic		:	:	:	:	:	:
Russian Federation		:	:	:	:	:	:
Ukraine		:	:	:	:	:	:
OTHERS							
Croatia	1996	61555	45230	16325	127279	171869	143604
Cyprus	1995	4600	3450	1150	0	260	1150
Malta		:	:	:	:	:	:
Federal Republic of Yugoslavia		:	:	:	:	:	:
Switzerland		:	60100	19950	40150	13100	60100
Turkey		501000	274000	227000	7000	186000	234000

Remarks: Romania: calculated from mm
Date*: long term annual average unless year given

Source: EUROSTAT (1997)
Groundwater Questionnaire, 1996
OECD, 1995
(1) Data from Polish Statistical Office

Table 12 Total annual fresh water abstractions by source (in Mio m³/year)

country	latest year	Total annual freshwater abstraction			Total annual fresh surface water abstraction			Total annual fresh groundwater abstraction			groundwater abstraction in % of freshwater abstraction		
		1985	1990	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest year
EEA18													
Austria	1994	2120	2427*	2207*	1005	988*	920*	1115	1385*	1236*	52.6	57.1	56.0
Belgium		:	:	:	:	:	:	:	:	:	:	:	:
Denmark	1995	1200*	930*	915	4	5	3	1200	930*	915*	100.0	100.0	100.0
Finland	1995	4000	2347	2404	3680	2087	1781	320	240	239	8.0	10.2	9.9
France	1995	34887*	37686	40670*	28714*	31485*	34644*	6173	6201*	5460	17.7	16.5	13.4
Germany	1991	41216	58852	46272	34225	51125		6991	7727		17.0	13.1	:
Greece		:	:	:	:	:	:	:	:	:	:	:	:
Iceland	1995	103	164	164	8	14	14	95	150	150	92.2	91.5	91.5
Ireland		:	:	:	:	:	:	:	:	:	:	:	:
Italy		52000	:	:	40000	:	:	12000	:	:	23.1	:	:
Liechtenstein		:	:	:	:	:	:	:	:	:	:	:	:
Luxembourg	1995	:	261*	57	:	217	28	:	43	29		16.5	50.9
Netherlands	1991	9348	7800	7798	8240	6751	:	1108	1049	1049	11.9	13.4	13.5
Norway		2025	:	:	1620	:	:	405	:	:	20.0	:	:
Portugal	1996	2003	7288	:	:	4223	7060	:	3065	:	:	42.1	:
Spain	1995	46250	33289	33300	40840	31400	:	5410	5500	5500	11.7	16.5	16.5
Sweden	1995	2901*	2932*	2961	2294*	2335*	2319	607*	597*	642	20.9	20.4	21.7
United Kingdom		:	:	:	:	:	:	:	:	:	:	:	:
PHARE 13													
Albania		15.18	:	:	:	47	2.4	:	:	:	:	:	:
Bosnia & Herzegovina		:	:	:	:	:	:	:	:	:	:	:	:
Bulgaria	1995	:	:	2984	:	:	2034	:	:	942	:	:	31.6
Czech Rep.	1995	3531	3647	2633	2834	2799	2044	697	848	589	19.7	23.3	22.4
Estonia	1995	3195	3300	1850	2791	2720	1430	426	478	350	13.3	14.5	18.9
FYROM		:	:	:	:	:	:	:	:	:	:	:	:
Hungary	1994	8360	9430	8100	6770	7940	6900	1590	1490	1200	19.0	15.8	14.8
Latvia	1995	901.65	547	:	598.687	322	:	277.9	294.9	176.5	30.8	53.9 :	
Lithuania	1995	2810	4311	4582	2329	3812	4277	408	426	259	14.5	9.9	5.7

Table 12 continued

country	latest year	Total annual freshwater abstraction			Total annual fresh surface water abstraction			Total annual fresh groundwater abstraction			groundwater abstraction in % of freshwater abstraction		
		1985	1990	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest year
Poland (1)	1995	15453	14248	11799	13076	11928	9928	2377	2320	1871	15.4	16.3	15.9
Romania	1995	23934	17510	10299	21800	15690	9020	2134	1820	1278	8.9	10.4	12.4
Slovak Rep.	1995	2006	2139	1386	1335	1390	808	671	749	578	33.4	35.0	41.7
Slovenia	1994	72213	68198	74331	71948	68024	74165	176	166	153.2	0.2	0.2	0.2
TACIS 7													
Armenia		:	:	:	:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:	:	:	:
Belarus		:	:	:	:	:	:	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:	:	:	:
Moldova	1995	1313	1655	982	1037	1343	738	274	312	244	20.9	18.9	24.8
Russian Federation		:	:	:	:	:	:	:	:	:	:	:	:
Ukraine		:	:	:	:	:	:	:	:	:	:	:	:
OTHERS													
Croatia	1996	866	761	624	70	63	49	577	528	429	66.6	69.4	68.8
Cyprus	1995	:	:	225	:	:	125	:	:	:	:	:	:
Malta		:	:	:	:	:	:	:	:	:	:	:	:
Federal Republic of Yugoslavia		:	:	:	:	:	:	:	:	:	:	:	:
Switzerland	1995	1143*	1162*	2595	1693	1742	1693	953	941	902	83.4	81.0	34.8
Turkey	1995	19400	31800	:	14100	25200	:	5300	6631	8454	27.3	20.9	:

* diverging from EUROSTAT

® France: mining, drainage not included at fresh water abstraction
Bulgaria: total annual groundwater abstraction is approx. 1.5 times higher due to a great number of small consumers
Bulgaria: total annual freshwater abstraction is without water for hydro- and nuclear power plants
Turkey: total annual groundwater abstraction from 1985, 1991 and 1995

(1) Data from Polish Statistical Office (1998)
Source: groundwater questionnaire, 1996, EUROSTAT, 1996

Table 13 Total annual groundwater abstraction related to groundwater available for annual abstraction (in Mio m³)

country	latest year	Groundwater available for annual abstraction			Total annual artificial groundwater injection or recharge			Total annual fresh groundwater abstraction		
		1985	1990	latest year	1985	1990	latest year	1985	1990	latest year
EEA18										
Austria	1994	28000	28000	28000	:	:	:	1115	1385*	1236*
Belgium		:	:	:	:	:	:	:	:	:
Denmark	1995	1800	1800	1800	0	0	5	1200	930*	915*
Finland	1995	:	:	2100	:	:	:	320	240	239
France	1995	:	:	:	:	:	:	6173	6201*	5460
Germany		:	:	:	:	:	:	6991	7727	:
Greece		:	:	:	:	:	:	:	:	:
Iceland	1995	:	:	15000	:	:	:	95	150	150
Ireland		:	:	:	:	:	:	:	:	:
Italy		:	:	:	:	:	:	12000	:	:
Liechtenstein		:	:	:	:	:	:	:	:	:
Luxembourg	1995	:	:	:	:	0	:	:	43	29
Netherlands	1991	:	:	:	:	:	:	1108	1049	1049
Norway		:	:	:	:	:	:	405	:	:
Portugal	1996	:	:	:	0	0	0	:	3065	:
Spain	1995	:	20000	:	:	:	:	5410	5500	5500
Sweden	1995	:	:	:	:	:	:	607*	597*	642
United Kingdom		:	:	:	:	:	:	:	:	:
PHARE 13										
Albania		:	:	:	:	30	10.5	:	:	:
Bosnia & Herzegovina		:	:	:	:	:	:	:	:	:
Bulgaria	1995 ®	:	:	4450	:	:	:	:	:	942
Czech Rep.	1995	1600	870	1400	:	:	22	697	848	589
Estonia	1995	161.9	176	201.6	:	:	:	426	478	350
FYROM		:	:	:	:	:	:	:	:	:
Hungary	1994	2500	2500	2100	0	5	5	1590	1490	1200
Latvia	1995	296.9	314.9	195.2	0	0	:	277.9	294.9	176.5
Lithuania	1995	584	694	730	n.d.	n.d.	n.d.	408	426	259

Table 13 continued

country	latest year	Groundwater available for annual abstraction			Total annual artificial groundwater injection or recharge			Total annual fresh groundwater abstraction		
		1985	1990	latest year	1985	1990	latest year	1985	1990	latest year
Poland (1)	1995	13236:	14040	15635	n.d.	n.d.	n.d.	2377	2320	1871
Romania	1995	:	:	9680	:	:	:	2134	1820	1278
Slovak Rep.	1995	2295	2358	2330	n.d.	n.d.	n.d.	671	749	578
Slovenia	1994	:	:	:	:	:	:	176	166	153.2
TACIS 7										
Armenia		:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:	:	:	:	:	:	:
Belarus		:	:	:	:	:	:	:	:	:
Georgia		:	:	:	:	:	:	:	:	:
Moldova, Rep.	1995	927	1095	982	:	:	:	274	312	244
Russian Federation		:	:	:	:	:	:	:	:	:
Ukraine		:	:	:	:	:	:	:	:	:
OTHERS										
Croatia	1996	5616	5616	5616	0	0	0	577	528	429
Cyprus	1995	:	:	270	:	:	15	:	:	:
Malta		:	:	:	:	:	:	:	:	:
Federal Republic of Yugoslavia		:	:	:	:	:	:	:	:	:
Switzerland	1995	:	:	:	:	:	:	953	941	902
Turkey	1995 ®	:	11813	12021	:	:	:	5300	6631	8454

* diverging from EUROSTAT

® Bulgaria: total annual groundwater abstraction is approx. 1.5 times higher due to a great number of small consumers
Turkey: 1990 data from 1991

(1) Data from Polish Statistical Office (1998)

Source: groundwater questionnaire, 1996, EUROSTAT, 1996

Table 14 Total annual fresh groundwater abstraction by major activity 1985, 1990 and latest year available (in Mio m³/year)

country		public water supply						private self supply			agriculture						mining			industry			cooling (electricity)		
		total			domestic sector						total			irrigation											
	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest	1985	1990	latest year	1985	1990	latest year	1985	1990	latest	1985	1990	latest year
EEA 18																									
Austria	1994	618	636*	659				:	583	612	148	112	107	:	269	110	:	200	60	:	:	:	:	436*	463
Belgium		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Denmark	1995	540	560*	475				360	325	310	10	10	10	360	300	350	200	140*	200	0	0	0	290	50*	65
Finland	1993	200	223	233				:	:	:	54	45	40	:	:	:	:	:	:	:	:	:	:	7	:
France	1994	3675	3487*	3381				:	:	:	:	:	:	676	1000*	1007	:	:	:	:	:	:	1807	1700*	1594
Germany	®	:	4863	:				:	:	:	:	:	:	:	:	:	:	469	:	:	:	:	:	2235	:
Greece		:	:	:				:	:	:	:	:	:	:	:	:	:	2000	:	:	:	:	:	:	:
Iceland	1995	80		69				2	:	:	:	:	2	3	:	63	0	0	0	0	0	0	10	0	10
Ireland		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Italy		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Liechtenstein		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Luxembourg		:	31	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
Netherlands		:	847	:				:	:	:	:	:	:	:	130	:	:	100	:	:	:	:	:	206	:
Norway		:	65	:				:	:	:	:	18	:	:	:	:	:	:	:	:	:	:	:	:	:
Portugal	1996	:	462	360				:	:	241	:	:	:		2568	3800	:	:	3420	:	:	:	:	285	800
Spain		:	1080*	:				:	:	:	:	:	:	:	4060	:	:	4060*	:	:	:	:	:	360*	:
Sweden		:	449	:				:	:	:	:	:	:	:	80	:	:	15	:	:	:	:		20	
UK		:	2064	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
PHARE 13																									
Albania		:	:	:				:	:	:	:	:	:	:	2	:	:	2	:	:	77	13	:	1.3	0.7
Bosnia & Herzegovina		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Bulgaria	1995	:	:	637.3				:	:	:	:	:	:	:	:	32.2	:	:	:	:	:	13	:	:	214.5
Czech Rep.	1995 ®	449	555	440				n.d.	n.d.	n.d.	54	38	35	50	55	41	0	0	0	94	93	73	:	:	:
Estonia	1995	:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	291	310	254	:	:	:
FYROM		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Hungary	1994	900	860	760				480	480	400	40	30	20	100	150	200	n.d.	n.d.	n.d.	350	200	100	300	280	250
Latvia	1995	:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Lithuania	1995	144	178	145				83	63	37	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	77	71	37

Table 14 continued

country		public water supply						private self supply			agriculture						mining			industry			cooling (electricity)		
		total			domestic sector						total			irrigation											
	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest year	1985	1990	latest	1985	1990	latest year	1985	1990	latest year	1985	1990	latest	1985	1990	latest year
Poland (1)	1995	1458	1477	1283				n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	344	96	208	344	296	298	32	30	19
Romania	1995	1000	820	672				:	:	:	:	:	:	416	160	105	24	10	6	:	:	47	:	:	442
Slovak Rep.	1995	512	554	459				n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	44	37	21	3	4	3	n.d.	n.d.	n.d.	115	114	89
Slovenia	1994 ®	122	132	124				:	:	:	:	:	31.6	:	1	0.2	:	1	0.2	:	:	:	39	32	23
TACIS 7																									
Armenia		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Azerbaijan		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Belarus		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Georgia		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Moldova	1995	:	140	:				:	:	:	:	:	:	:	126	:	:	:	:	:	0.8	:	:	2.1	:
Russian Federation		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Ukraine		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
OTHERs																									
Croatia	1996	428	386	303				316	291	261	78.8	77.1	77	1.4	1.4	1.2	1.2	1.2	1	:	:	:	96	82	42
Cyprus	1995	:	:	50				:	:	:	:	:	:	:	:	80	:	:	:	:	.	:	:	:	:
Malta		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Federal Republic of Yugoslavia		:	:	:				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Switzerland	1994	953	941	902				:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Turkey	1995 ®	:	:	:				:	:	:	:	:	:	:	:	:	:	3591	4640	:	:	:	:	485	502

* diverging from EUROSTAT

® Germany and Czech Rep.: abstraction for industry includes mining
Slovenia: manufacturing industry incl. cooling water for electricity
Turkey: 1990 data from 1991, cooling data from 1992

(1) Data from Polish Statistical Office (1998)

Source: groundwater questionnaire, 1996
EUROSTAT, 1996

Table 15 Country specific remarks on human interventions

Austria	Austria is a country with abundant water resources. Nevertheless and disregarding very local effects, the major impact on groundwater quantity was the drainage of 200,000 ha of land in the post war period in order to intensify agricultural production. This drainage of land was accompanied by a straightening of water courses for better drainage and flood control. Minor impacts - according to the criteria applied - are due to the irrigation of at about 76,000 hectares (1989) of land especially in the eastern parts of Austria.
Czech Republic	Heavy machinery in agriculture and forestry, inadequate drainage of agricultural and forest lands, urbanisation (change of infiltration capacity of land), deepening of underground water table due to river regulation (local problems).
Denmark	The most important problem is lowering of the groundwater table from abstractions for water supply, agriculture and industry.
Finland	There is no significant over-exploitation in Finland. Utilisation is generally less than yield.
France	Currently no assessments are available at the country level.
Hungary	• Ground water recharge is lower than the concentrated drinking water abstraction in some areas, resulting in local depressions of the ground water table in the greatest part of Hungary. Additional resources have been mobilised (mainly the local, potentially polluted shallow ground water resources) • A huge amount of groundwater pumped from shallow wells is used for irrigation • Artificial, preventive decrease of groundwater table due to bauxite, coal, and lignite mining has upset the groundwater balance. The greatest exploitation in the Trans-Danubian Mountains, which resulted in a 200-300 m local depression of the karst water table, was cancelled. The karst reservoir has been refilling since 1990. • Drainage of lowlands causes decreasing water tables in the recharge areas. • NW Hungary (Szigetköz) Danube river has a new, artificial channel built in the Slovak Republic (Gabcikovo) for the production of electricity. Groundwater balance of the thick gravel aquifer recharging from the river Danube has been disturbed. The river bed of Danube was dredged in many places. • Higher transpiration of forests causes lower infiltration rate mainly in the recharge areas of the regional groundwater flow systems.
Iceland	Water abstraction in Iceland is mostly for public water supply and – quickly increasing - for fish farming. However the most important human intervention in groundwater quantity is land drainage due to cultivation and other land use.
Ireland	None identified
Norway	Any problems of this sort are only at the local level - if any.
Portugal	The most important human interventions are those related to groundwater abstraction: agricultural use (76%), industrial supply (16%), public supply (8%). This type and the extent of the intervention may lead, in some places where it is more important, to the over-exploitation of groundwater.
Romania	The average consumption per capita, as well as the specific consumption in industry and agriculture are higher than in other countries, due to the exaggerated losses along the water supply and distribution networks. In Bucharest, for instance, the water losses reach 40 - 50 %. Also in the irrigation systems the used water represents some 40 - 50 % out of the total amount pumped. The specific consumption in certain industries - such as the iron and steel industry, the energy, chemical and textile sector etc. - exceed by 1.5 - 2 times the consumption of the economically advanced countries. The way in which the groundwater is used has a double negative effect: • A high specific energy consumption, almost twice as high as necessary; • An important imbalance of groundwater quantity.
Slovak Republic	In the Slovak Republic it would be possible to increase groundwater quantity also by improving water management in the field of static groundwater resources within a year cycle, mainly in Mesozoic structures.
Slovenia	Aquifer No 18: lowering of the groundwater table by 5 m due to the river channelisation and river bed gravel mining (71.4 km²) Aquifer No 14: rising of groundwater level due to river damming for hydropower scheme (14 m along the river, 7 m at control part, 2 m at outflow boundary) - 56.9 km² Aquifer No 20: rising of groundwater level (1 m) and damping of groundwater oscillation due to agro-melioration - 27.3 km²

Table 16 Most important human interventions with related adverse effects on groundwater quantity. Selection and ranking

	EUR-15 + EFTA									PHARE									TACIS	REST				
Country code	AT	BE	DK	ES	FI	GR	IS	LU	PT	AL	BG	CZ	EE	HU	LT	PL	RO	SK	SI	MD	CY	HR	TR	selection ranking
Remarks	®		®		®		®					®		®			®	®	®					
Number of selections	4	5	6	3	1	6	3	2	6	2	11	3	3	7	2	3	10	9	8	14	6	8	6	

1. DECREASE OF GROUNDWATER QUANTITY

1.1 GROUNDWATER ABSTRACTION / WITHDRAWAL

Public supply		**1**	**1**	**2**		**0**	**0**	**0**	**3**		**0**		**1**	**1**	**0**	**0**		**1**	**0**	**0**	**0**	**0**	**2**	**18**	**1.**
Agriculture	**4**	**3**	**2**	**1**		**0**	**0**		**1**		**0**			**2**		**0**		**2**		**0**	**0**		**1**	**14**	**3.**
Agricultural irrigation	•	•	•	•		•					•			•							•			8	
Other agricultural use			•															•						2	
Fish farming (and recreation)							•							•										2	
Livestock breeding																		•						1	
Industry		**2**	**3**	**3**		**0**			**2**	**0**	**0**		**2**	**3**		**0**	**0**	**3**	**0**	**0**		**0**	**3**	**16**	**2.**
Electricity cooling										**0**														**1**	
Construction						**0**														**0**				**2**	
Other purpose																			**0**	**0**				**2**	
Decrease due to constructions																	**0**			**0**				**2**	
Land drainage	**1**	**4**	**4**		**0**		**0**				**0**	**0**	**3**	**4**			**0**		**0**	**0**		**0**		**13**	**4.**
due to cultivation	•						•					•	•	•			•		•	•				8	
due to flood control	•													•						•				3	
due to urbanisation					•						•	•		•						•		•		6	
due to traffic			•		•						•									•				4	
due to other							•																	1	
gravel uptake					•																			1	
other land use							•																	1	

1.2 LOWERING OF SURFACE WATER TABLE

Surface water abstraction						**0**					**0**							**1**		**0**	**0**	**0**		**6**	**8.**
River channelization	**2**					**0**					**0**	**0**		**5**			**0**	**3**	**0**	**0**				**9**	**6.**
due to flood control	•											•		•					•	•				5	
due to irrigation											•									•				2	
due to drainage	•											•		•			•		•	•				6	
due to navigation														•						•				2	
due to other														•				•						2	
land reclamation																			•					1	
Dredging of river channels											**0**			**6**			**0**	**2**	**0**	**0**				**6**	**8.**
due to navigation														•										1	
due to drainage														•						•				2	
due to mining of river bed gravel											•			•			•	•	•	•				6	
due to other use																		•						1	

1.3 INCREASE OF SURFACE WATER RUN-OFF

Land sealing	**3**	**1**	**6**					**0**			**0**	**0**		**7**			**0**		**0**	**0**		**0**	**1**	**12**	**5.**
due to urbanisation		• 1						•			•	•					•		•	•			•	8	
due to traffic		• 2	•					•			•								•	•				6	
due to agriculture	•	• 3	•					•			•	•		•			•		•					10	
due to other use																			•					1	
increasing rate of forest areas (transpiration)														•										1	
Deforestation																	**0**	**1**			**0**	**0**	**2**	**5**	**9.**
(fires)																					•			1	

Table 17 Name and approximate area of the selected groundwater areas for which quality data have been provided

Code	ref. area	Area (km²)	Name of region or GW-area
AT	Austria		
AT01	A	1033	Marchfeld
AT02	A	1191	Südliches Wiener Becken
AT03	A	347	Mattigtal
BG	Bulgaria		
BG01	A	7800	Trakia
BG02	A	1000	Sofia District
BG03	A	6000	North-East Bulgaria
CY	Cyprus		
CY01	R	2717	Nicosia District
CY02	R	1393	Limassol District
CY03	R	1121	Larnaca District
CY04	R	1396	Paphos District
CY05	R	1984	Famagusta District
CY06	R		Limassol-Larnaca District
CZ	Czech Republic		
CZ01	R	3188	Northern Bohemia Cretaceous Basin
CZ02	R	872	Trebon Basin
CZ03	R	880	Fluvial sediments of the Moravia river
DK	Denmark		
DK01	R	10	Nitratbæltet, Kastbjerg
DK02	R	3.5	Vestdanmark, Grindsted
DK03	R	2	Østdanmark, Skuldelev
DK04	R	20	Nitratbæltet, Thisted
DK05	R	3	Østdanmark, Nyborg
EE	Estonia		
EE01	A	3200	Pandivere upland
EE02	A	3400	North-East Estonia
EE03	A	2900	Island Saaremaa
EE04	A		Tallin
FI	Finland		
FR	France		
FR01	A		Nappe d´Alsace
FR02	A		Calcaires de Champigny
FR03	A		Craie du Nord et de la Picardie
FR04	A		Jurassique de Poitou-Charentes
FR05	R		Départments: Bas-Rhin et Haut-Rhin
FR06	R		Nord et Somme
DE	Germany		
DE01	R		Baden-Württemberg
DE02	R		Bayern
DE03	R		Berlin
DE04	R		Brandenburg
DE05	R		Bremen
DE06	R		Hamburg
DE07	R		Hessen
DE08	R		Mecklenburg-Vorpommern
HU	Hungary		
HU01	R	9500	Karst
HU02	R	70000	G1 Porous media (20-50)
IS	Iceland		
IE			Ireland
IE01	R	7622	Eastern Water Resource Region
IE02	R	12768	South-Eastern Water Resource Region
IE03	R	9615	Western Water Resource Region
LV			Latvia
LV01	A		Upesciems
LV02	A		Asari
LV03	A		Incukalns
LV04	A		Tireli
LT	Lithuania		
LU	Luxembourg		
LU01	R	540	Grès de Luxembourg
MD	Moldova		
MD01	R	33700	
MD03	R	20500	
NL	Netherlands		
NL01	R	532	Loam area (5-15m)
NL02	R	5452	Southern sandy area (5-15m)
NL03	R	2451	Central sand area (5-15m)
NL04	R	3228	Eastern sand area (5-15m)
NL05	R	5123	Northern sand area (5-15m)
NL06	R	794	Dune sand area (5-15m)
NL07	R	3497	River clay area (5-15m)
NL08	R	8823	Marine clay area (5-15m)
NL09	R	3959	Peat area (5-15m)
NO	Norway		
PL			Poland
PL01	A	4105	Czestochowa Basin
PL02	A	18670	Radom Trough and Lublin Trough
PL03	A	51000	Warsaw
PT	Portugal		
PT01	R	2000	Meridional mesocenozoic border
PT02	R	5000	Algarve
RO	Romania		
RO01	R	4600	South Baragan Plain
SK	Slovak Republic		
SK01	A	680	Rye Island
SK02	A	65	Alluvia of Ondava from Svidník to Domaša
SK03	A	130	Alluvia of Ondava from Domaša to Trebišov
SK04	A	240	Medzibodro ie and alluvia of Roòava
SI	Slovenia		
SI01	A	59	VS (Vipavsko Soška dolina)
SI02	A	533.7	KB/LB/LP/SP/KP/VP (Dolina Kamniške Bistrice, Ljubljansko Barje, Ljubljansko polje, Sorško polje, Krajsko polje, Vodiško polje)

Table 17 continued

Code	ref. area	Area (km²)	Name of region or GW-area
DE09	R	47400	Niedersachsen
DE10	R		Nordrhein-Westfalen
DE11	R		Rheinland-Pfalz
DE12	R	2580	Saarland
DE13	R		Sachsen
DE14	R		Sachsen-Anhalt
DE15	R		Schleswig-Holstein
DE16	R	16000	Thüringen
DE17	R	34900	Niedersachsen Tiefland
DE18	R	12500	Niedersachsen Bergland
GR	Greece		
GR01	R	7304	W-Peloponessus
GR02	R	7314	N-Peloponessus
GR03	R	8464	E-Peloponessus
GR04	R	10417	W-Mainland
GR05	R	9967	Epirus
GR06	R	3201	Attica
GR07	R	12223	E-Mainland
GR08	R	13162	Thessaly
GR09	R	13696	W-Macedonia
GR10	R	10389	Central-Macedonia
GR11	R	7213	E-Macedonia
GR12	R	11241	Thrace
GR13	R	8312	Crete
SI03	A	107.2	SD/DM/DB (Spodnja Savinjska dolina, Dolina Hudinje, Dolina Bolske)
SI04	A	245.2	BKC (Breziško, Krško in Catezko polje)
SI05	A	434.3	DP (Dravsko in Ptujsko polje)
SI06	A	654.7	AMP (Apaško, Mursko in Pretmursko polje)
ES			Spain
ES01	A	6000	Region de los Arenales
ES02	A	260	Plana de Valencia Norte
ES03	A	6300	Madrid - Talavera
ES04	A	17117	Duero (U.H. 2/8/17/18)
ES05	A	11134	Tajo (U.H. 3/4/5/9)
ES06	A	7717	Guadiana (U.H. 4/6)
SE	Sweden		
SE01	A	525	Kristianstadslätten
SE02	A	80	Brattforsheden
SE03	A	50	Badelundaåsen
TR	Turkey		
TR01	A	1135	Küçük Menderes
TR02	A	740	Erzurum
TR03	A	770	Elazig - Uluova
UK			United Kingdom
UK01	R		England and Wales
UK02	A	6518	Principal Jurassic Limestones Aquifers
UK03	A	24540	Chalk and upper greensand chem
UK04	A	12650	Permo triassic sandstones chem
UK05	A	789	Northern Ireland Permo triassic sandstones chem

Table 18 Country specific remarks on groundwater quality

Austria	To give a general idea of groundwater quality in Austria, the data of Austria's national monitoring network of aquifers in porous media, the aquifers Marchfeld, Südliches Wiener Becken and Mattigtal have been joined. The Marchfeld and the Südliches Wiener Becken (both in the east of Austria) were selected for being the two largest aquifers in Austria. The groundwater area Mattigtal was selected for its size as well as for being representative of the situation in the central western and southern parts of Austria. The geology of Austria, the karst areas as well as the distribution of sampling sites within Austria's national monitoring network are described in greater detail in the publication "Jahresbericht 1994 - Wassergüte in Österreich". No separate data on springs (in karst areas and others) are presented. Based on the data of the Austrian national monitoring network these waters are of good to excellent quality: all means of nitrate of springs in karst areas are below 10 mg/l; no concentrations of pesticides above 0.1 µg/l were observed.
Finland	Groundwater areas are numerous (7141 areas (excluding Ahvenanmaa) and small (total average area is approx. 2 km²). Presentation and labelling of a map is quite inconvenient. Because of the size of the groundwater areas, data (nitrate, pesticides, determinands) were presented only at the country level.
France	Quality data are from the National Groundwater Quality Database (ONQES). The statistics include all the sites for which data are available in the ONQES database and they concern five year mean concentrations for the period under consideration. The five-year average is calculated by the annual averages of a site. The majority of the sites included in ONQES are drinking water wells. Since most of the data come from the public health departments. This means that most "unknown uses" are also likely to be drinking water wells (and implies that the field "TYPE" unfortunately was not considered in the data collection). Pesticide compound data available at the national level are insufficient to provide a representative overview. Because of variations in site density within an aquifer and across the country for the database, the data do not provide a representative view of groundwater quality in France.
Hungary	Monitoring of groundwater quality is the duty of the Waterwork Companies taking samples from their own wells and analysing them. A country size monitoring system is just under development. The chemical data used for this questionnaire were collected by the Waterwork Companies in 1993 according to their data of the last twenty years, so the latest data available is from 1992. There is a groundwater monitoring network of 600 wells but the greatest part of these are wells for public supply.
Iceland	In Iceland no monitoring of pesticides in water have been performed yet. Pesticides are not considered a threat because of the very little use of pesticides in the country. Available data show values below detection limits or were not detected at all.
Ireland	The EPA National Monitoring Programme commenced in November 1995 and up to now only a limited amount of sampling for pesticides has been undertaken. Sampling for pesticides to date indicates that the levels are below the detection limits. Locations of the national groundwater monitoring programme have large groundwater abstractions. Some of the presented drinking water, industrial and other sites are part of the national monitoring programme.
Portugal	Data do not include the Azores and Madeira island There is no information available on pesticides and they are not a problem.
Sweden	Data are exclusively from the national groundwater monitoring network. Since 1993 environmental monitoring has been reconsidered and new programmes are being drawn up. There are programmes at both the regional and the national levels and they include groundwater resources important for the ecosystem and for drinking water purposes. The programs are not in full operation yet. There is no monitoring of pesticides yet.

Table 19 Country specific remarks on nitrate

Cyprus	Serious problems due to over fertilisation (intensive agriculture)
Estonia	Manure water from Linnamäe and Viiratsi piggeries etc.
Germany	Major threat especially due to maize and special crops in Baden-Württemberg
Hungary	A very important problem is that the sewerage of settlements is behind with drinking water supply, resulting in high nitrate content of the shallow (<20 m) groundwater in the villages. However these polluted water resources are not used for water supply. Large-scale livestock farms polluted the shallow groundwater with nitrate and ammonia.
Latvia	During investigations carried out in 70-80's (hydrogeological mapping etc.) no serious problems with agricultural contamination of groundwater by nitrogen compounds were found in confined aquifers. There are two diffuse sources of groundwater contamination. Jonava nitrogen fertiliser factory (problem - nitrate in groundwater); Kedainiai phosphorus fertiliser factory (problem - fluorine in groundwater).
Romania	The intensive contamination of the aquifers with organic substances, as well as with ammonia and, especially the bacterial contamination are altogether different. The most intensive cases of multiple quality depreciation were identified in the rural village area, due to the scarcity of the minimum necessary sewerage facilities, the liquid wastes directly pollute the shallow groundwater (through the water closets and street sewerage which are not waterproof) as well as indirectly (coming from stable waste deposits, improvised garbage holes, etc.) Leakage and seepage loss from fertiliser or chemical industrial estates of Arad, Targu Mures, Fagaras, Victoria, Isalnita, Ramnicu Valcea, Tumu Magurele, Giurgiu, Roznov and Navodari; material stockpiles and sludge thickeners of coal power stations of Turceni, Rovinari, Iasi and Suceava; slime thickeners of Ocna Muresului, Govora, Valea Calugareasca, Tohanul Vechi and Tulcea. Contamination from nitrate, nitrite, ammonia, chlorides, sulphates, sulphides, cyanides, caustic soda etc. in alluvial or fissured shallow and even deeper aquifers and severe deterioration of groundwater quality. Percolation of atmospheric contaminants close to Savinesti, Isalnita and Pitesti

Table 20 Number of sampling sites with regard to nitrate. Comparison between the EEA's inventory and information delivered for the monograph

Country	Groundwater Monitoring in Europe (EEA 1997) number of sampling sites	Nitrate	reported NO_3 sampling sites
Austria	**1,359**, will increase to **1,600** within 1996. **70** in karst, will increase to **450**	✔	**1719**[C]
Belgium	no information	-	-
Denmark	**1,100** sampling sites	✔	**1113**[C]
Finland	**50** reference sampling sites: **20** in porous media aquifers, **30** in others, and 1426 abstraction points	✔	**425**[C]
France	**16112** sampling sites	✔	**5805**[C]
Germany			**4092**[C]
Bayern	**118** in porous aquifers, **40** in karst and **121** in fractured rock	✔	**280**
Nordrhein-Westfalen	**2,256** in porous media, **20** in karst, **310** in fractured rock	✔	**1457**
Thüringen	**4** in porous media, **96** in joint aquifers, **20** in karst	✔	**78**
Sachsen-Anhalt	**82** in porous media, **30** in solid rock media	✔	**114**
Greece	**275** sites. National network planned: **186** monitoring sites	-	**360**[R (13)]
Iceland	no information	-	**51**[C]
Ireland	in operation: **293** groundwater abstraction points	-	**676**[C]
Italy	no national monitoring	✔	-
Luxembourg	-	-	**110**[R (1)]
The Netherlands	**380** (375+5) monitoring wells, other networks: **240** pumping stations, **150** forest sites	✔	**440**[R (9)]
Norway	**38** monitoring stations, groundwater chemistry is monthly monitored at **4** stations. Project NIVA: **4** wells (precipitation chemistry, soil and water acidification)	✔	**4**[C]
Portugal	**74** sampling sites	✔	**75**[R (1)]
Spain	**1,147** sampling sites in porous media, **408** in karst, **1,377** in isolated groundwater regions	✔	**98**[R (3)]
Sweden	**2** sampling sites in each of the **27** different geological regions	✔	**126**[C]
United Kingdom		✔	**765**[R (4)]
England and Wales	**346** sampling sites in porous media, karst: **270**, other: **1,920**	-	-
Scotland	no information	-	-
Northern Ireland	1992: 759 groundwater sources measured, 351 sites with either pumped or naturally flowing water; **109** sites were revisited at 3 monthly intervals until July 1994, then reduced to **78** target sites; 1992/93: **95** sites to sample monthly for 12 month, monitoring was reduced to **5** sites in 10/93	-	-

[C])…at the country level [R (#)])…aggregated at the regional level (# = number of regions)

Table 21 Nitrate sampling sites

code		name	year	area km²	sites/ 1000 km²	Sampling Sites absolute						Sampling Sites in %				
						total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
AT	**Austria**		1995			1719	288	386	395	650		**17**	**22**	**23**	**38**	
AT01		Marchfeld	1995	1033	74.54	77	11	11	35	20		14	14	45	26	
AT02		Südliches Wiener Becken	1995	1191	83.96	100	31	36	8	25		31	36	8	25	
AT03		Mattigtal	1995	347	54.76	19	2	4	1	12		11	21	5	63	
BG	**Bulgaria**															
BG01		Trakia	1995	7800	9.10	71	54	4	11	2		76	6	15	3	
BG02		Sofia District	1995	1000	25.00	25	5	6	12	2		20	24	48	8	
BG03		North-East Bulgaria	1995	6000	3.17	19	12	2	1	4		63	11	5	21	
CY	**Cyprus**															
CY01		Nicosia District	1995	2717	87.96	239	196	0	43	0		82	0	18	0	
CY02		Limassol District	1995	1393	166.55	232	189	0	43	0		81	0	19	0	
CY03		Larnaca District	1995	1121	69.58	78	67	0	11	0		86	0	14	0	
CY04		Paphos District	1995	1396	130.37	182	152	0	30	0		84	0	16	0	
CY05		Famagusta District	1995	1984	13.10	26	23	0	3	0		88	0	12	0	
CZ	**Czech Republic**		1996			476	0	0	339	137		**0**	**0**	**71**	**29**	
CZ01		Northern Bohemia Cretaceous Basin	1996	3188	26.35	84	0	0	70	14		0	0	83	17	
CZ02		Trebon Basin	1996	872	35.55	31	0	0	31	0		0	0	100	0	
CZ03		Fluvial sediments of the Moravia river	1996	880	12.50	11	0	0	11	0		0	0	100	0	
DK	**Denmark**		1995			1113	0	0	1113	0		**0**	**0**	**100**	**0**	
DK01		Nitratbæltet, Kastbjerg	1995	10	2200.00	22	0	0	22	0		0	0	100	0	
DK02		Vestdanmark, Grindsted	1995	3.5	6000.00	21	0	0	21	0		0	0	100	0	
DK03		Østdanmark, Skuldelev	1995	2	9000.00	18	0	0	18	0		0	0	100	0	
EE	**Estonia**		1996			163	42	0	121	0		**26**	**0**	**74**	**0**	
EE01		Pandivere upland	1996	3200	9.06	29	0	0	10	19		0	0	34	66	
EE02		North-East Estonia	1996	3400	10.00	34	12	0	22	0		35	0	65	0	
EE03		Island Saaremaa	1996	2900	4.48	13	3	0	10	0		23	0	77	0	
FI	**Finland**		1995			425	370	0	55	0		**87**	**0**	**13**	**0**	

Table 21 continued

code		name	year	area km²	sites/ 1000 km²	total wells	Sampling Sites absolute					Sampling Sites in %				
							drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
FR	**France**		9195			5805					5805					**100**
FR01		Nappe d´Alsace	9195			117					117					
FR02		Calcaires de Champigny	9195			7					7					
FR03		Craie du Nord et de la Picardie	9195			793					793					
FR04		Jurassique de Poitou-Charentes	9195			24	24	0	0	0		100	0	0	0	
DE	**Germany**		1995			4092	17	0	3918	0	157	**0**	**0**	**96**	**0**	**4**
DE01		Baden-Württemberg	1992			71					71					
DE02		Bayern				280	0	0	280	0		0	0	100	0	
DE03		Berlin	1991			323	0	0	323	0		0	0	100	0	
DE04		Brandenburg	1993			82	17	0	65	0		21	0	79	0	
DE05		Bremen	8693			149	0	0	149	0		0	0	100	0	
DE06		Hamburg	9193			107	0	0	107	0		0	0	100	0	
DE07		Hessen	1993			297	0	0	297	0		0	0	100	0	
DE08		Mecklenburg-Vorpommern	1993			36	0	0	36	0		0	0	100	0	
DE09		Niedersachsen	1993	47400	4.51	214	0	0	214	0		0	0	100	0	
DE10		Nordrhein-Westfalen	1991			1457	0	0	1457	0		0	0	100	0	
DE11		Rheinland-Pfalz	9193			641	0	0	641	0		0	0	100	0	
DE12		Saarland	1993	2580	42.64	110	0	0	110	0		0	0	100	0	
DE13		Sachsen	1993			86					86					
DE14		Sachsen-Anhalt	9093			114	0	0	114	0		0	0	100	0	
DE15		Schleswig-Holstein	1993			47	0	0	47	0		0	0	100	0	
DE16		Thüringen	1992	16000	4.88	78	0	0	78	0		0	0	100	0	
GR	**Greece**															
GR01		W-Peloponessus	1996	7304	4.24	31	13	1	0	17		42	3	0	55	
GR02		N-Peloponessus	1996	7314	5.88	43	15	12	0	16		35	28	0	37	
GR03		E-Peloponessus	1996	8464	2.95	25	2	0	0	23		8	0	0	92	
GR04		W-Mainland	1996	10417	2.59	27	13	1	0	13		48	4	0	48	
GR05		Epirus	1996	9967	1.71	17	5	5	0	7		29	29	0	41	
GR06		Attica	1996	3201	4.69	15	2	1	0	12		13	7	0	80	

Table 21 continued

						Sampling Sites absolute					Sampling Sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
GR07	E-Mainland	1996	12223	1.96	24	7	1	0	16		29	4	0	67	
GR08	Thessaly	1996	13162	2.13	28	6	1	0	21		21	4	0	75	
GR09	W-Macedonia	1996	13696	2.26	31	13	1	0	17		42	3	0	55	
GR10	Central-Macedonia	1996	10389	3.85	40	22	1	0	17		55	3	0	43	
GR11	E-Macedonia	1996	7213	3.19	23	8	0	0	15		35	0	0	65	
GR12	Thrace	1996	11241	2.85	32	7	0	0	25		22	0	0	78	
GR13	Crete	1996	8312	2.89	24	8	0	0	16		33	0	0	67	
HU	**Hungary**	1992			4282	4282	0	0	0		**100**	**0**	**0**	**0**	
HU01	Karstic	1992	9500	32.53	309	309	0	0	0		100	0	0	0	
HU02	G1 Porous media (20-50)	1992	70000	7.03	492	492	0	0	0		100	0	0	0	
IS	**Iceland**	8696			51	51	0	0	0		**100**	**0**	**0**	**0**	
IE	**Ireland**	1995			676	671	3	0	2		**99**	**1**	**0**	**0**	
IE01	Eastern Water Resource Region	1995	7622	8.27	63	61	2	0	0		97	3	0	0	
IE02	South-Eastern Water Resource Region	1995	12768	10.96	140	137	1	0	2		98	1	0	2	
IE03	Western Water Resource Region	1995	9615	11.75	113	113	0	0	0		100	0	0	0	
LV	**Latvia**														
LV01	Upesciems	1996			2	0	0	2	0		0	0	100	0	
LV02	Asari	1996			3	0	0	3	0		0	0	100	0	
LV03	Incukalns	1996			4	0	0	4	0		0	0	100	0	
LV04	Tireli	1996			7	0	0	7	0		0	0	100	0	
LT	**Lithuania**	1996			48	0	0	48	0		0	0	100	0	
LU	**Luxembourg**														
LU01	Grès de Luxembourg	1995	540	203.70	110	6	3	0	101		5	3	0	91	
MD	**Moldova**														
MD01			33700	2124.63	71600	71600	0	0	0		100	0	0	0	
NL	**Netherlands**														
NL01	Loam area (5-15m)	1995	532	5.64	3	0	0	3	0		0	0	100	0	
NL02	Southern sandy area (5-15m)	1995	5452	10.09	55	0	0	55	0		0	0	100	0	

Table 21 continued

code	name	year	area km²	sites/ 1000 km²	Sampling Sites absolute: total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	Sampling Sites in %: drinking water wells	industrial water wells	monitoring wells	other wells	no info
NL03	Central sand area (5-15m)	1995	2451	25.30	62	0	0	62	0		0	0	100	0	
NL04	Eastern sand area (5-15m)	1995	3228	13.94	45	0	0	45	0		0	0	100	0	
NL05	Northern sand area (5-15m)	1995	5123	15.03	77	0	0	77	0		0	0	100	0	
NL06	Dune sand area (5-15m)	1995	794	47.86	38	0	0	38	0		0	0	100	0	
NL07	River clay area (5-15m)	1995	3497	14.30	50	0	0	50	0		0	0	100	0	
NL08	Marine clay area (5-15m)	1995	8823	6.57	58	0	0	58	0		0	0	100	0	
NL09	Peat area (5-15m)	1995	3959	13.64	54	0	0	54	0		0	0	100	0	
NO	**Norway**	1995			4	0	0	4	0		**0**	**0**	**100**	**0**	
PL	**Poland**	1996			675	0	0	675	0		**0**	**0**	**100**	**0**	
PL01	Czestochowa Basin	1996	4105	3.90	16	0	0	16	0		0	0	100	0	
PL02	Radom Trough and Lublin Trough	1996	18670	1.66	31	0	0	31	0		0	0	100	0	
PL03	Warsaw Subtrough	1996	51000	0.90	46	0	0	46	0		0	0	100	0	
PT	**Portugal**														
PT01	Meridional mesocenozoic border	1996	2000	37.00	74	0	0	74	0		0	0	100	0	
RO	**Romania**	1993			1000	0	0	1000	0		**0**	**0**	**100**	**0**	
SK	**Slovak Republic**	1995			282	88	0	173	21		**31**	**0**	**61**	**7**	
SK01	Rye Island	1995	680	86.76	59	0	0	59	0		0	0	100	0	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	61.54	4	3	0	1	0		75	0	25	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	69.23	9	3	0	6	0		33	0	67	0	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	33.33	8	1	0	7	0		13	0	88	0	
SI	**Slovenia**	1996			84	17	5	62	0		**20**	**6**	**74**	**0**	
SI01	VS	1996	59	67.80	4	1	0	3	0		25	0	75	0	
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	58.09	31	8	5	18	0		26	16	58	0	
SI03	SD/DM/DB	1996	107.2	102.61	11	1	0	10	0		9	0	91	0	
SI04	BKC	1996	245.2	53.02	13	1	0	12	0		8	0	92	0	
SI05	DP	1996	434.3	34.54	15	3	0	12	0		20	0	80	0	
SI06	AMP	1996	654.7	15.27	10	3	0	7	0		30	0	70	0	

Table 21 continued

						Sampling Sites absolute						Sampling Sites in %				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
ES	**Spain**															
ES01		Region de los Arenales	1995	6000	5.00	30	10	0	16	4		33	0	53	13	
ES02		Plana de Valencia Norte	1995	260	42.31	11	6	0	0	5		55	0	0	45	
ES03		Madrid - Talavera	1995	6300	9.05	57	20	3	0	34		35	5	0	60	
SE	**Sweden**					126	1	0	125	0		**1**	**0**	**99**	**0**	
TR	**Turkey**															
TR02		Erzurum	1996	740	24.32	18	13	0	0	5		72	0	0	28	
TR03		Elazig - Uluova	1995	770	15.58	12	0	0	0	12		0	0	0	100	
UK	**United Kingdom**															
UK02		Principal Jurassic Limestones Aquifers	1996	6518	32.99	215					215					100
UK03		Chalk and upper greensand chem	1996	24540	17.81	437					437					100
UK04		Permo triassic sandstones chem	1996	12650	8.38	106					106					100
UK05		Northern Ireland Permo triassic sandstones chem	1994	789	8.87	7	1	4	0	2		14	57	0	29	

Table 22 Nitrate frequency distribution

code	Name	year	area km²	Frequency Distribution absolute						Frequency Distribution in %				
				sampling sites	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50
AT	**Austria**	1995		1719	619	499	337	264		**36**	**29**	**20**	**15**	
AT01	Marchfeld	1995	1033	77	7	12	14	44		9	16	18	57	
AT02	Südliches Wiener Becken	1995	1191	100	16	42	21	21		16	42	21	21	
AT03	Mattigtal	1995	347	19	4	14	1	0		21	74	5	0	
BG	**Bulgaria**													
BG01	Trakia	1995	7800	71	19	26	19	7		27	37	27	10	
BG02	Sofia District	1995	1000	25	17	6	0	2		68	24	0	8	
BG03	North-East Bulgaria	1995	6000	19	7	5	5	2		37	26	26	11	
CY	**Cyprus**													
CY01	Nicosia District	1995	2717	239	143	53	33	10		60	22	14	4	
CY02	Limassol District	1995	1393	232	149	40	30	13		64	17	13	6	
CY03	Larnaca District	1995	1121	78	57	10	8	3		73	13	10	4	
CY04	Paphos District	1995	1396	182	99	53	17	13		54	29	9	7	
CY05	Famagusta District	1995	1984	26	17	6	2	1		65	23	8	4	
CZ	**Czech Republic**	1996		476	275	76	58	67		**58**	**16**	**12**	**14**	
CZ01	Northern Bohemia Cretaceous Basin	1996	3188	84	57	17	6	4		68	20	7	5	
CZ02	Trebon Basin	1996	872	31	27	0	1	3		87	0	3	10	
CZ03	Fluvial sediments of the Moravia river	1996	880	11	9	2	0	0		82	18	0	0	
DK	**Denmark**	1995		1113	766	72	91	184		**69**	**6**	**8**	**17**	
DK01	Nitratbæltet, Kastbjerg	1995	10	22	6	4	1	11		27	18	5	50	
DK02	Vestdanmark, Grindsted	1995	3.5	21	8	0	4	9		38	0	19	43	
DK03	Østdanmark, Skuldelev	1995	2	18	10	4	1	3		56	22	6	17	
EE	**Estonia**	1996		163	127	24	11	1		**78**	**15**	**7**	**1**	
EE01	Pandivere upland	1996	3200	29	15	12	2	0		52	41	7	0	
EE02	North-East Estonia	1996	3400	34	33	0	1	0		97	0	3	0	
EE03	Island Saaremaa	1996	2900	13	11	1	1	0		85	8	8	0	
FI	**Finland**	1995		425	402	19	4	0		**95**	**4**	**1**	**0**	
FR	**France**	9195		5805	2714	1484	1253	354		**47**	**26**	**22**	**6**	
FR01	Nappe d´Alsace	9195		117	34	50	29	4		29	43	25	3	
FR02	Calcaires de Champigny	9195		7	4	2	1	0		57	29	14	0	
FR03	Craie du Nord et de la Picardie	9195		793	76	306	373	38		10	39	47	5	

Table 22 continued

code	name	year	area km²	Frequency Distribution absolute: sampling sites	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50	Frequency Distribution in %: £10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50
FR04	Jurassique de Poitou-Charentes	9195		24	1	1	6	16		4	4	25	67	
DE	**Germany**	1995		4092						**60**	**14**	**15**	**11**	
DE01	Baden-Württemberg	1992		71						30	30	29	11	
DE02	Bayern			280						50	23	21	6	
DE03	Berlin	1991		323						91	4	3	2	
DE04	Brandenburg	1993		82						72	3	18	7	
DE05	Bremen	8693		149						80	8	3	9	
DE06	Hamburg	9193		107			**no detailed**			73	7	13	7	
DE07	Hessen	1993		297						67	18	8	7	
DE08	Mecklenburg-Vorpommern	1993		36			**informati on**			86	5	2	7	
DE09	Niedersachsen	1993	47400	214						66	6	6	22	
DE10	Nordrhein-Westfalen	1991		1457						41	21	22	16	
DE11	Rheinland-Pfalz	9193		641						67	11	9	13	
DE12	Saarland	1993	2580	110						41	33	23	3	
DE13	Sachsen	1993		86						31	23	30	16	
DE14	Sachsen-Anhalt	9093		114						68	2	15	15	
DE15	Schleswig-Holstein	1993		47						66	12	10	12	
DE16	Thüringen	1992	16000	78						41	22	22	15	
GR	**Greece**													
GR01	W-Peloponessus	1996	7304	20	8	5	4	3		40	25	20	15	
GR02	N-Peloponessus	1996	7314	27	13	5	7	2		48	19	26	7	
GR03	E-Peloponessus	1996	8464	26	8	5	7	6		31	19	27	23	
GR04	W-Mainland	1996	10417	25	17	7	0	1		68	28	0	4	
GR05	Epirus	1996	9967	17	11	2	3	1		65	12	18	6	
GR06	Attica	1996	3201	13	4	2	4	3		31	15	31	23	
GR07	E-Mainland	1996	12223	21	5	10	5	1		24	48	24	5	
GR08	Thessaly	1996	13162	25	10	13	2	0		40	52	8	0	
GR09	W-Macedonia	1996	13696	25	14	8	2	1		56	32	8	4	
GR10	Central-Macedonia	1996	10389	35	18	10	6	1		51	29	17	3	
GR11	E-Macedonia	1996	7213	23	8	11	3	1		35	48	13	4	
GR12	Thrace	1996	11241	38	19	14	5	0		50	37	13	0	
GR13	Crete	1996	8312	21	10	3	8	0		48	14	38	0	

Table 22 continued

code	name	year	area km²	Frequency Distribution absolute: sampling sites	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50	Frequency Distribution in %: £10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50
HU	**Hungary**	1992		4282	3735	288	147	112		**87**	**7**	**3**	**3**	
HU01	Karstic	1992	9500	309	182	78	37	12		59	25	12	4	
HU02	G1 Porous media (20-50)	1992	70000	492	424	39	13	16		86	8	3	3	
IS	**Iceland**	8696		51	50	1	0	0		**98**	**2**	**0**	**0**	
IE	**Ireland**	1995		676	358	215	95	8		**53**	**32**	**14**	**1**	
IE01	Eastern Water Resource Region	1995	7622	63	33	14	14	2		52	22	22	3	
IE02	South-Eastern Water Resource Region	1995	12768	140	41	49	46	4		29	35	33	3	
IE03	Western Water Resource Region	1995	9615	113	65	42	6	0		58	37	5	0	
LV	**Latvia**													
LV01	Upesciems	1996		2	2	0	0	0		100	0	0	0	
LV02	Asari	1996		3	3	0	0	0		100	0	0	0	
LV03	Incukalns	1996		4	4	0	0	0		100	0	0	0	
LV04	Tireli	1996		7	7	0	0	0		100	0	0	0	
LT	**Lithuania**	1996		77	64	8	3	2		83	10	4	3	
LU	**Luxembourg**													
LU01	Grès de Luxembourg	1995	540	110						0	80	19	1	
MD	**Moldova**													
MD01			33700	71600									40	60
NL	**Netherlands**													
NL01	Loam area (5-15m)	1995	532	3	1	0	0	2		33	0	0	67	
NL02	Southern sandy area (5-15m)	1995	5452	55	33	3	2	17		60	5	4	31	
NL03	Central sand area (5-15m)	1995	2451	62	37	6	8	11		60	10	13	18	
NL04	Eastern sand area (5-15m)	1995	3228	45	30	2	2	11		67	4	4	24	
NL05	Northern sand area (5-15m)	1995	5123	77	61	5	5	6		79	6	6	8	
NL06	Dune sand area (5-15m)	1995	794	38	38	0	0	0		100	0	0	0	
NL07	River clay area (5-15m)	1995	3497	50	45	1	0	4		90	2	0	8	
NL08	Marine clay area (5-15m)	1995	8823	58	58	0	0	0		100	0	0	0	
NL09	Peat area (5-15m)	1995	3959	54	52	2	0	0		96	4	0	0	
NO	**Norway**	1995		4	4	0	0	0		**100**	**0**	**0**	**0**	

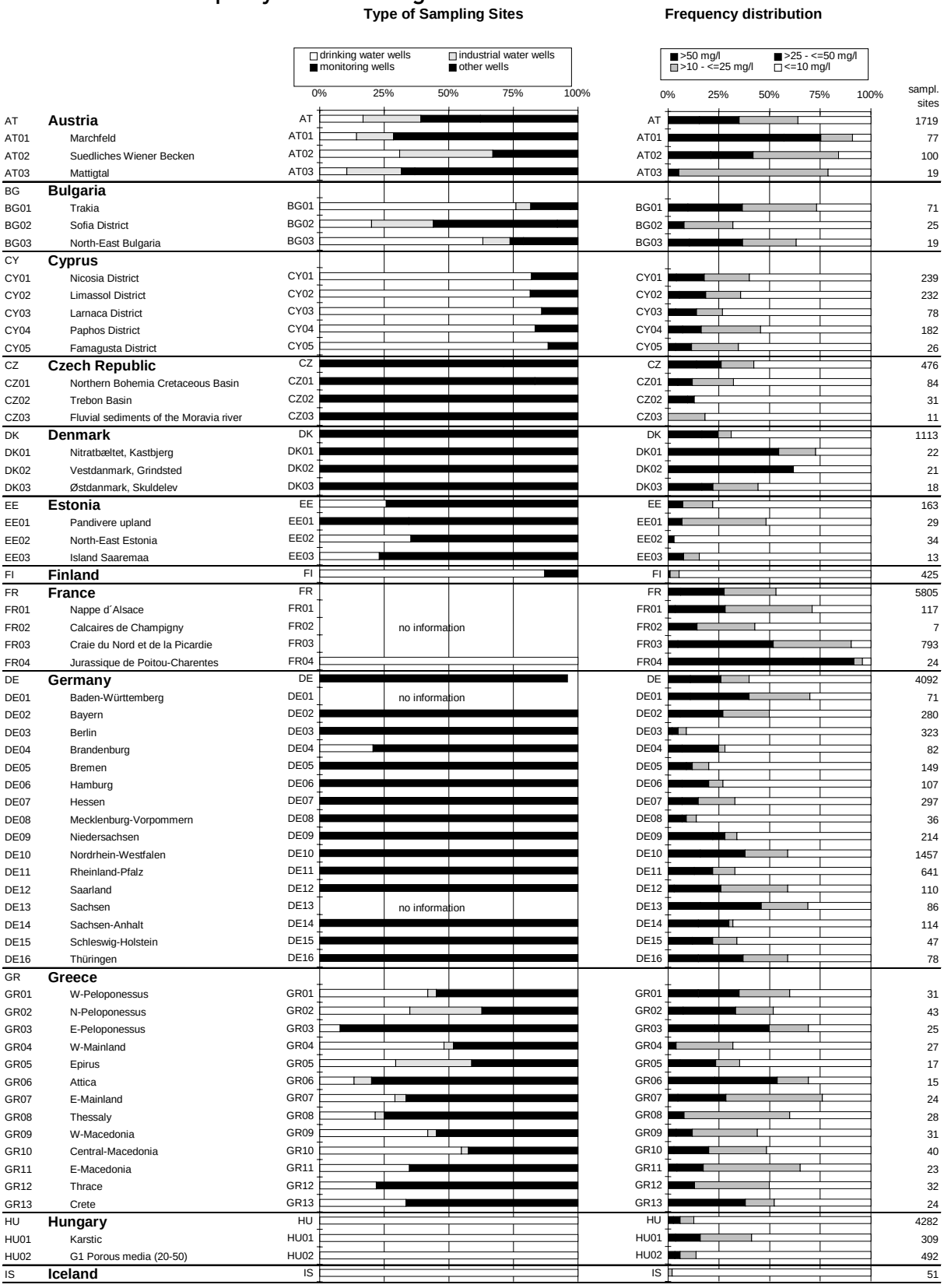
Table 22 continued

				Frequency Distribution absolute						Frequency Distribution in %				
code	**name**	**year**	**area km²**	sampling sites	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50
PL	**Poland**	1996		675	437	75	63	100		**65**	**11**	**9**	**15**	
PL01	Czestochowa Basin	1996	4105	16	7	2	6	1		44	13	38	6	
PL02	Radom Trough and Lublin Trough	1996	18670	31	16	6	5	4		52	19	16	13	
PL03	Warsaw Subtrough	1996	51000	46	30	3	5	8		65	7	11	17	
PT	**Portugal**													
PT01	Meridional mesocenozoic border	1996	2000	74	22	22	12	18		30	30	16	24	
RO	**Romania**	1993		1000									**35**	**65**
SK	**Slovak Republic**	1995		282	121	62	56	43		**43**	**22**	**20**	**15**	
SK01	Rye Island	1995	680	59	37	7	6	9		63	12	10	15	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	4	4	0	0	0		100	0	0	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	9	5	1	2	1		56	11	22	11	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	8	6	1	0	1		75	13	0	13	
SI	**Slovenia**	1996		84	8	33	17	26		**10**	**39**	**20**	**31**	
SI01	VS	1996	59	4	0	1	2	1		0	25	50	25	
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	31	3	20	6	2		10	65	19	6	
SI03	SD/DM/DB	1996	107.2	11	1	2	1	7		9	18	9	64	
SI04	BKC	1996	245.2	13	1	8	2	2		8	62	15	15	
SI05	DP	1996	434.3	15	1	1	3	10		7	7	20	67	
SI06	AMP	1996	654.7	10	2	1	3	4		20	10	30	40	
ES	**Spain**													
ES01	Region de los Arenales	1995	6000	30	12	4	10	4		40	13	33	13	
ES02	Plana de Valencia Norte	1995	260	11	1	2	3	5		9	18	27	45	
ES03	Madrid - Talavera	1995	6300	57	11	22	18	6		19	39	32	10	
SE	**Sweden**			125	115	5	3	2		**92**	**4**	**2**	**2**	
TR	**Turkey**													
TR02	Erzurum	1996	740	18	6	4	2	6		33	22	11	33	
TR03	Elazig - Uluova	1995	770	12	2	10	0	0		17	83	0	0	

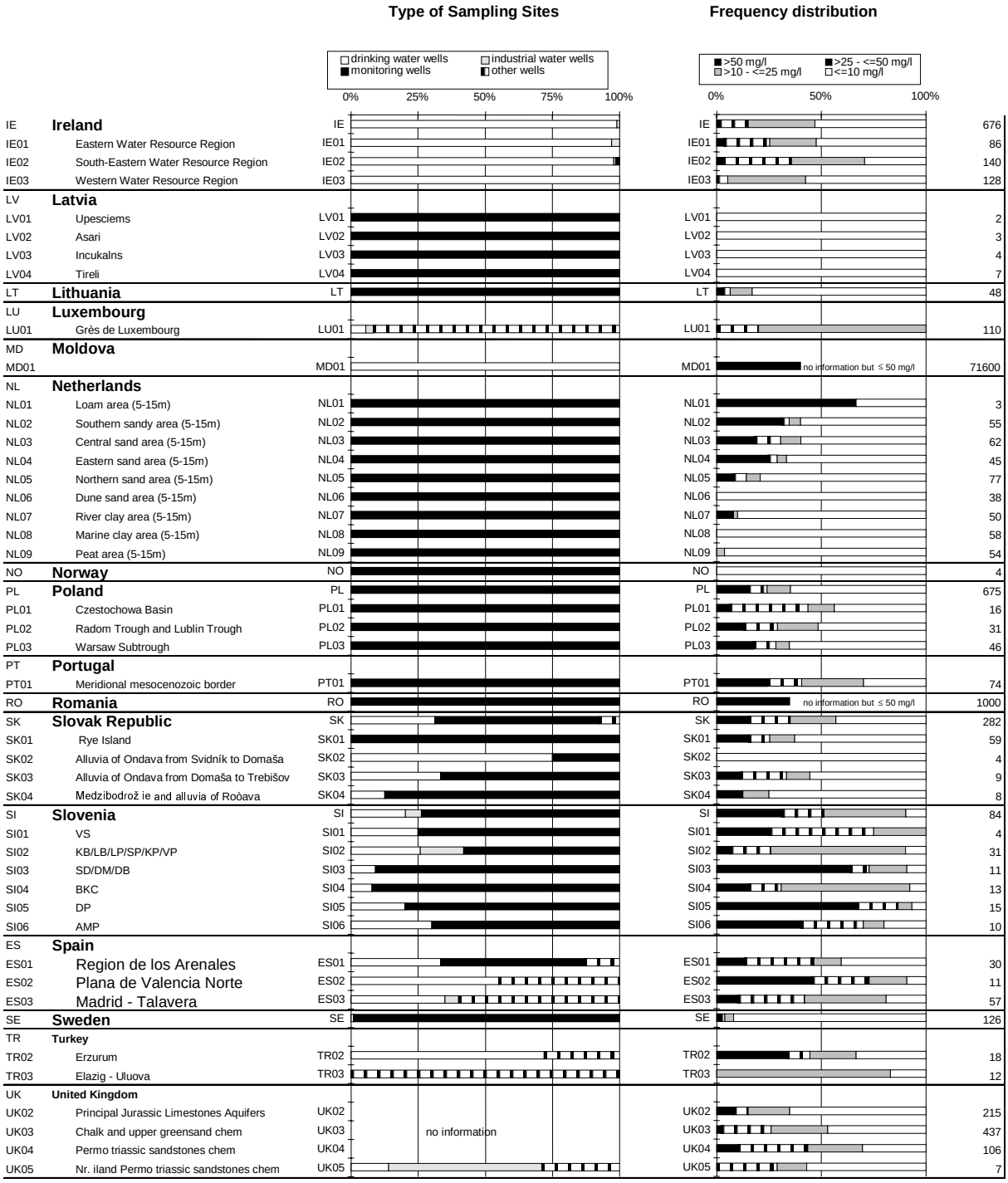
Table 22 continued

code	name	year	area km²	Frequency Distribution absolute						Frequency Distribution in %				
				sampling sites	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50	£10 mg/l	>10 - £25 mg/l	>25 - £50 mg/l	**>50 mg/l**	no info but £ 50
UK	**United Kingdom**													
UK02	Principal Jurassic Limestones Aquifers	1996	6518	215	141	42	15	17		65	20	7	8	
UK03	Chalk and upper greensand chem	1996	24540	437	204	120	103	10		47	27	24	2	
UK04	Permo triassic sandstones chem	1996	12650	106	32	28	35	11		30	26	33	10	
UK05	North Ireland Permo triassic sandstones chem	1994	789	7	4	1	2	0		57	14	29	0	

Table 23 Nitrate - quality data at the regional level



AT	**Austria**	AT	1719
AT01	Marchfeld	AT01	77
AT02	Suedliches Wiener Becken	AT02	100
AT03	Mattigtal	AT03	19
BG	**Bulgaria**		
BG01	Trakia	BG01	71
BG02	Sofia District	BG02	25
BG03	North-East Bulgaria	BG03	19
CY	**Cyprus**		
CY01	Nicosia District	CY01	239
CY02	Limassol District	CY02	232
CY03	Larnaca District	CY03	78
CY04	Paphos District	CY04	182
CY05	Famagusta District	CY05	26
CZ	**Czech Republic**	CZ	476
CZ01	Northern Bohemia Cretaceous Basin	CZ01	84
CZ02	Trebon Basin	CZ02	31
CZ03	Fluvial sediments of the Moravia river	CZ03	11
DK	**Denmark**	DK	1113
DK01	Nitratbæltet, Kastbjerg	DK01	22
DK02	Vestdanmark, Grindsted	DK02	21
DK03	Østdanmark, Skuldelev	DK03	18
EE	**Estonia**	EE	163
EE01	Pandivere upland	EE01	29
EE02	North-East Estonia	EE02	34
EE03	Island Saaremaa	EE03	13
FI	**Finland**	FI	425
FR	**France**	FR	5805
FR01	Nappe d´Alsace	FR01	117
FR02	Calcaires de Champigny	FR02	7
FR03	Craie du Nord et de la Picardie	FR03	793
FR04	Jurassique de Poitou-Charentes	FR04	24
DE	**Germany**	DE	4092
DE01	Baden-Württemberg	DE01	71
DE02	Bayern	DE02	280
DE03	Berlin	DE03	323
DE04	Brandenburg	DE04	82
DE05	Bremen	DE05	149
DE06	Hamburg	DE06	107
DE07	Hessen	DE07	297
DE08	Mecklenburg-Vorpommern	DE08	36
DE09	Niedersachsen	DE09	214
DE10	Nordrhein-Westfalen	DE10	1457
DE11	Rheinland-Pfalz	DE11	641
DE12	Saarland	DE12	110
DE13	Sachsen	DE13	86
DE14	Sachsen-Anhalt	DE14	114
DE15	Schleswig-Holstein	DE15	47
DE16	Thüringen	DE16	78
GR	**Greece**		
GR01	W-Peloponessus	GR01	31
GR02	N-Peloponessus	GR02	43
GR03	E-Peloponessus	GR03	25
GR04	W-Mainland	GR04	27
GR05	Epirus	GR05	17
GR06	Attica	GR06	15
GR07	E-Mainland	GR07	24
GR08	Thessaly	GR08	28
GR09	W-Macedonia	GR09	31
GR10	Central-Macedonia	GR10	40
GR11	E-Macedonia	GR11	23
GR12	Thrace	GR12	32
GR13	Crete	GR13	24
HU	**Hungary**	HU	4282
HU01	Karstic	HU01	309
HU02	G1 Porous media (20-50)	HU02	492
IS	**Iceland**	IS	51



IE	**Ireland**	IE	676
IE01	Eastern Water Resource Region	IE01	86
IE02	South-Eastern Water Resource Region	IE02	140
IE03	Western Water Resource Region	IE03	128
LV	**Latvia**		
LV01	Upesciems	LV01	2
LV02	Asari	LV02	3
LV03	Incukalns	LV03	4
LV04	Tireli	LV04	7
LT	**Lithuania**	LT	48
LU	**Luxembourg**		
LU01	Grès de Luxembourg	LU01	110
MD	**Moldova**		
MD01		MD01	71600
NL	**Netherlands**		
NL01	Loam area (5-15m)	NL01	3
NL02	Southern sandy area (5-15m)	NL02	55
NL03	Central sand area (5-15m)	NL03	62
NL04	Eastern sand area (5-15m)	NL04	45
NL05	Northern sand area (5-15m)	NL05	77
NL06	Dune sand area (5-15m)	NL06	38
NL07	River clay area (5-15m)	NL07	50
NL08	Marine clay area (5-15m)	NL08	58
NL09	Peat area (5-15m)	NL09	54
NO	**Norway**	NO	4
PL	**Poland**	PL	675
PL01	Czestochowa Basin	PL01	16
PL02	Radom Trough and Lublin Trough	PL02	31
PL03	Warsaw Subtrough	PL03	46
PT	**Portugal**		
PT01	Meridional mesocenozoic border	PT01	74
RO	**Romania**	RO	1000
SK	**Slovak Republic**	SK	282
SK01	Rye Island	SK01	59
SK02	Alluvia of Ondava from Svidník to Domaša	SK02	4
SK03	Alluvia of Ondava from Domaša to Trebišov	SK03	9
SK04	Medzibodrož ie and alluvia of Roòava	SK04	8
SI	**Slovenia**	SI	84
SI01	VS	SI01	4
SI02	KB/LB/LP/SP/KP/VP	SI02	31
SI03	SD/DM/DB	SI03	11
SI04	BKC	SI04	13
SI05	DP	SI05	15
SI06	AMP	SI06	10
ES	**Spain**		
ES01	Region de los Arenales	ES01	30
ES02	Plana de Valencia Norte	ES02	11
ES03	Madrid - Talavera	ES03	57
SE	**Sweden**	SE	126
TR	**Turkey**		
TR02	Erzurum	TR02	18
TR03	Elazig - Uluova	TR03	12
UK	**United Kingdom**		
UK02	Principal Jurassic Limestones Aquifers	UK02	215
UK03	Chalk and upper greensand chem	UK03	437
UK04	Permo triassic sandstones chem	UK04	106
UK05	Nr. iland Permo triassic sandstones chem	UK05	7

Table 24 Country specific remarks on pesticides

Austria	Based on a list of all pesticides monitored between 1991 and 1994 those pesticides have been selected, which have been found so far most frequently in concentrations above the detection limit (0.02 - 0.05 µg/l, depending on substance and laboratory). A comprehensive survey of pesticides in groundwater was made in the years 1992 - 1994. Based on the results the long list of pesticides was narrowed down to those pesticides which had actually been found. Therefore only a very limited list of pesticides tailor-made to the very local situation was monitored in 1995/1996.
Cyprus	Serious problems due to intensive use of pesticides in agriculture.
Germany	Major threat especially due to maize and special crops in Baden-Württemberg
Hungary	Analysing groundwater for pesticides is not a routine work so the database of 1993 does not contain any pesticide data. Pesticide data of case studies would be available.
Slovak Republic	Local problems regarding pesticides are due to agricultural activities and cooling water (power stations, refineries ...)

Table 25 Analysed active ingredients on country level

Pesticide	AT	CZ	DE	DK	ES	LU	RO	SI	UK	sum
Footnote	1		2						3	
2,3,5,6-Tetrachloroaniline									x	1
2,3,6-TBA (2,3,6-Trichlorobenzoic acid)									x	1
2,4,5-T	x	x						x	x	4
2,4,6-Trichlorophenol		x								1
2,4-D	x			x				x	x	4
2,4-DB								x	x	2
3-Phenyl-4-hydroxy-6-chloropiridazine								x		1
4-CPA (4-Chlorophenoxy acetic acid)									x	1
Alachlor	x		x	x		x		x		5
Aldicarb									x	1
Aldrin	x		x		x	x	x	x	x	7
Ametryn			x							1
Asulam									x	1
Atrazine	x		x	x		x	x	x	x	7
Atrazine-Desethyl	x		x	x				x	x	5
Atrazine-Desisopropyl	x		x	x				x	x	5
Azinphos-ethyl									x	1
Azinphos-methyl					x				x	2
Bendiocarb									x	1
Bentazone	x		x	x		x			x	5
Bifenox						x				1
Bromacil			x					x		2
Bromoxynil	x			x		x			x	4
Buturon	x									1
Carbaryl									x	1
Carbendazim									x	1
Carbofuran				x					x	2
Carbophenothion									x	1
CCP 4-				x						1
Chlorbromuron	x									1
Chlordane	x									1
Chlordane-cis									x	1
Chlorfenvinphos									x	1
Chloridazon									x	1
Chlorothalonil						x			x	2
Chlortoluron	x		x						x	3
Chloroxuron									x	1
Chlorpyriphos									x	1
Chlorpyriphos-methyl									x	1
Coumaphos									x	1
Cyanazine	x			x				x		3
Cyfluthrin									x	1
DDD (o, p')					x			x		2
DDD (p, p')			x		x		x	x		4
DDE (o, p')					x				x	2
DDE (p, p')			x		x		x	x	x	5
DDT		x						x		2
DDT (o, p')			x		x				x	3
DDT (p, p')			x		x		x	x	x	5

Pesticide	AT	CZ	DE	DK	ES	LU	RO	SI	UK	sum
footnote	1		2						3	
Demeton-S-methyl					x				x	2
Desethylterbutylazine			x							1
Desmetryne			x						x	2
Diazinon					x				x	2
Dicamba	x			x				x	x	4
Dichlorbenil									x	1
Dichlorthiamid				x						1
Dichlorphenol		x								1
Dichlorprop (2,4-DP)	x		x	x				x	x	5
Dichlorvos									x	1
Dieldrin	x		x		x		x	x	x	6
Diflubenzuron									x	1
Dimethoate			x	x					x	3
Dinoseb	x			x					x	3
Dinoseb-Acetat	x									1
Disulfoton					x					1
Diuron	x		x			x		x	x	5
DNOC				x					x	2
Endosulfan			x			x		x	x	4
Endosulfan I					x		x		x	3
Endosulfan II					x		x		x	3
Endosulfan sulfate					x		x			2
Endrin			x		x		x	x	x	5
Endrin aldehyde					x		x			2
EPTC									x	1
Ethiofencarb									x	1
Ethion					x				x	2
Ethofumesate									x	1
Fenitrothion									x	1
Fenoprop								x	x	2
Fenpropimorph						x			x	2
Fenthion									x	1
Fenuron									x	1
Fluoranthen				x						1
Fluroxypyr						x			x	2
Fonofos									x	1
Glyphosate									x	1
Haloxyfop						x				1
HCH, alpha			x				x	x	x	4
HCH, beta			x				x	x	x	4
HCH, delta			x					x		2
HCH, epsilon									x	1
HCH, gamma (Lindane)	x	x	x			x	x	x	x	7
Heptachlor	x	x	x		x		x	x	x	7
Heptachlor-epoxide					x		x	x	x	4
Heptachlor-epoxide cis									x	1
Heptachlor-epoxide trans									x	1
Heptenophos				x						1
Hexachlorobenzene		x			x	x		x	x	5
Hexachlorbenzol	x		x							2

Pesticide	AT	CZ	DE	DK	ES	LU	RO	SI	UK	sum
footnote	1		2						3	
Hexachlorbutadiene								x		1
Hexazinon			x	x						2
Hydroxyatrazine				x						1
Indeno(1,2,3-cd)pyrene				x						1
Ioxynil	x			x					x	3
Isodrin									x	1
Isoproturon	x		x	x		x			x	5
Linuron	x		x	x					x	4
Malathion					x				x	2
MCPA	x		x	x				x	x	5
MCPB	x							x	x	3
Mecoprop (MCPP)	x		x	x				x	x	5
Metalaxyl						x		x	x	3
Metamitron				x				x		2
Metazachlor	x		x	x		x			x	5
Methabenzthiazuron			x			x			x	3
Methiocarb									x	1
Methomyl									x	1
Methoxychlor	x	x								2
Metobromuron	x		x			x				3
Metolachlor	x		x			x		x		4
Metoxuron	x		x							2
Metribuzin			x			x		x		3
Mevinphos									x	1
Monolinuron	x		x						x	3
Monuron									x	1
Napropamide									x	1
Neburon	x								x	2
Orbencarb	x									1
Oxadixyl						x				1
Oxamyl									x	1
Parathion			x		x	x			x	4
Parathion-methyl			x		x	x			x	4
PCSD (Eulan)									x	1
Pendimethalin	x		x	x					x	4
Pentachlorophenol		x							x	2
Permethrin cis									x	1
Permethrin trans									x	1
Phenmedipham									x	1
Phorate									x	1
Pirimicarb				x					x	2
Pirimicarb-methyl									x	1
Prometryne	x		x					x	x	4
Propazine	x		x	x				x	x	5
Propetamphos									x	1
Propiconazole				x						1
Propoxur									x	1
Propyzamide				x					x	2
Pyridate	x									1
Pyridate-M								x		1

Pesticide	AT	CZ	DE	DK	ES	LU	RO	SI	UK	sum
footnote	1		2						3	
Sebutylazine	x		x					x		3
Simazine	x		x	x		x		x	x	6
Tebuconazole						x				1
TCA									x	1
TDE-o,p'									x	1
TDE-p,p'									x	1
Tecnazene									x	1
Terbumeton								x		1
Terbutryn	x		x					x	x	4
Terbuthylazine	x		x	x				x		4
Triadimenol				x						1
Tri-allate									x	1
Triasulfuron						x				1
Triazophos									x	1
Tributyl tin									x	1
Triclopyr									x	1
Trietazine									x	1
Trifluralin	x		x			x			x	4
Triphenyl tin									x	1
Vinclozolin	x								x	2
Sum	47	9	49	36	24	28	16	46	122	

footnotes

1 not at all sampling sites analysed

2 Pesticides analysed in at least the half of all Länder

3 England and Wales

Table 26 Number of sampling sites, sampling frequency and number of monitored pesticides for each groundwater area/region.

country / region		year	area km²	number of sampling sites	sampling frequency per year	Nr. of monitored pesticides	
						range	mean value
Austria		1995	83500	1719	**4**	**8-48**	**15.9**
AT01	Marchfeld	1995	1033	77	4	8-20	15.0
AT02	Südliches Wiener Becken	1995	1191	100	4	8-20	9.7
AT03	Mattigtal	1995	347	19	4	13	
Czech Rep.		1996	78864	215	**1***	**max 9**	
CZ01	Northern Bohemia Cretaceous Basin	1996	3188	46	1*	max 9	
CZ02	Trebon Basin	1996	872	12	1*	max 9	
CZ03	Fluvial sediments of the Moravia river	1996	880	11	1*	max 9	
Denmark		1995	43094	585	**1-4**	**8**	
DK04	Nitratbæltet, Thisted	1995	20	16	1-2	8	
DK02	Vestdanmark, Grindsted	90-95	3,5	22	1-4	8	
DK05	Østdanmark, Nyborg	90-95	3	11	1	8	
Germany		1994		12150		**36-142**	
Luxembourg							
LU01	Grès de Luxembourg	1995	540	28	2	28	
Moldova							
MD01		87-88	33700	29	1	11	
MD03		86-88	20500	26	1-3	11	
Norway		1995		3	**2**	**28**	
Romania							
RO01	South Baragan Plain	1995	4600	61	1	2	
Slovak Rep		1995	49034	14	**1**	**1-5**	**3.9**
SK01	Rye Island	1995	680	59	1-3	3-5	3.9
Slovenia		1996	2034	84	**1-3**	**27-36**	**29.3**
SI01	VS	1996	59	4	2	27	
SI02	KB/LB/LP/SP/KP/VP	1996	534	31		27-36	30.2
SI03	SD/DM/DB	1996	107	11	1-2	27	
SI04	BKC	1996	245	13	2	34	
SI05	DP	1996	434	15	2	27	
SI06	AMP	1996	655	10	2	25	
Spain							
ES04	Duero U.H. 02/08/17/18	1996	17117	15	1	28	
ES05	Tajo U.H. 03/04/05/09	1992	11134	38	1	20	
ES06	Guadiana U.H. 04/06	1993	7717	115	2-4	28	
United Kingdom							
UK01	England and Wales	1995		534	1-20	1-83	17.8
UK02	Principal Jurassic Limestone Aquifers	1995	6518	47	1-83	1-17	2
UK03	Chalk and upper greensand chem	1995	24540	145	1-40	1-20	1.7
UK04	Permo triassic sandstones chem	1995	12650	129	1-63	1-15	2.1

Table 27 Type and distribution of sampling sites monitoring pesticides

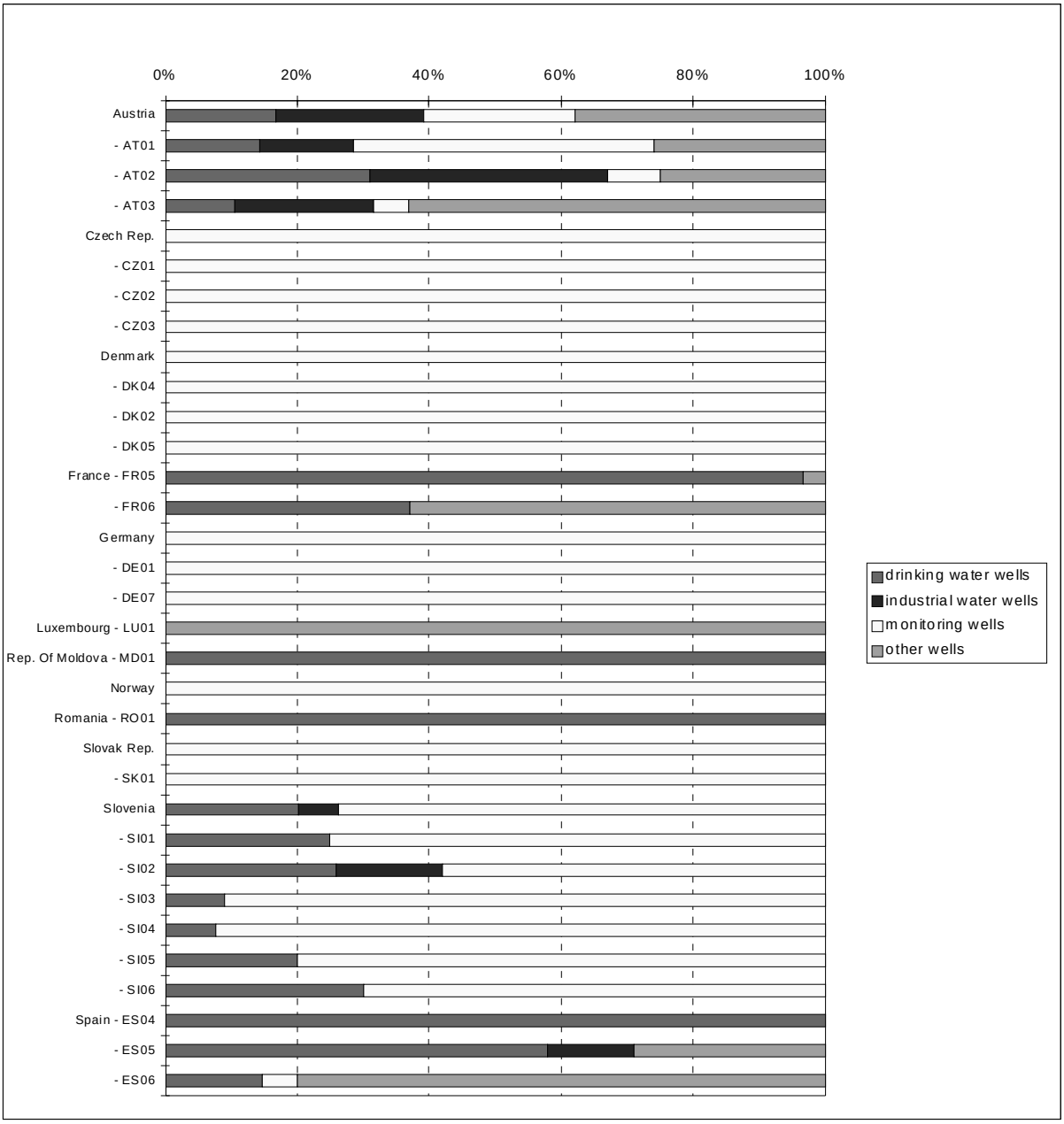


Table 28 Country specific remarks on chloride

Latvia	Sea water intrusion caused by over-exploitation of groundwater is a serious problem for Liepaja city.
Poland	There are some areas of increasing salinity in groundwater due to ascending inflow of saline waters from deep-seated water bearing horizons and of salt water intrusion into Quaternary aquifers.

Table 29 Chloride - Type of sampling sites

							Sampling site absolute					Sampling sites in % of total				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
AT	**Austria**		10			1719	288	386	395	650		**17**	**22**	**23**	**38**	
AT01		Marchfeld	1995	1033	74.54	77	11	11	35	20		14	14	45	26	
AT02		Südliches Wiener Becken	1995	1191	83.96	100	31	36	8	25		31	36	8	25	
AT03		Mattigtal	1995	347	54.76	19	2	4	1	12		11	21	5	63	
	Bulgaria															
BG01		Trakia	1995	7800	9.10	71	54	4	11	2		76	6	15	3	
BG02		Sofia District	1995	1000	25.00	25	5	6	12	2		20	24	48	8	
BG03		North-East Bulgaria	1995	6000	3.17	19	12	2	1	4		63	11	5	21	
	Cyprus															
CY04		Paphos District	1991			106	0	0	0	106		0	0	0	100	
CY06		Limassol - Larnaca District	1991			125	0	0	0	125		0	0	0	100	
CY05		Famagusta District	1991			66	0	0	0	66		0	0	0	100	
CZ	**Czech Republic**		1996			476	0	0	339	137		**0**	**0**	**71**	**29**	
CZ01		Northern Bohemia Cretaceous Basin	1996	3188	26.35	84	0	0	70	14		0	0	83	17	
CZ02		Trebon Basin	1996	872	35.55	31	0	0	31	0		0	0	100	0	
CZ03		Fluvial sediments of the Moravia river	1996	880	12.50	11	0	0	11	0		0	0	100	0	
DK	**Denmark**		1995			1113	0	0	1113	0		**0**	**0**	**100**	**0**	
DK01		Nitratbæltet, Kastbjerg	1995	10	2200.00	22	0	0	22	0		0	0	100	0	
DK02		Vestdanmark, Grindsted	1995	3.5	6000.00	21	0	0	21	0		0	0	100	0	
DK03		Østdanmark, Skuldelev	1995	2	9000.00	18	0	0	18	0		0	0	100	0	
EE	**Estonia**		1996			163	42	0	121	0		**26**	**0**	**74**	**0**	
EE02		North-East Estonia	1996	3400	10.00	34	12	0	22	0		35	0	65	0	
EE03		Island Saaremaa	1996	2900	4.48	13	3	0	10	0		23	0	77	0	
EE04		Tallinn	1996			33	20	0	13	0		61	0	39	0	
FI	**Finland**		8896			455	400	0	55	0		**88**	**0**	**12**	**0**	
FR	**France**		9195			4659					4659					**100**
FR01		Nappe d´Alsace	9195			114					114					100
FR02		Calcaires de Champigny	9195			7					7					100

Table 29 continued

							Sampling site absolute					Sampling sites in % of total				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
FR03		Craie du Nord et de la Picardie	9195			786					786					100
FR04		Jurassique de Poitou-Charentes	9195			24	24					100	0	0	0	
	Germany															
DE09		Niedersachsen	1995	47400	11.10	526	0	0	526	0		0	0	100	0	
DE17		Niedersachsen, Tiefland	1995	34900	12.64	441	0	0	441	0		0	0	100	0	
DE18		Niedersachsen, Bergland	1995	12500	6.80	85	0	0	85	0		0	0	100	0	
DE12		Saarland	1996	2580	43.80	113	87	2	20	4		77	2	18	4	
DE14		Sachsen-Anhalt	1995	20444	5.63	115	0	0	115	0		0	0	100	0	
DE16		Thüringen	1996	16000	5.38	86	0	0	86	0		0	0	100	0	
	Greece															
GR01		W-Peloponessus	1996	7304	4.24	31	13	1	0	17		42	3	0	55	
GR02		N-Peloponessus	1996	7314	5.88	43	15	12	0	16		35	28	0	37	
GR03		E-Peloponessus	1996	8464	2.95	25	2		0	23		8	0	0	92	
GR04		W-Mainland	1996	10417	2.59	27	13	1	0	13		48	4	0	48	
GR05		Epirus	1996	9967	1.71	17	5	5	0	7		29	29	0	41	
GR06		Attica	1996	3201	4.69	15	2	1	0	12		13	7	0	80	
GR07		E-Mainland	1996	12223	1.96	24	7	1	0	16		29	4	0	67	
GR08		Thessaly	1996	13162	2.13	28	6	1	0	21		21	4	0	75	
GR09		W-Macedonia	1996	13696	2.26	31	13	1	0	17		42	3	0	55	
GR10		Central-Macedonia	1996	10389	3.85	40	22	1	0	17		55	3	0	43	
GR11		E-Macedonia	1996	7213	3.19	23	8	0	0	15		35	0	0	65	
GR12		Thrace	1996	11241	2.85	32	7	0	0	25		22	0	0	78	
GR13		Crete	1996	8312	2.89	24	8	0	0	16		33	0	0	67	
HU	**Hungary**		1992			4284	4284	0	0	0		**100**	**0**	**0**	**0**	
HU01		Karstic	1992	9500	32.63	310	310	0	0	0		100	0	0	0	
HU02		G1 Porous media (20-50)	1992	70000	7.36	515	515	0	0	0		100	0	0	0	
IS	**Iceland**					36	36	0	0	0		**100**	**0**	**0**	**0**	
IE	**Ireland**		1995			178	173	3	0	2		**97**	**2**	**0**	**1**	
IE01		Eastern Water Resource Region	1995	7622		23	21	2	0	0		91	9	0	0	

Table 29 continued

							Sampling site absolute					Sampling sites in % of total				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
IE02		South-Eastern Water Resource Region	1995	12768		45	42	1	0	2		93	2	0	4	
IE03		Western Water Resource Region	1995	9615		15	15	0	0	0		100	0	0	0	
	Latvia															
LV01		Upesciems	1996			2	0	0	2	0		0	0	100	0	
LV02		Asari	1996			3	0	0	3	0		0	0	100	0	
LV03		Incukalns	1996			4	0	0	4	0		0	0	100	0	
LV04		Tireli	1996			7	0	0	7	0		0	0	100	0	
LT	**Lithuania**		1996			27	0	0	27	0		0	0	100	0	
	Luxembourg															
LU01		Grès de Luxembourg		540	203.70	110		6	3	101		0	5	3	92	
	Moldova															
MD03			1985	20500	15.22	312					312					100
	Netherlands															
NL01		Loam area (5-15m)	1995	532	5.64	3	0	0	3	0		0	0	100	0	
NL02		Southern sandy area (5-15m)	1995	5452	10.09	55	0	0	55	0		0	0	100	0	
NL03		Central sand area (5-15m)	1995	2451	25.30	62	0	0	62	0		0	0	100	0	
NL04		Eastern sand area (5-15m)	1995	3228	13.94	45	0	0	45	0		0	0	100	0	
NL05		Northern sand area (5-15m)	1995	5123	15.03	77	0	0	77	0		0	0	100	0	
NL06		Dune sand area (5-15m)	1995	794	47.86	38	0	0	38	0		0	0	100	0	
NL07		River clay area (5-15m)	1995	3500	14.29	50	0	0	50	0		0	0	100	0	
NL08		Marine clay area (5-15m)	1995	8823	6.57	58	0	0	58	0		0	0	100	0	
NL09		Peat area (5-15m)	1995	3960	13.13	52	0	0	52	0		0	0	100	0	
NO	**Norway**		1995			4	0	0	4	0		**0**	**0**	**100**	**0**	
PL	**Poland**		1996			675	0	0	675	0		**0**	**0**	**100**	**0**	
PL01		Czestochowa Basin	1996	4105	3.90	16	0	0	16	0		0	0	100	0	
PL02		Radom Trough and Lublin Trough	1996	18670	1.66	31	0	0	31	0		0	0	100	0	
PL03		Warsaw Trough	1996	51000	0.90	46	0	0	46	0		0	0	100	0	

Table 29 continued

							Sampling site absolute					Sampling sites in % of total				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
	Portugal															
PT02		Algarve	1996	5000	15.00	75	0	0	75	0		0	0	100	0	
	Romania															
RO01		South Baragan Plain	1995	4600	13.26	61	61	0	0	0		100	0	0	0	
SK	**Slovak Republic**		1995			282	88	0	173	21		**31**	**0**	**61**	**7**	
SK01		Rye Island	1995	680	86.76	59	0	0	59	0		0	0	100	0	
SK02		Alluvia of Ondava from Svidník to Domaša	1995	65	61.54	4	3	0	1	0		75	0	25	0	
SK03		Alluvia of Ondava from Domaša to Trebišov	1995	130	69.23	9	3	0	6	0		33	0	67	0	
SK04		Medzibodro ie and alluvia of Roòava	1995	240	33.33	8	1	0	7	0		13	0	88	0	
SI	**Slovenia**		1996			84	17	5	62	0		**20**	**6**	**74**	**0**	
SI01		VS	1996	59	67.80	4	1	0	3	0		25	0	75	0	
SI02		KB/LB/LP/SP/KP/VP	1996	533.7	58.09	31	8	5	18	0		26	16	58	0	
SI03		SD/DM/DB	1996	107.2	102.61	11	1	0	10	0		9	0	91	0	
SI04		BKC	1996	245.2	53.02	13	1	0	12	0		8	0	92	0	
SI05		DP	1996	434.3	34.54	15	3	0	12	0		20	0	80	0	
SI06		AMP	1996	654.7	15.27	10	3	0	7	0		30	0	70	0	
	Spain															
ES01		Region de los Arenales	1995	6000	5.17	31	10	0	16	5						
ES02		Plana de Valencia Norte	1995	260	42.31	11	6	0	0	5						
ES03		Madrid - Talavera	1995	6300	8.89	56	20	3	0	33						
SE	**Sweden**		1995			114	0	0	114	0		**0**	**0**	**100**	**0**	
SE01		Kristianstadslätten	1995	525	1.90	1	1	0	1	0	-1	100	0	100	0	-100
SE02		Brattforsheden	1995	80	12.50	1	0	0	1	0		0	0	100	0	
SE03		Badelundaåsen		50	60.00	3	0	0	3	0		0	0	100	0	
	Turkey															
TR01		Küçük Menderes	1996	1135	12.33	14	0	0	0	14		0	0	0	100	
TR02		Erzurum	1996	740	24.32	18	13	0	0	5		72	0	0	28	
TR03		Elazig-Uluova	1995	770	33.77	26	0	0	0	26		0	0	0	100	

Table 29 continued

							Sampling site absolute					Sampling sites in % of total				
code		**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
	United Kingdom															
UK02		Principal Jurassic Limestones Aquifers	1996	6518	34.52	225					225					100
UK03		Chalk and upper greensand chem	1996	24540	16.01	393					393					100
UK04		Permo triassic sandstones chem	1996	12650	4.51	57					57					100
UK05		Northern Ireland Permo triassic sandstones chem	1994	789	8.87	7	0	4	0	3		0	57	0	43	

Table 30 Chloride - Frequency distribution

code		name	year	area km²	frequency distribution absolute						frequency distribution in %				
					sampling sites	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l
AT	**Austria**		1995		1719	1217	303	168	26	5	**71**	**18**	**10**	**2**	**0**
AT01		Marchfeld	1995	1033	78	4	28	42	4	0	5	36	54	5	0
AT02		Südliches Wiener Becken	1995	1191	100	55	25	16	3	1	55	25	16	3	1
AT03		Mattigtal	1995	347	19	19	0	0	0	0	100	0	0	0	0
	Bulgaria														
BG01		Trakia	1995	7800	71	53	15	0	2	1	75	21	0	3	1
BG02		Sofia District	1995	1000	25	11	12	0	2	0	44	48	0	8	0
BG03		North-East Bulgaria	1995	6000	19	2	10	5	2	0	11	53	26	11	0
	Cyprus														
CY04		Paphos District	1991		106	0	0	6	50	50	0	0	6	47	47
CY06		Limassol - Larnaca District	1991		125	0	0	9	27	89	0	0	7	22	71
CY05		Famagusta District	1991		66	0	0	0	4	62	0	0	0	6	94
CZ	**Czech Republic**		1996		476	289	93	60	29	5	**61**	**20**	**13**	**6**	**1**
CZ01		Northern Bohemia Cretaceous Basin	1996	3188	84	65	15	4	0	0	77	18	5	0	0
CZ02		Trebon Basin	1996	872	31	27	4	0	0	0	87	13	0	0	0
CZ03		Fluvial sediments of the Moravia river	1996	880	11	2	1	5	3	0	18	9	45	27	0
DK	**Denmark**		1995		1113	413	519	125	41	15	**37**	**47**	**11**	**4**	**1**
DK01		Nitratbæltet, Kastbjerg	1995	10	22	2	11	7	0	2	9	50	32	0	9
DK02		Vestdanmark, Grindsted	1995	3.5	21	5	15	1	0	0	24	71	5	0	0
DK03		Østdanmark, Skuldelev	1995	2	18	7	6	4	1	0	39	33	22	6	0
EE	**Estonia**		1996		163	88	29	13	17	16	**54**	**18**	**8**	**10**	**10**
EE02		North-East Estonia	1996	3400	34	25	3	1	3	2	74	9	3	9	6
EE03		Island Saaremaa	1996	2900	13	7	3	1	1	1	54	23	8	8	8
EE04		Tallinn	1996		33	3	6	6	11	7	9	18	18	33	21
FI	**Finland**		8896		455	444	8	1	2	0	**98**	**2**	**0**	**0**	**0**
FR	**France**		9195		4659	3252	1069	254	71	13	**70**	**23**	**5**	**2**	**0**
FR01		Nappe d´Alsace	9195		114	17	41	47	9	0	15	36	41	8	0
FR02		Calcaires de Champigny	9195		7	1	4	2	0	0	14	57	29	0	0
FR03		Craie du Nord et de la Picardie	9195		786	531	203	47	5	0	68	26	6	1	0
FR04		Jurassique de Poitou-Charentes	9195		24	9	13	2	0	0	38	54	8	0	0
	Germany														
DE09		Niedersachsen	1995	47400	526	218	154	84	24	46	41	29	16	5	9
DE17		Niedersachsen, Tiefland	1995	34900	441	179	145	64	13	40	41	33	15	3	9
DE18		Niedersachsen, Bergland	1995	12500	85	39	9	20	11	6	46	11	24	13	7
DE12		Saarland	1996	2580	113	90	17	2	3	1	80	15	2	3	1
DE14		Sachsen-Anhalt	1995	20444	115						28	25	20	13	13
DE16		Thüringen	1996	16000	86	58	8	12	6	2	67	9	14	7	2
	Greece														
GR01		W-Peloponessus	1996	7304	10	1	1	3	4	1	10	10	30	40	10
GR02		N-Peloponessus	1996	7314	16	6	5	2	2	1	38	31	13	13	6

Table 30 continued

code		name	year	area km²	frequency distribution absolute						frequency distribution in %				
					sampling sites	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l
GR03		E-Peloponessus	1996	8464	17	7	0	3	4	3	41	0	18	24	18
GR04		W-Mainland	1996	10417	17	14	0	1	1	1	82	0	6	6	6
GR05		Epirus	1996	9967	11	9	1	1	0	0	82	9	9	0	0
GR06		Attica	1996	3201	5	1	0	2	1	1	20	0	40	20	20
GR07		E-Mainland	1996	12223	15	7	2	3	0	3	47	13	20	0	20
GR08		Thessaly	1996	13162	20	17	2	0	1	0	85	10	0	5	0
GR09		W-Macedonia	1996	13696	20	17	2	1	0	0	85	10	5	0	0
GR10		Central-Macedonia	1996	10389	33	11	14	4	2	2	33	42	12	6	6
GR11		E-Macedonia	1996	7213	19	13	4	2	0	0	68	21	11	0	0
GR12		Thrace	1996	11241	35	13	8	5	4	5	37	23	14	11	14
GR13		Crete	1996	8312	19	3	2	4	5	5	16	11	21	26	26
HU	**Hungary**		1992		4284	3527	580	83	75	19	**82**	**14**	**2**	**2**	**0**
HU01		Karstic	1992	9500	310	249	48	9	3	1	80	15	3	1	0
HU02		G1 Porous media (20-50)	1992	70000	515	440	54	18	3	0	85	10	3	1	0
IS	**Iceland**				36	30	1	3	1	1	**83**	**3**	**8**	**3**	**3**
IE	**Ireland**		1995		178	121	51	5	1	0	**68**	**29**	**3**	**1**	**0**
IE01		Eastern Water Resource Region	1995	7622	23	17	3	2	1	0	74	13	9	4	0
IE02		South-Eastern Water Resource Region	1995	12768	45	27	18	0	0	0	60	40	0	0	0
IE03		Western Water Resource Region	1995	9615	15	10	5	0	0	0	67	33	0	0	0
	Latvia														
LV01		Upesciems	1996		2	0	0	0	0	2	0	0	0	0	100
LV02		Asari	1996		3	0	0	2	1	0	0	0	67	33	0
LV03		Incukalns	1996		4	3	0	1	0	0	75	0	25	0	0
LV04		Tireli	1996		7	2	0	3	2	0	29	0	43	29	0
LT	**Lithuania**		1996		77	56	16	5	0	0	**73**	**21**	**6**	**0**	**0**
LU	**Luxembourg**														
LU01		Grès de Luxembourg		540	110	110	0	0	0	0	100	0	0	0	0
MD03	**Republic of Moldova**		1985	20500	312	37	100	67	73	35	12	32	21	23	11
	Netherlands														
NL01		Loam area (5-15m)	1995	532	3	0	2	1	0	0	0	67	33	0	0
NL02		Southern sandy area (5-15m)	1995	5452	55	22	21	10	2	0	40	38	18	4	0
NL03		Central sand area (5-15m)	1995	2451	62	33	17	8	3	1	53	27	13	5	2
NL04		Eastern sand area (5-15m)	1995	3228	45	15	23	6	1	0	33	51	13	2	0
NL05		Northern sand area (5-15m)	1995	5123	77	25	26	16	6	4	32	34	21	8	5
NL06		Dune sand area (5-15m)	1995	794	38	0	10	16	9	3	0	26	42	24	8
NL07		River clay area (5-15m)	1995	3500	50	14	16	10	9	1	28	32	20	18	2
NL08		Marine clay area (5-15m)	1995	8823	58	1	6	5	17	29	2	10	9	29	50
NL09		Peat area (5-15m)	1995	3960	52	10	7	10	13	12	19	13	19	25	23
NO	**Norway**		1995		4	4	0	0	0	0	**100**	**0**	**0**	**0**	**0**
PL	**Poland**		1996		675	431	105	77	45	17	**64**	**16**	**11**	**7**	**3**
PL01		Czestochowa Basin	1996	4105	16	12	3	1	0	0	75	19	6	0	0
PL02		Radom Trough and Lublin Trough	1996	18670	31	21	5	2	1	2	68	16	6	3	6

Table 30 continued

code		name	year	area km²	frequency distribution absolute						frequency distribution in %				
					sampling sites	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l	≤25 mg/l	>25-≤50 mg/l	>50-≤100 mg/l	>100-≤250 mg/l	>250 mg/l
PL03		Warsaw Trough	1996	51000	46	32	3	6	2	3	70	7	13	4	7
	Portugal														
PT02		Algarve	1996	5000	75	4	13	21	21	16	5	17	28	28	21
	Romania														
RO01		South Baragan Plain	1995	4600	61	0	7	11	27	16	0	11	18	44	26
SK	**Slovak Republic**		1995		282	125	74	55	26	2	**44**	**26**	**20**	**9**	**1**
SK01		Rye Island	1995	680	59	34	11	13	1	0	58	19	22	2	0
SK02		Alluvia of Ondava from Svidník to Domaša	1995	65	4	3	1	0	0	0	75	25	0	0	0
SK03		Alluvia of Ondava from Domaša to Trebišov	1995	130	9	1	4	4	0	0	11	44	44	0	0
SK04		Medzibodro ie and alluvia of Roòava	1995	240	8	4	3	1	0	0	50	38	13	0	0
SI	**Slovenia**		1996		84	75	9	0	0	0	**89**	**11**	**0**	**0**	**0**
SI01		VS	1996	59	4	4	0	0	0	0	100	0	0	0	0
SI02		KB/LB/LP/SP/KP/VP	1996	533.7	31	30	1	0	0	0	97	3	0	0	0
SI03		SD/DM/DB	1996	107.2	11	10	1	0	0	0	91	9	0	0	0
SI04		BKC	1996	245.2	13	13	0	0	0	0	100	0	0	0	0
SI05		DP	1996	434.3	15	13	2	0	0	0	87	13	0	0	0
SI06		AMP	1996	654.7	10	5	5	0	0	0	50	50	0	0	0
	Spain														
ES01		Region de los Arenales	1995	6000	31	9	9	8	3	2	29	29	26	10	6
ES02		Plana de Valencia Norte	1995	260	11	0	0	5	4	2	0	0	45	36	18
ES03		Madrid - Talavera	1995	6300	56	27	19	5	4	1	48	34	9	7	2
SE	**Sweden**		1995		114	106	7	1	0	0	**93**	**6**	**1**	**0**	**0**
SE01		Kristianstadslätten	1995	525	1	1	0	0	0	0	100	0	0	0	0
SE02		Brattforsheden	1995	80	1	1	0	0	0	0	100	0	0	0	0
SE03		Badelundaåsen		50	3	2	1	0	0	0	67	33	0	0	0
	Turkey														
TR01		Küçük Menderes	1996	1135	14	1	11	0	1	1	7	79	0	7	7
TR02		Erzurum	1996	740	18	10	3	2	3	0	56	17	11	17	0
TR03		Elazig-Uluova	1995	770	26	12	10	4	0	0	46	38	15	0	0
	United Kingdom														
UK02		Principal Jurassic Limestones Aquifers	1996	6518	225	34	81	61	25	24	15	36	27	11	11
UK03		Chalk and upper greensand chem	1996	24540	393	160	122	60	34	17	41	31	15	9	4
UK04		Permo triassic sandstones chem	1996	12650	57	15	22	7	8	5	26	39	12	14	9
UK05		Nr. iland Permo triassic sandstones chem	1994	789	7	4	3	0	0	0	57	43	0	0	0

Table 31 Chloride - Groundwater quality at the regional level

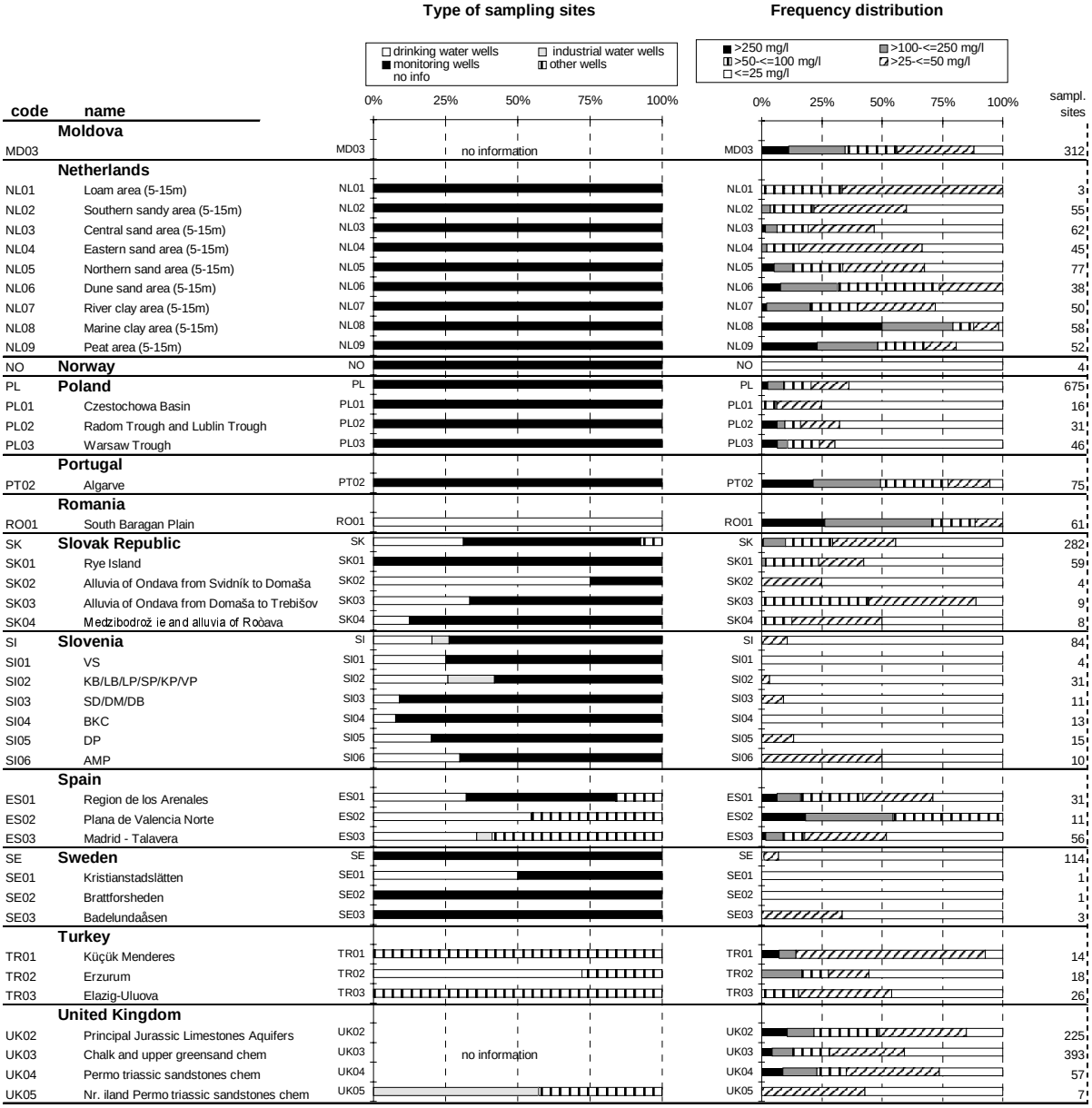


Table 32 pH- Types of sampling station

					Sampling sites absolute						Sampling Sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monito-ring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
AT	**Austria**	1995			1719	288	386	395	650		**17**	**22**	**23**	**38**	
AT01	Marchfeld	1995	1033	74.54	77	11	11	35	20		14	14	45	26	
AT02	Südliches Wiener Becken	1995	1191	83.96	100	31	36	8	25		31	36	8	25	
AT03	Mattigtal	1995	347	54.76	19	2	4	1	12		11	21	5	63	
	Bulgaria														
BG01	Trakia	1995	7800	9.10	71	54	4	11	2		76	6	15	3	
BG02	Sofia District	1995	1000	25.00	25	5	6	12	2		20	24	48	8	
BG03	North-East Bulgaria	1995	6000	3.17	19	12	2	1	4		63	11	5	21	
CZ	**Czech Republic**	1996			476	0	0	339	137		**0**	**0**	**71**	**29**	
CZ01	Northern Bohemia Cratecous Basin	1996	3188	26.35	84	0	0	70	14		0	0	83	17	
CZ02	Trebon Basin	1996	872	35.55	31	0	0	31	0		0	0	100	0	
CZ03	Fluvial sediments of the Moravia river	1996	880	12.50	11	0	0	11	0		0	0	100	0	
DK	**Denmark**	1995			1085	0	0	1085	0		**0**	**0**	**100**	**0**	
DK01	Nitratbæltet, Kastbjerg	1995	10	2200.00	22	0	0	22	0		0	0	100	0	
DK02	Vestdanmark, Grindsted	1995	3.5	6000.00	21	0	0	21	0		0	0	100	0	
DK03	Østdanmark, Skuldelev	1995	2	9000.00	18	0	0	18	0		0	0	100	0	
EE	**Estonia**	1996			163	42	0	121	0		**26**	**0**	**74**	**0**	
EE02	North-East Estonia	1996	3400	10.00	34	12	0	22	0		35	0	65	0	
EE03	Island Saaremaa	1996	2900	4.48	13	3	0	10	0		23	0	77	0	
EE04	Tallin	1996			33	20	0	13	0		61	0	39	0	
FI	**Finland**	8896			595	540	0	55	0		**91**	**0**	**9**	**0**	
FR	**France**	9195			5541					5541					**100**
FR01	Nappe d´Alsace	9195			116					116					100
FR02	Calcaires de Champigny	9195			8	3	0	0	5		38	0	0	63	
FR03	Craie du Nord et de la Picardie	9195			787					787					100
FR04	Jurassique de Poitou-Charentes	9195			24	24	0	0	0		100	0	0	0	
	Germany														
DE01	Baden-Württemberg	1995			2647					2647					100
DE09	Niedersachsen	1995	47400	11.10	526	0	0	526	0		0	0	100	0	
DE17	Niedersachsen Tiefland	1995	34900	12.64	441	0	0	441	0		0	0	100	0	
DE18	Niedersachsen Bergland	1995	12500	6.80	85	0	0	85	0		0	0	100	0	
DE12	Saarland	1996	2580	43.80	113	87	2	20	4		77	2	18	4	
DE14	Sachsen-Anhalt	1995			115	0	0	115	0		0	0	100	0	
DE16	Thüringen	1996	16000	5.38	86	0	0	86	0		0	0	100	0	
	Greece														
GR01	W-Peloponessus	1996	7304												
GR02	N-Peloponessus	1996	7314												
GR03	E-Peloponessus	1996	8464												
GR04	W-Mainland	1996	10417												
GR05	Epirus	1996	9967												
GR06	Attica	1996	3201			some inconsistency									

Table 32 continued

					Sampling sites absolute						Sampling Sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
GR07	E-Mainland	1996	12223												
GR08	Thessaly	1996	13162												
GR09	W-Macedonia	1996	13696												
GR10	Central-Macedonia	1996	10389												
GR11	E-Macedonia	1996	7213												
GR12	Thrace	1996	11241												
GR13	Crete	1996	8312												
HU	**Hungary**	1992	93000	41.90	3897	3897	0	0	0		**100**	**0**	**0**	**0**	
HU01	Karstic	1992	9500	28.11	267	267	0	0	0		100	0	0	0	
HU02	G1 Porous media (20-50)	1992	70000	6.64	465	465	0	0	0		100	0	0	0	
IS	**Iceland**				37	37	0	0	0						
IE	**Ireland**	1995			178	173	3	0	2		**97**	**2**	**0**	**1**	
IE01	Eastern Water Resource Region	1995	7622	3.02	23	21	2	0	0		91	9	0	0	
IE02	South-Eastern Water Resource Region	1995	12768	3.52	45	42	1	0	2		93	2	0	4	
IE03	Western Water Resource Region	1995	9615	1.56	15	15	0	0	0		100	0	0	0	
	Latvia														
LV01	Upesciems	1996			2	0	0	2	0		0	0	100	0	
LV02	Asari	1996			3	0	0	3	0		0	0	100	0	
LV03	Incukalns	1996			4	0	0	4	0		0	0	100	0	
LV04	Tireli	1996			7	0	0	7	0		0	0	100	0	
LT	**Lithuania**	1996			27	0	0	27	0		0	0	100	0	
	Luxembourg														
LU01	Grès de Luxembourg		540	203.70	110	0	6	3	101		0	5	3	92	
	Moldova														
MD03		1985	20500	14.05	288					288					100
	Netherlands														
NL01	Loam area (5-15m)	1995	532	5.64	3	0	0	3	0		0	0	100	0	
NL02	Southern sandy area (5-15m)	1995	5452	9.90	54	0	0	54	0		0	0	100	0	
NL03	Central sand area (5-15m)	1995	2451	25.30	62	0	0	62	0		0	0	100	0	
NL04	Eastern sand area (5-15m)	1995	3228	13.94	45	0	0	45	0		0	0	100	0	
NL05	Northern sand area (5-15m)	1995	5123	14.84	76	0	0	76	0		0	0	100	0	
NL06	Dune sand area (5-15m)	1995	794	47.86	38	0	0	38	0		0	0	100	0	
NL07	River clay area (5-15m)	1995	3497	14.30	50	0	0	50	0		0	0	100	0	
NL08	Marine clay area (5-15m)	1995	8823	6.57	58	0	0	58	0		0	0	100	0	
NL09	Peat area (5-15m)	1995	3959	12.88	51	0	0	51	0		0	0	100	0	
NO	**Norway**	1995			4	0	0	4	0		**0**	**0**	**100**	**0**	
PL	**Poland**	1996			676	0		676			**0**	**0**	**100**	**0**	
PL01	Czestochowa Basin	1996	4105	3.90	16	0	0	16	0		0	0	100	0	
PL02	Radom Trough and Lublin Trough	1996	18670	1.66	31	0	0	31	0		0	0	100	0	
PL03	Warsaw	1996	51000	0.90	46	0	0	46	0		0	0	100	0	
	Portugal														
PT02	Algarve	1996	5000	14.00	70	0	0	70	0		0	0	100	0	

Table 32 continued

					Sampling sites absolute						Sampling Sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
	Romania														
RO01	South Baragan Plain	1995	4600	13.26	61	61	0	0	0		100	0	0	0	
SK	**Slovak Republic**	1995			282	88	0	173	21		**31**	**0**	**61**	**7**	
SK01	Rye Island	1995	680	86.76	59	0	0	59	0		0	0	100	0	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	61.54	4	3	0	1	0		75	0	25	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	69.23	9	3	0	6	0		33	0	67	0	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	33.33	8	1	0	7	0		13	0	88	0	
SI	**Slovenia**	1996			84	17	5	62	0		**20**	**6**	**74**	**0**	
SI01	VS	1996	59	67.80	4	1	0	3	0		25	0	75	0	
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	58.09	31	8	5	18	0		26	16	58	0	
SI03	SD/DM/DB	1996	107.2	102.61	11	1	0	10	0		9	0	91	0	
SI04	BKC	1996	245.2	53.02	13	1	0	12	0		8	0	92	0	
SI05	DP	1996	434.3	34.54	15	3	0	12	0		20	0	80	0	
SI06	AMP	1996	654.7	15.27	10	3	0	7	0		30	0	70	0	
	Spain														
ES01	Region de los Arenales	1995	6000	5.00	30	10	0	16	4		33	0	53	13	
ES02	Plana de Valencia Norte	1995	260	42.31	11	6	0	0	5		55	0	0	45	
ES03	Madrid - Talavera	1995	6300	9.05	57	20	3	0	34		35	5	0	60	
SE	**Sweden**	1995			114	0	0	114	0		**0**	**0**	**100**	**0**	
SE01	Kristianstadslätten	1995	525	1.90	1	1	0	1	0	-1	100	0	100	0	-100
SE02	Brattforsheden	1995	80	12.50	1	0	0	1	0		0	0	100	0	
SE03	Badelundaåsen		50	60.00	3	0	0	3	0		0	0	100	0	
	Turkey														
TR01	Küçük Menderes	1996	1135	12.33	14	0	0	0	14		0	0	0	100	
TR02	Erzurum	1996	740	24.32	18	13	0	0	5		72	0	0	28	
TR03	Elazig-Uluova	1995	770	33.77	26	0	0	0	26		0	0	0	100	
	United Kingdom														
UK02	Principal Jurassic Limestones Aquifers	1996	6518	33.29	217					217					100
UK03	Chalk and upper greensand chem	1996	24540	18.46	453					453					100
UK04	Permo triassic sandstones chem	1996	12650	10.43	132					132					100
UK05	Northern Ireland Permo triassic sandstones chem	1994	789	8.87	7	0	4	0	3		0	57	0	43	

Table 33 pH- Frequency distribution

					frequency distribution absolute						frequency distribution in %					
code	**name**	**year**	**area km²**	sampling sites	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5
AT	**Austria**	1995		1719	1	66	1284	365	3		**0**	**4**	**75**	**21**	**0**	
AT01	Marchfeld	1995	1033	77	0	0	69	8	0		0	0	90	10	0	
AT02	Südliches Wiener Becken	1995	1191	100	0	0	71	29	0		0	0	71	29	0	
AT03	Mattigtal	1995	347	19	0	0	15	4	0		0	0	79	21	0	
	Bulgaria															
BG01	Trakia	1995	7800	71	0	0	52	19	0		0	0	73	27	0	
BG02	Sofia District	1995	1000	25	0	0	13	12	0		0	0	52	48	0	
BG03	North-East Bulgaria	1995	6000	19	0	0	11	8	0		0	0	58	42	0	
CZ	**Czech Republic**	1996		476	6	87	291	86	6		**1**	**18**	**61**	**18**	**1**	
CZ01	Northern Bohemia Cratecous Basin	1996	3188	84	1	10	58	15	0		1	12	69	18	0	
CZ02	Trebon Basin	1996	872	31	2	22	4	2	1		6	71	13	6	3	
CZ03	Fluvial sediments of the Moravia river	1996	880	11	0	2	8	0	1		0	18	73	0	9	
DK	**Denmark**	1995		1085	78	135	484	388	0		**7**	**12**	**45**	**36**	**0**	
DK01	Nitratbæltet, Kastbjerg	1995	10	22	0	0	4	18	0		0	0	18	82	0	
DK02	Vestdanmark, Grindsted	1995	3.5	21	7	12	2	0	0		33	57	10	0	0	
DK03	Østdanmark, Skuldelev	1995	2	18	0	0	9	9	0		0	0	50	50	0	
EE	**Estonia**	1996		163	0	3	49	94	17		**0**	**2**	**30**	**58**	**10**	
EE02	North-East Estonia	1996	3400	34	0	2	16	14	2		0	6	47	41	6	
EE03	Island Saaremaa	1996	2900	13	0	0	11	2	0		0	0	85	15	0	
EE04	Tallinn	1996		33	0	1	8	21	3		0	3	24	64	9	
FI	**Finland**	8896		589	10	392	164	23	0		**2**	**67**	**28**	**4**	**0**	
FR	**France**	9195		5541	378	1373	2880	904	6		**7**	**25**	**52**	**16**	**0**	
FR01	Nappe d´Alsace	9195		116	0	1	106	8	1		0	1	91	7	1	
FR02	Calcaires de Champigny	9195		8	0	0	8	0	0		0	0	100	0	0	
FR03	Craie du Nord et de la Picardie	9195		787	0	0	765	22	0		0	0	97	3	0	
FR04	Jurassique de Poitou-Charentes	9195		24	0	0	24	0	0		0	0	100	0	0	
	Germany															
DE01	Baden-Württemberg	1995		2647		184				2463		7				93
DE09	Niedersachsen	1995	47400	526	101	164	207	51	3		19	31	39	10	1	
DE17	Niedersachsen Tiefland	1995	34900	441	95	150	149	45	2		22	34	34	10	0	
DE18	Niedersachsen Bergland	1995	12500	85	6	14	58	6	1		7	16	68	7	1	
DE12	Saarland	1996	2580	113	4	45	41	21	2		4	40	36	19	2	
DE14	Sachsen-Anhalt	1995		115		15				100		13			0	87
DE16	Thüringen	1996	16000	86	2	15	52	16	1		2	17	60	19	1	
	Greece															
GR01	W-Peloponessus	1996	7304	10	0	0	9	1	0		0	0	90	10	0	
GR02	N-Peloponessus	1996	7314	16	0	0	10	5	1		0	0	63	31	6	
GR03	E-Peloponessus	1996	8464	17	0	0	12	5	0		0	0	71	29	0	
GR04	W-Mainland	1996	10417	17	0	0	13	4	0		0	0	76	24	0	
GR05	Epirus	1996	9967	11	0	0	3	8	0		0	0	27	73	0	
GR06	Attica	1996	3201	5	0	0	1	4	0		0	0	20	80	0	

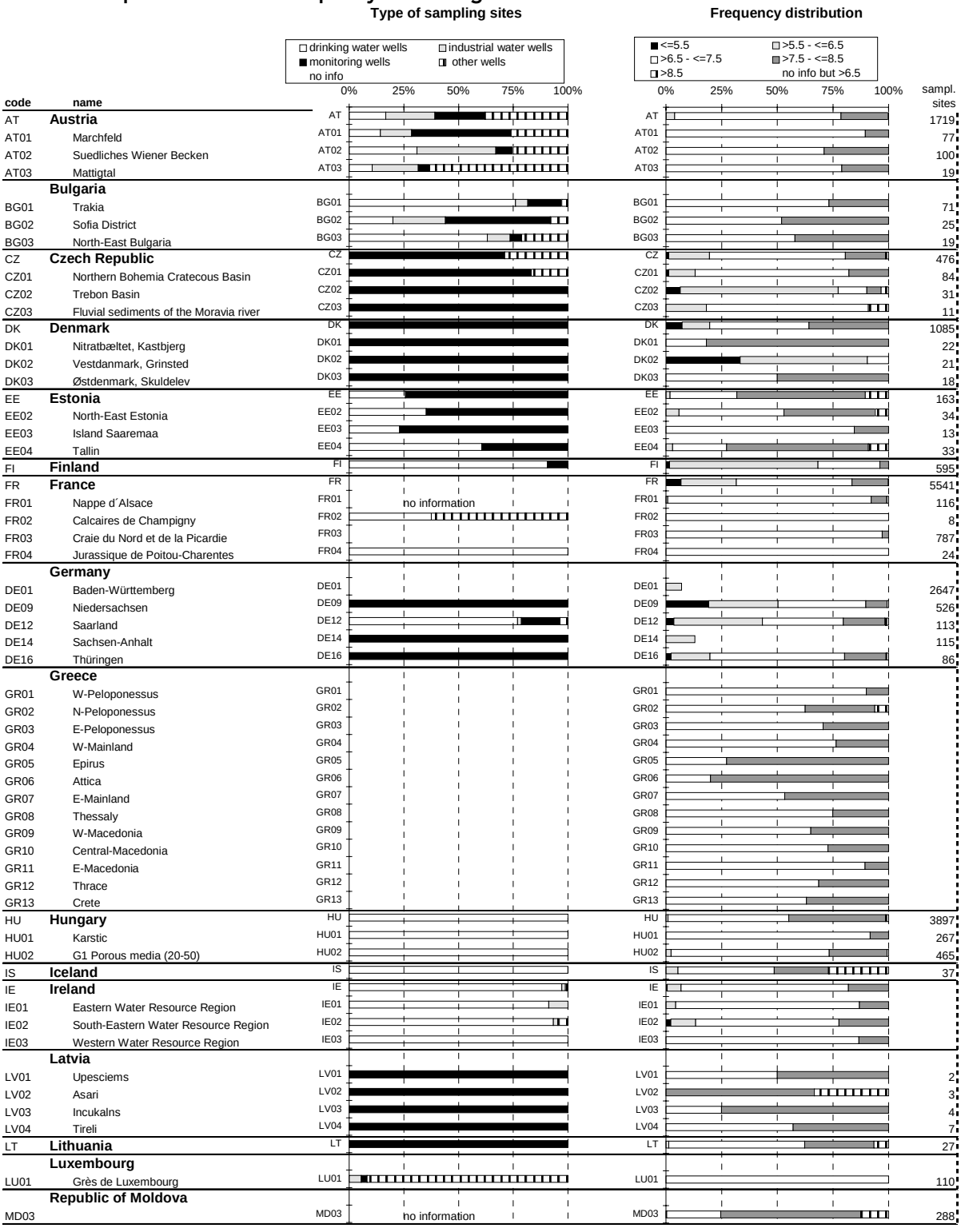
Table 33 continued

					frequency distribution absolute						frequency distribution in %					
code	**name**	**year**	**area km²**	sampling sites	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5
GR07	E-Mainland	1996	12223	15	0	0	8	7	0		0	0	53	47	0	
GR08	Thessaly	1996	13162	20	0	0	15	5	0		0	0	75	25	0	
GR09	W-Macedonia	1996	13696	20	0	0	13	7	0		0	0	65	35	0	
GR10	Central-Macedonia	1996	10389	33	0	0	24	9	0		0	0	73	27	0	
GR11	E-Macedonia	1996	7213	19	0	0	17	2	0		0	0	89	11	0	
GR12	Thrace	1996	11241	35	0	0	24	11	0		0	0	69	31	0	
GR13	Crete	1996	8312	19	0	0	12	7	0		0	0	63	37	0	
HU	**Hungary**	1992	93000	3897	0	35	2118	1695	49		**0**	**1**	**54**	**43**	**1**	
HU01	Karstic	1992	9500	267	0	0	245	22	0		0	0	92	8	0	
HU02	G1 Porous media (20-50)	1992	70000	465	0	11	330	121	3		0	2	71	26	1	
IS	**Iceland**			37	0	2	16	9	10		**0**	**5**	**43**	**24**	**27**	
IE	**Ireland**	1995		178	1	11	134	32	0		**1**	**6**	**75**	**18**	**0**	
IE01	Eastern Water Resource Region	1995	7622	23	0	1	19	3	0		0	4	83	13	0	
IE02	South-Eastern Water Resource Region	1995	12768	45	1	5	29	10	0		2	11	64	22	0	
IE03	Western Water Resource Region	1995	9615	15	0	0	13	2	0		0	0	87	13	0	
	Latvia															
LV01	Upesciems	1996		2	0	0	1	1	0		0	0	50	50	0	
LV02	Asari	1996		3	0	0	0	2	1		0	0	0	67	33	
LV03	Incukalns	1996		4	0	0	1	3	0		0	0	25	75	0	
LV04	Tireli	1996		7	0	0	4	3	0		0	0	57	43	0	
LT	**Lithuania**	1996		77	0	1	47	24	5		**0**	**1**	**61**	**31**	**6**	
	Luxembourg															
LU01	Grès de Luxembourg		540	110	0	0	110	0	0		0	0	100	0	0	
	Moldova															
MD03		1985	20500	288	0	1	70	181	36		0	0	24	63	13	
	Netherlands															
NL01	Loam area (5-15m)	1995	532	3	0	0	3	0	0		0	0	100	0	0	
NL02	Southern sandy area (5-15m)	1995	5452	54	28	16	8	2	0		52	30	15	4	0	
NL03	Central sand area (5-15m)	1995	2451	62	17	11	24	10	0		27	18	39	16	0	
NL04	Eastern sand area (5-15m)	1995	3228	45	2	3	30	9	1		4	7	67	20	2	
NL05	Northern sand area (5-15m)	1995	5123	76	23	32	20	1	0		30	42	26	1	0	
NL06	Dune sand area (5-15m)	1995	794	38	0	0	24	14	0		0	0	63	37	0	
NL07	River clay area (5-15m)	1995	3497	50	1	1	45	3	0		2	2	90	6	0	
NL08	Marine clay area (5-15m)	1995	8823	58	0	8	42	8	0		0	14	72	14	0	
NL09	Peat area (5-15m)	1995	3959	51	1	5	42	3	0		2	10	82	6	0	
NO	**Norway**	1995		4	4	0	0	0	0		**100**	**0**	**0**	**0**	**0**	
PL	**Poland**	1996		676	0	40	467	158	11		**0**	**6**	**69**	**23**	**2**	
PL01	Czestochowa Basin	1996	4105	16	0	1	12	3	0		0	6	75	19	0	
PL02	Radom Trough and Lublin Trough	1996	18670	31	0	1	27	3	0		0	3	87	10	0	
PL03	Warsaw	1996	51000	46	0	0	31	15	0		0	0	67	33	0	
	Portugal															
PT02	Algarve	1996	5000	70	0	1	67	2	0		0	1	96	3	0	

Table 33 continued

					frequency distribution absolute						frequency distribution in %					
code	**name**	**year**	**area km²**	sampling sites	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5	<=5.5	>5.5 - <=6.5	>6.5 - <=7.5	>7.5 - <=8.5	>8.5	no info but >6.5
	Romania															
RO01	South Baragan Plain	1995	4600	61	0	1	18	41	1		0	2	30	67	2	
SK	**Slovak Republic**	1995		282	1	12	175	94	0		**0**	**4**	**62**	**33**	**0**	
SK01	Rye Island	1995	680	59	0	0	38	21	0		0	0	64	36	0	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	4	0	0	4	0	0		0	0	100	0	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	9	0	2	7	0	0		0	22	78	0	0	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	8	0	1	6	1	0		0	13	75	13	0	
SI	**Slovenia**	1996		84	0	4	69	11	0		**0**	**5**	**82**	**13**	**0**	
SI01	VS	1996	59	4	0	0	4	0	0		0	0	100	0	0	
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	31	0	0	24	7	0		0	0	77	23	0	
SI03	SD/DM/DB	1996	107.2	11	0	1	10	0	0		0	9	91	0	0	
SI04	BKC	1996	245.2	13	0	0	9	4	0		0	0	69	31	0	
SI05	DP	1996	434.3	15	0	0	15	0	0		0	0	100	0	0	
SI06	AMP	1996	654.7	10	0	3	7	0	0		0	30	70	0	0	
	Spain															
ES01	Region de los Arenales	1995	6000	30	0	0	1	24	5		0	0	3	80	17	
ES02	Plana de Valencia Norte	1995	260	11	0	0	0	11	0		0	0	0	100	0	
ES03	Madrid - Talavera	1995	6300	57	0	0	9	44	4		0	0	16	77	7	
SE	**Sweden**	1995		114	20	37	44	13	0		**18**	**32**	**39**	**11**	**0**	
SE01	Kristianstadslätten	1995	525	1	0	0	0	1	0		0	0	0	100	0	
SE02	Brattforsheden	1995	80	1	0	0	1	0	0		0	0	100	0	0	
SE03	Badelundaåsen		50	3	0	0	1	2	0		0	0	33	67	0	
	Turkey															
TR01	Küçük Menderes	1996	1135	14	0	0	12	2	0		0	0	86	14	0	
TR02	Erzurum	1996	740	18	0	0	0	18	0		0	0	0	100	0	
TR03	Elazig-Uluova	1995	770	26	0	0	0	26	0		0	0	0	100	0	
	United Kingdom															
UK02	Principal Jurassic Limestones Aquifers	1996	6518	217	0	0	79	121	17		0	0	36	56	8	
UK03	Chalk and upper greensand chem	1996	24540	453	0	8	305	132	8		0	2	67	29	2	
UK04	Permo triassic sandstones chem	1996	12650	132	0	6	83	43	0		0	5	63	33	0	
UK05	Northern Ireland Permo triassic sandstones chem	1994	789	7	0	0	4	3	0		0	0	57	43	0	

Table 34 pH - Groundwater quality at the regional level



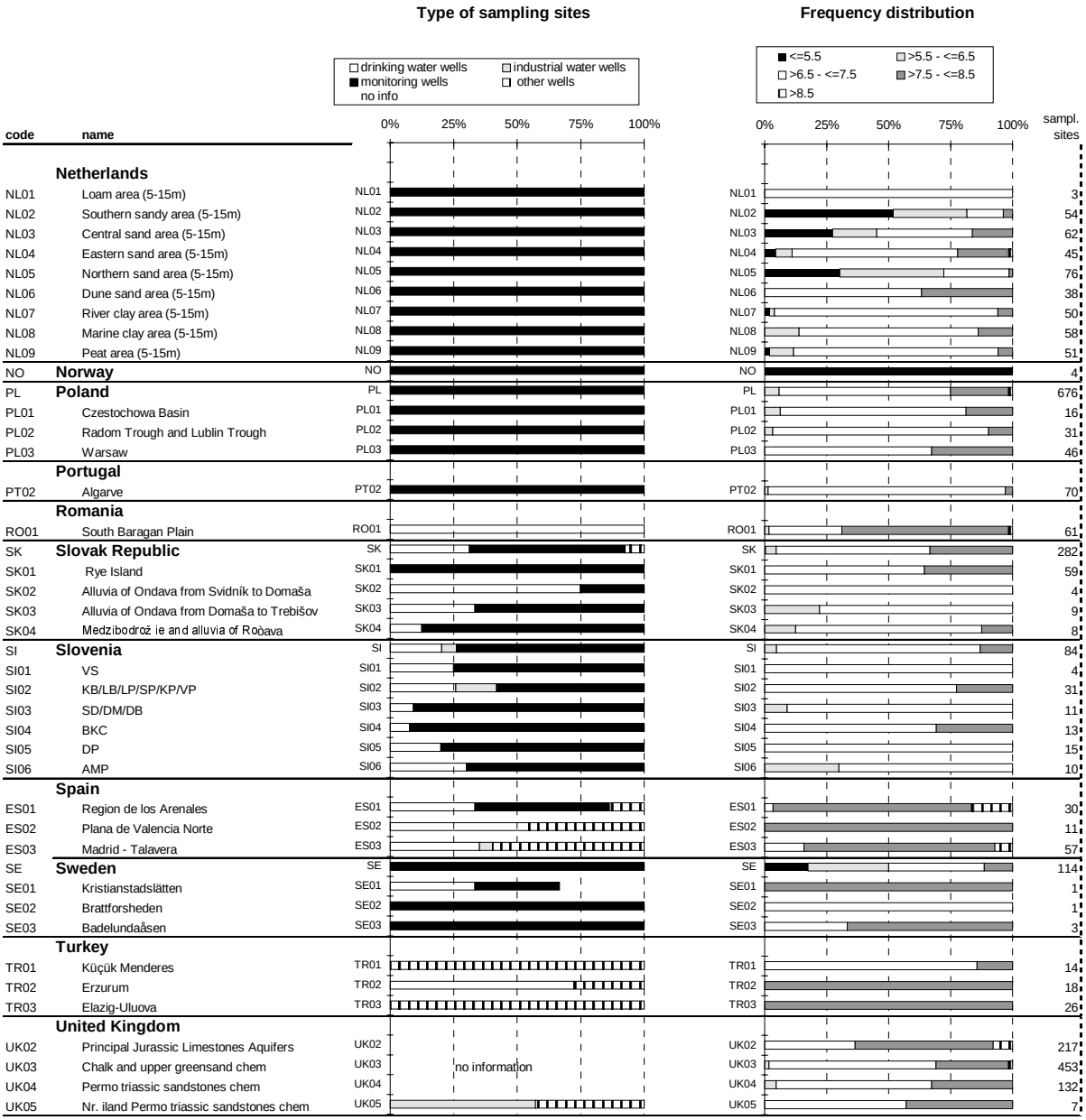


Table 35 Country specific remarks on alkalinity and acidification

Bulgaria	Problematic
Germany	Thüringen: due to atmospheric depositions in regions with soils and rocks of small amounts of carbonates and bases (lower pH, higher Al, Fe and Mn concentrations, partly elevated heavy metals. **Baden-Württemberg:** Acidification tendencies in the Schwarzwald and Odenwald (new red sandstone and crystalline) **Hessen:** due to atmospheric depositions. About 36 % of the region/area is covered by lower alkaline geological formations, endangered by acidification.
Lithuania	The problem of acidification of shallow groundwater is not acute for Lithuania (loamy soils). There are some indirect indices of influence of **acid rain** on groundwater - increasing of amount of SO_4 in shallow aquifer.
Sweden	Long range transport of pollutants

Table 36 Alkalinity type of sampling site

code	name	year	area km²	sites/ 1000 km²	Sampling site absolute: total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	Sampling sites in %: drinking water wells	industrial water wells	monitoring wells	other wells	no info
AT	**Austria**	1995			1719	288	386	395	650		**17**	**22**	**23**	**38**	
AT01	Marchfeld	1995	1033	74.54	77	11	11	35	20		14	14	45	26	
AT02	Südliches Wiener Becken	1995	1191	83.96	100	31	36	8	25		31	36	8	25	
AT03	Mattigtal	1995	347	54.76	19	2	4	1	12		11	21	5	63	
	Bulgaria														
BG01	Trakia	1995	7800	4.49	35	32	2	1	0		91	6	3	0	
BG02	Sofia District	1995	1000	6.00	6	3	0	2	1		50	0	33	17	
BG03	North-East Bulgaria	1995	6000	1.67	10	10	0	0	0		100	0	0	0	
CZ	**Czech Republic**	1996			476	0	0	339	137		**0**	**0**	**71**	**29**	
CZ01	N-Bohemia Cretaceous Basin	1996	3188	26.35	84	0	0	70	14		0	0	83	17	
CZ02	Trebon Basin	1996	872	35.55	31	0	0	31	0		0	0	100	0	
CZ03	Fluvial sediments of the Moravia river	1996	880	12.50	11	0	0	11	0		0	0	100	0	
DK	**Denmark**	1995			1113	0	0	1113	0		**0**	**0**	**100**	**0**	
DK01	Nitratbæltet, Kastbjerg	1995	10	2200.00	22	0	0	22	0		0	0	100	0	
DK02	Vestdanmark, Grindsted	1995	3.5	6000.00	21	0	0	21	0		0	0	100	0	
DK03	Østdanmark, Skuldelev	1995	2	9000.00	18	0	0	18	0		0	0	100	0	
FI	**Finland**	8896			425	370	0	55	0		**87**	**0**	**13**	**0**	
FR	**France**	9195			4566					4566					**100**
FR01	Nappe d´Alsace	9195			101					101					100
FR02	Calcaires de Champigny	9195			7					7					100
FR03	Craie du Nord et de la Picardie	9195			611					611					100
FR04	Jurassique de Poitou-Charentes	9195			9					9					100
	Germany														
DE09	Niedersachsen	1995	47400	11.08	525	0	0	525	0		0	0	100	0	
DE17	Niedersachsen Tiefland	1995	34900	12.64	441	0	0	441	0		0	0	100	0	
DE18	Niedersachsen Bergland	1995	12500	6.72	84	0	0	84	0		0	0	100	0	
DE12	Saarland	1996	2580	43.80	113	87	2	20	4		77	2	18	4	
DE16	Thüringen	1996	16000	5.38	86	0	0	86	0		0	0	100	0	
HU	**Hungary**	1992			4141	4141	0	0	0		**100**	**0**	**0**	**0**	
HU01	Karstic	1992	9500	30.84	293	293	0	0	0		100	0	0	0	
HU02	G1 Porous media (20-50)	1992	70000	6.99	489	489	0	0	0		100	0	0	0	
	Latvia														
LV01	Upesciems	1996			2	0	0	2	0		0	0	100	0	
LV02	Asari	1996			3	0	0	3	0		0	0	100	0	
LV03	Incukalns	1996			4	0	0	4	0		0	0	100	0	
LV04	Tireli	1996			7	0	0	7	0		0	0	100	0	
LT	**Lithuania**	1996			27	0	0	27	0		**0**	**0**	**100**	**0**	
MD03	**Republic of Moldova**	1985	20500	4.20	86					86					100
	Netherlands														
NL01	Loam area (5-15m)	1995	532	5.64	3	0	0	3	0		0	0	100	0	

Table 36 continued

					Sampling site absolute						Sampling sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
NL02	Southern sandy area (5-15m)	1995	5452	10.09	55	0	0	55	0		0	0	100	0	
NL03	Central sand area (5-15m)	1995	2451	25.30	62	0	0	62	0		0	0	100	0	
NL04	Eastern sand area (5-15m)	1995	3228	13.94	45	0	0	45	0		0	0	100	0	
NL05	Northern sand area (5-15m)	1995	5123	15.03	77	0	0	77	0		0	0	100	0	
NL06	Dune sand area (5-15m)	1995	794	47.86	38	0	0	38	0		0	0	100	0	
NL07	River clay area (5-15m)	1995	3497	14.30	50	0	0	50	0		0	0	100	0	
NL08	Marine clay area (5-15m)	1995	8823	6.57	58	0	0	58	0		0	0	100	0	
NL09	Peat area (5-15m)	1995	3959	13.13	52	0	0	52	0		0	0	100	0	
NO	**Norway**	1995			4	0	0	4	0		**0**	**0**	**100**	**0**	
PL	**Poland**	1996			676	0	0	676	0		**0**	**0**	**100**	**0**	
PL01	Czestochowa Basin	1996	4105	3.90	16	0	0	16	0		0	0	100	0	
PL02	Radom Trough and Lublin Trough	1996	18670	1.66	31	0	0	31	0		0	0	100	0	
PL03	Warsaw	1996	51000	0.90	46	0	0	46	0		0	0	100	0	
	Romania														
RO01	South Baragan Plain	1995	4600	13.26	61	61	0	0	0		100	0	0	0	
SK	**Slovak Republic**	1995			282	88	0	173	21		**31**	**0**	**61**	**7**	
SK01	Rye Island	1995	680	86.76	59	0	0	59	0		0	0	100	0	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	61.54	4	3	0	1	0		75	0	25	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	69.23	9	3	0	6	0		33	0	67	0	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	33.33	8	1	0	7	0		13	0	88	0	
SE	**Sweden**	1995			113	0	0	113	0		**0**	**0**	**100**	**0**	
SE01	Kristianstadslätten	1995	525	1.90	1	1	0	1	0						
SE02	Brattforsheden	1995	80	12.50	1	0	0	1	0		0	0	100	0	
SE03	Badelundaåsen		50	60.00	3	0	0	3	0		0	0	100	0	
	Turkey														
TR01	Küçük Menderes	1996	1135	12.33	14	0	0	0	14		0	0	0	100	
TR02	Erzurum	1996	740	6.76	5	13	0	0	5		260	0	0	100	
TR03	Elazig-Uluova	1995	770	33.77	26	0	0	0	26		0	0	0	100	
	United Kingdom														
UK02	Principal Jurassic Limestones Aquifers	1996	6518	30.07	196					196					100
UK03	Chalk and upper greensand chem	1996	24540	16.87	414					414					100
UK04	Permo triassic sandstones chem	1996	12650	6.32	80					80					100
UK05	Nr. iland Permo triassic sandstones chem	1994	789	3.80	3	0	2	0	1		0	67	0	33	

Table 37 Alkalinity frequency distribution

code	name	year	area km²	Frequency distribution absolute: sampling sites	≤1 mval/l	>1 - ≤4 mval/l	>4 mval/l	frequency distribution in %: ≤1 mval/l	>1 - ≤4 mval/l	>4 mval/l
AT	**Austria**	1995		1719	62	485	1172	**4**	**28**	**68**
AT01	Marchfeld	1995	1033	77	0	1	76	0	1	99
AT02	Südliches Wiener Becken	1995	1191	100	0	14	86	0	14	86
AT03	Mattigtal	1995	347	19	0	4	15	0	21	79
	Bulgaria									
BG01	Trakia	1995	7800	35	0	28	7	0	80	20
BG02	Sofia District	1995	1000	6	0	6	0	0	100	0
BG03	North-East Bulgaria	1995	6000	10	0	10	0	0	100	0
CZ	**Czech Republic**	1996		476	99	190	187	**21**	**40**	**39**
CZ01	Northern Bohemia Cretaceous Basin	1996	3188	84	12	43	29	14	51	35
CZ02	Trebon Basin	1996	872	31	13	17	1	42	55	3
CZ03	Fluvial sediments of the Moravia river	1996	880	11	0	2	9	0	18	82
DK	**Denmark**	1995		1113	239	333	541	**21**	**30**	**49**
DK01	Nitratbæltet, Kastbjerg	1995	10	22	0	14	8	0	64	36
DK02	Vestdanmark, Grindsted	1995	3.5	21	19	2	0	90	10	0
DK03	Østdanmark, Skuldelev	1995	2	18	0	0	18	0	0	100
FI	**Finland**	8896		422	378	43	1	**90**	**10**	**0**
FR	**France**	9195		4566	1965	845	1756	**43**	**19**	**38**
FR01	Nappe d´Alsace	9195		101	0	44	57	0	44	56
FR02	Calcaires de Champigny	9195		7	0	0	7	0	0	100
FR03	Craie du Nord et de la Picardie	9195		611	0	15	596	0	2	98
FR04	Jurassique de Poitou-Charentes	9195		9	0	0	9	0	0	100
	Germany									
DE09	Niedersachsen	1995	47400	525	198	215	112	38	41	21
DE17	Niedersachsen Tiefland	1995	34900	441	184	185	72	42	42	16
DE18	Niedersachsen Bergland	1995	12500	84	14	30	40	17	36	48
DE12	Saarland	1996	2580	113	54	44	15	48	39	13
DE16	Thüringen	1996	16000	86	18	28	40	21	33	47
HU	**Hungary**	1992		4141	2	192	3947	**0**	**5**	**95**
HU01	Karstic	1992	9500	293	0	5	288	0	2	98
HU02	G1 Porous media (20-50)	1992	70000	489	1	36	452	0	7	92
	Latvia									
LV01	Upesciems	1996		2	0	2	0	0	100	0
LV02	Asari	1996		3	1	2	0	33	67	0
LV03	Incukalns	1996		4	0	2	2	0	50	50
LV04	Tireli	1996		7	0	5	2	0	71	29
LT	**Lithuania**	1996		27	bicarbonates					
MD03	**Republic of Moldova**	1985	20500	86	52	32	2	60	37	2
	Netherlands									
NL01	Loam area (5-15m)	1995	532	3	0	0	3	0	0	100
NL02	Southern sandy area (5-15m)	1995	5452	55	38	13	4	69	24	7
NL03	Central sand area (5-15m)	1995	2451	62	26	19	17	42	31	27
NL04	Eastern sand area (5-15m)	1995	3228	45	6	13	26	13	29	58
NL05	Northern sand area (5-15m)	1995	5123	77	43	21	13	56	27	17
NL06	Dune sand area (5-15m)	1995	794	38	0	5	33	0	13	87
NL07	River clay area (5-15m)	1995	3497	50	1	8	41	2	16	82
NL08	Marine clay area (5-15m)	1995	8823	58	1	5	52	2	9	90
NL09	Peat area (5-15m)	1995	3959	52	1	7	44	2	13	85
NO	**Norway**	1995		4	4	0	0	**100**	**0**	**0**
PL	**Poland**	1996		676	42	268	366	**6**	**40**	**54**
PL01	Czestochowa Basin	1996	4105	16	0	15	1	0	94	6
PL02	Radom Trough and Lublin Trough	1996	18670	31	1	5	25	3	16	81
PL03	Warsaw	1996	51000	46	1	17	28	2	37	61
	Romania									
RO01	South Baragan Plain	1995	4600	61	0	3	58	0	5	95
SK	**Slovak Republic**	1995		282	7	63	212	**2**	**22**	**75**
SK01	Rye Island	1995	680	59	0	12	47	0	20	80
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	4	0	0	4	0	0	100
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	9	0	1	8	0	11	89
SK04	Medzibodro ie and alluvia of Roòava	1995	240	8	0	2	6	0	25	75
SE	**Sweden**	1995		113	74	30	9	**65**	**27**	**8**
SE01	Kristianstadslätten	1995	525	1	0	1	0	0	100	0
SE02	Brattforsheden	1995	80	1	1	0	0	100	0	0
SE03	Badelundaåsen		50	3	1	2	0	33	67	0
	Turkey									
TR01	Küçük Menderes	1996	1135	14	0	3	11	0	21	79
TR02	Erzurum	1996	740	5	0	12	6	0	240	120

Table 37 continued

code	name	year	area km²	Frequency distribution absolute				frequency distribution in %		
				sampling sites	≤1 mval/l	>1 - ≤4 mval/l	>4 mval/l	≤1 mval/l	>1 - ≤4 mval/l	>4 mval/l
TR03	Elazig-Uluova	1995	770	26	0	16	10	0	62	38
	United Kingdom									
UK02	Principal Jurassic Limestones Aquifers	1996	6518	196	1	43	152	1	22	78
UK03	Chalk and upper greensand chem	1996	24540	414	7	57	350	2	14	85
UK04	Permo triassic sandstones chem	1996	12650	80	0	0	80	0	0	100
UK05	Northern Ireland Permo triassic sandstones chem	1994	789	3	0	1	2	0	33	67

Table 38 Alkalinity - Groundwater quality at the regional level

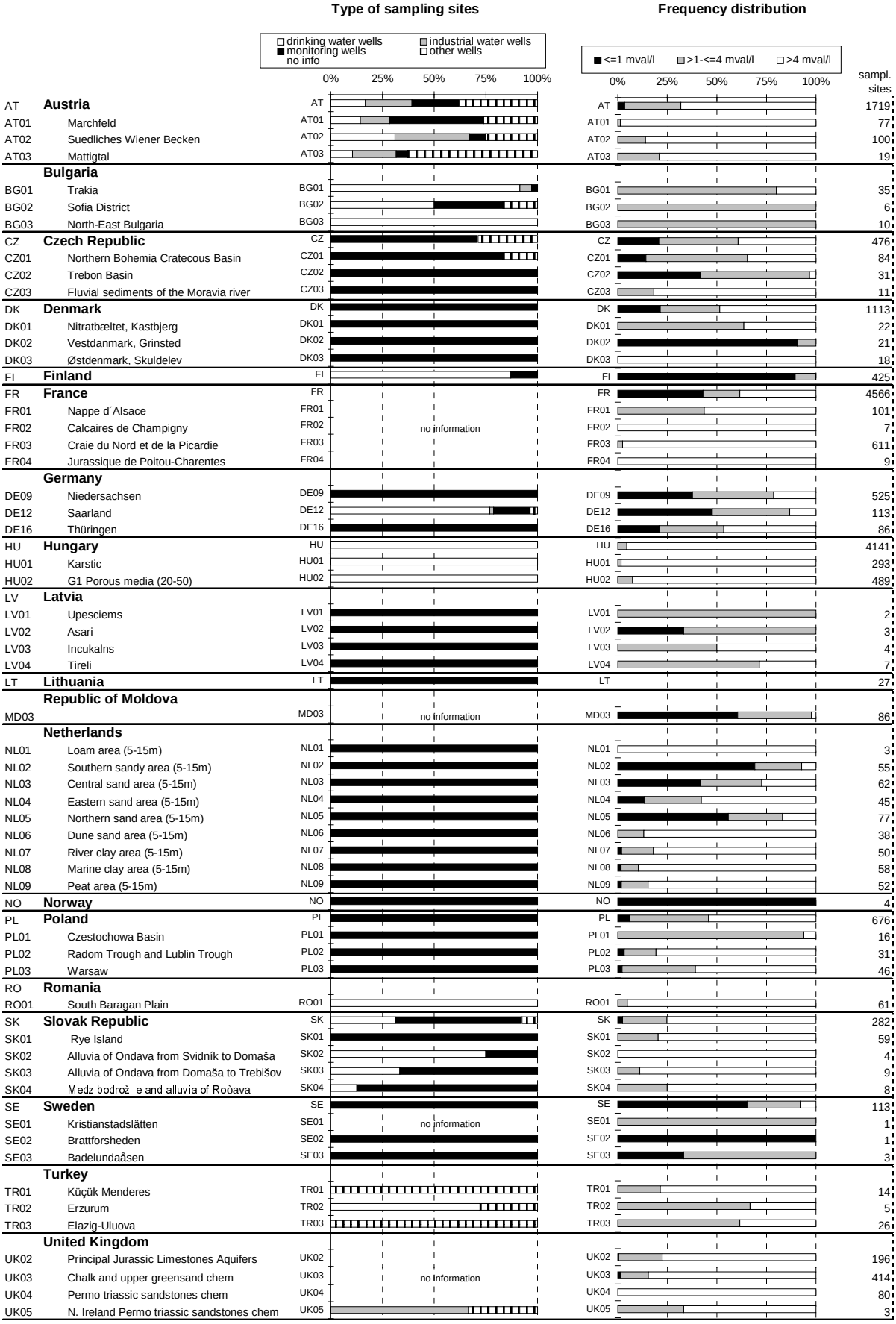


Table 39 Electrical conductivity - Types of sampling sites

					Sampling sites absolute						Sampling sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
AT	**Austria**	1995			1719	288	386	395	650		**17**	**22**	**23**	**38**	
AT01	Marchfeld	1995	1033	74.54	77	11	11	35	20		14	14	45	26	
AT02	Südliches Wiener Becken	1995	1191	83.96	100	31	36	8	25		31	36	8	25	
AT03	Mattigtal	1995	347	54.76	19	2	4	1	12		11	21	5	63	
	Bulgaria														
BG01	Trakia	1995	7800	3.97	31	28	2	0	1		90	6	0	3	
BG02	Sofia District	1995	1000	6.00	6	3	0	2	1		50	0	33	17	
BG03	North-East Bulgaria	1995	6000	2.83	17	12	2	0	3		71	12	0	18	
CZ	**Czech Republic**	1996			476	0	0	339	137		**0**	**0**	**71**	**29**	
CZ01	Northern Bohemia Cratecous Basin	1996	3188	26.35	84	0	0	70	14		0	0	83	17	
CZ02	Trebon Basin	1996	872	35.55	31	0	0	31	0		0	0	100	0	
CZ03	Fluvial sediments of the Moravia river	1996	880	12.50	11	0	0	11	0		0	0	100	0	
DK	**Denmark**	1995			1084	0	0	1084	0		**0**	**0**	**100**	**0**	
DK01	Nitratbæltet, Kastbjerg	1995	10	2200.00	22	0	0	22	0		0	0	100	0	
DK02	Vestdanmark, Grindsted	1995	3.5	6000.00	21	0	0	21	0		0	0	100	0	
DK03	Østdanmark, Skuldelev	1995	2	9000.00	18	0	0	18	0		0	0	100	0	
FI	**Finland**	8896			555	500	0	55	0		**90**	**0**	**10**	**0**	
FR	**France**	9195			2972					2972	**0**	**0**	**0**	**0**	**100**
FR01	Nappe d´Alsace	9195			105					105					100
FR02	Calcaires de Champigny	9195			5					5					100
FR04	Jurassique de Poitou-Charentes	9195			24	24	0	0	0		100	0	0	0	
	Germany														
DE09	Niedersachsen	1995	47400	11.10	526	0	0	526	0		0	0	100	0	
DE17	Niedersachsen Tiefland	1995	34900	12.64	441	0	0	441	0		0	0	100	0	
DE18	Niedersachsen Bergland	1995	12500	6.80	85	0	0	85	0		0	0	100	0	
DE12	Saarland	1996	2580	43.80	113	87	2	20	4		77	2	18	4	
DE16	Thüringen	1996	16000	4.75	76	0	0	76	0		0	0	100	0	
	Greece														
GR01	W-Peloponessus	1996	7304	1.37	10					10					100
GR02	N-Peloponessus	1996	7314	2.19	16					16					100
GR03	E-Peloponessus	1996	8464	2.01	17					17					100
GR04	W-Mainland	1996	10417	1.63	17					17					100
GR05	Epirus	1996	9967	1.10	11					11					100
GR06	Attica	1996	3201	1.56	5					5					100
GR07	E-Mainland	1996	12223	1.23	15					15					100
GR08	Thessaly	1996	13162	1.52	20					20					100
GR09	W-Macedonia	1996	13696	1.46	20					20					100
GR10	Central-Macedonia	1996	10389	3.18	33					33					100
GR11	E-Macedonia	1996	7213	2.63	19					19					100
GR12	Thrace	1996	11241	3.11	35					35					100
GR13	Crete	1996	8312	2.29	19					19					100

Table 39 continued

					Sampling sites absolute						Sampling sites in %				
code	name	year	area km²	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
HU	**Hungary**	1992			4053	4053	0	0	0		**100**	**0**	**0**	**0**	
HU01	Karstic	1992	9500	28.53	271	271	0	0	0		100	0	0	0	
HU02	G1 Porous media (20-50)	1992	70000	6.76	473	473	0	0	0		100	0	0	0	
IS	**Iceland**				20	20	0	0	0		**100**	**0**	**0**	**0**	
IE	**Ireland**	1995			178	173	3	0	2		**97**	**2**	**0**	**1**	
IE01	Eastern Water Resource Region	1995	7622	3.02	23	21	2	0	0		91	9	0	0	
IE02	South-Eastern Water Resource Region	1995	12768	3.52	45	42	1	0	2		93	2	0	4	
IE03	Western Water Resource Region	1995	9615	1.56	15	15	0	0	0		100	0	0	0	
	Latvia														
LV01	Upesciems	1996			2	0	0	2	0		0	0	100	0	
LV02	Asari	1996			3	0	0	3	0		0	0	100	0	
LV03	Incukalns	1996			5	0	0	5	0		0	0	100	0	
LV04	Tireli	1996			7	0	0	7	0		0	0	100	0	
	Luxembourg														
LU01	Grès de Luxembourg		540	203.70	110	0	6	3	101		0	5	3	92	
	Netherlands														
NL01	Loam area (5-15m)	1995	532	5.64	3	0	0	3	0		0	0	100	0	
NL02	Southern sandy area (5-15m)	1995	5452	9.90	54	0	0	54	0		0	0	100	0	
NL03	Central sand area (5-15m)	1995	2451	25.30	62	0	0	62	0		0	0	100	0	
NL04	Eastern sand area (5-15m)	1995	3228	13.94	45	0	0	45	0		0	0	100	0	
NL05	Northern sand area (5-15m)	1995	5123	14.84	76	0	0	76	0		0	0	100	0	
NL06	Dune sand area (5-15m)	1995	794	47.86	38	0	0	38	0		0	0	100	0	
NL07	River clay area (5-15m)	1995	3497	14.30	50	0	0	50	0		0	0	100	0	
NL08	Marine clay area (5-15m)	1995	8823	6.57	58	0	0	58	0		0	0	100	0	
NL09	Peat area (5-15m)	1995	3959	12.63	50	0	0	50	0		0	0	100	0	
NO	**Norway**	1995			4	0	0	4	0		**0**	**0**	**100**	**0**	
PL	**Poland**	1996			676	0	0	676	0		**0**	**0**	**100**	**0**	
PL01	Czestochowa Basin	1996	4105	3.90	16	0	0	16	0		0	0	100	0	
PL02	Radom Trough and Lublin Trough	1996	18670	1.66	31	0	0	31	0		0	0	100	0	
PL03	Warsaw Trough	1996	51000	0.90	46	0	0	46	0		0	0	100	0	
	Portugal														
PT02	Algarve	1996	5000	14.00	70	0	0	70	0		0	0	100	0	
	Romania														
RO01	South Baragan Plain	1995	4600	13.26	61	61	0	0	0		100	0	0	0	
SK	**Slovak Republic**	1995			282	88	0	173	21		**31**	**0**	**61**	**7**	
SK01	Rye Island	1995	680	86.76	59	0	0	59	0		0	0	100	0	
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	61.54	4	3	0	1	0		75	0	25	0	
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	69.23	9	3	0	6	0		33	0	67	0	
SK04	Medzibodro ie and alluvia of Roòava	1995	240	33.33	8	1	0	7	0		13	0	88	0	
SI	**Slovenia**	1996			84	17	5	62	0		**20**	**6**	**74**	**0**	
SI01	VS	1996	59	67.80	4	1	0	3	0		25	0	75	0	
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	58.09	31	8	5	18	0		26	16	58	0	
SI03	SD/DM/DB	1996	107.2	102.61	11	1	0	10	0		9	0	91	0	

Table 39 continued

					Sampling sites absolute						Sampling sites in %				
code	**name**	**year**	**area km²**	sites/ 1000 km²	total wells	drinking water wells	industrial water wells	monitoring wells	other wells	no info	drinking water wells	industrial water wells	monitoring wells	other wells	no info
SI04	BKC	1996	245.2	53.02	13	1	0	12	0		8	0	92	0	
SI05	DP	1996	434.3	34.54	15	3	0	12	0		20	0	80	0	
SI06	AMP	1996	654.7	15.27	10	3	0	7	0		30	0	70	0	
	Spain														
ES01	Region de los Arenales	1995	6000	5.17	31	10	0	16	5		32	0	52	16	
ES02	Plana de Valencia Norte	1995	260	42.31	11	6	0	0	5		55	0	0	45	
ES03	Madrid - Talavera	1995	6300	8.89	56	20	3	0	33		36	5	0	59	
SE	**Sweden**	1995			114	0	0	114	0		**0**	**0**	**100**	**0**	
SE01	Kristianstadslätten	1995	525	1.90	1	1	0	1	0	-1	100	0	100	0	
SE02	Brattforsheden	1995	80	12.50	1	0	0	1	0		0	0	100	0	
SE03	Badelundaåsen		50	60.00	3	0	0	3	0		0	0	100	0	
	Turkey														
TR01	Küçük Menderes	1996	1135	12.33	14	0	0	0	14		0	0	0	100	
TR02	Erzurum	1996	740	24.32	18	13	0	0	5		72	0	0	28	
TR03	Elazig-Uluova	1995	770	33.77	26	0	0	0	26		0	0	0	100	
	United Kingdom														
UK02	Principal Jurassic Limestones Aquifers	1996	6518	31.60	206					206					100
UK03	Chalk and upper greensand chem	1996	24540	18.66	458					458					100
UK04	Permo triassic sandstones chem	1996	12650	2.13	27					27					100

Table 40 Electrical conductivity - Frequency distribution

					frequency distribution absolute					frequency distribution in %				
code	Name	year	area km²	sampling sites	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm
AT	**Austria**	1995		1719	76	519	914	195	15	**4**	**30**	**53**	**11**	**1**
AT01	Marchfeld	1995	1033	77	0	2	33	42	0	0	3	43	55	0
AT02	Südliches Wiener Becken	1995	1191	100	0	13	69	16	2	0	13	69	16	2
AT03	Mattigtal	1995	347	19	2	7	10	0	0	11	37	53	0	0
	Bulgaria													
BG01	Trakia	1995	7800	31	0	11	17	2	1	0	35	55	6	3
BG02	Sofia District	1995	1000	6	0	5	1	0	0	0	83	17	0	0
BG03	North-East Bulgaria	1995	6000	17	0	7	8	2	0	0	41	47	12	0
CZ	**Czech Republic**	1996		476	100	171	136	61	8	**21**	**36**	**29**	**13**	**2**
CZ01	Northern Bohemia Cratecous Basin	1996	3188	84	25	35	19	5	0	30	42	23	6	0
CZ02	Trebon Basin	1996	872	31	20	10	1	0	0	65	32	3	0	0
CZ03	Fluvial sediments of the Moravia river	1996	880	11	0	2	7	1	1	0	18	64	9	9
DK	**Denmark**	1995		1082	1074	8	0	0	0	**99**	**1**	**0**	**0**	**0**
DK01	Nitratbæltet, Kastbjerg	1995	10	22	19	2	0	1	0	86	9	0	5	0
DK02	Vestdanmark, Grindsted	1995	3.5	21	21	0	0	0	0	100	0	0	0	0
DK03	Østdanmark, Skuldelev	1995	2	18	18	0	0	0	0	100	0	0	0	0
FI	**Finland**	8896		552	431	72	44	5	0	**78**	**13**	**8**	**1**	**0**
FR	**France**	9195		2972	1053	1017	871	29	2	**35**	**34**	**29**	**1**	**0**
FR01	Nappe d´Alsace	9195		105	3	15	87	0	0	3	14	83	0	0
FR02	Calcaires de Champigny	9195		5	0	0	4	0	1	0	0	80	0	20
FR04	Jurassique de Poitou-Charentes	9195		24	0	1	23	0	0	0	4	96	0	0
	Germany													
DE09	Niedersachsen	1995	47400	526	79	226	149	31	41	15	43	28	6	8
DE17	Niedersachsen Tiefland	1995	34900	441	74	208	112	13	34	17	47	25	3	8
DE18	Niedersachsen Bergland	1995	12500	85	5	18	37	18	7	6	21	44	21	8
DE12	Saarland	1996	2580	113	52	45	15	0	1	46	40	13	0	1
DE16	Thüringen	1996	16000	76	15	17	32	5	7	20	22	42	7	9
	Greece													
GR01	W-Peloponessus	1996	7304	10	0	0	8	1	1	0	0	80	10	10
GR02	N-Peloponessus	1996	7314	16	0	3	9	3	1	0	19	56	19	6
GR03	E-Peloponessus	1996	8464	17	0	1	9	4	3	0	6	53	24	18
GR04	W-Mainland	1996	10417	17	0	7	6	2	2	0	41	35	12	12
GR05	Epirus	1996	9967	11	0	4	7	0	0	0	36	64	0	0
GR06	Attica	1996	3201	5	0	0	1	3	1	0	0	20	60	20
GR07	E-Mainland	1996	12223	15	0	4	4	5	2	0	27	27	33	13
GR08	Thessaly	1996	13162	20	0	6	11	3	0	0	30	55	15	0
GR09	W-Macedonia	1996	13696	20	0	9	10	1	0	0	45	50	5	0
GR10	Central-Macedonia	1996	10389	33	0	4	19	9	1	0	12	58	27	3
GR11	E-Macedonia	1996	7213	19	0	6	12	1	0	0	32	63	5	0
GR12	Thrace	1996	11241	35	0	11	13	8	3	0	31	37	23	9
GR13	Crete	1996	8312	19	1	3	6	6	3	5	16	32	32	16

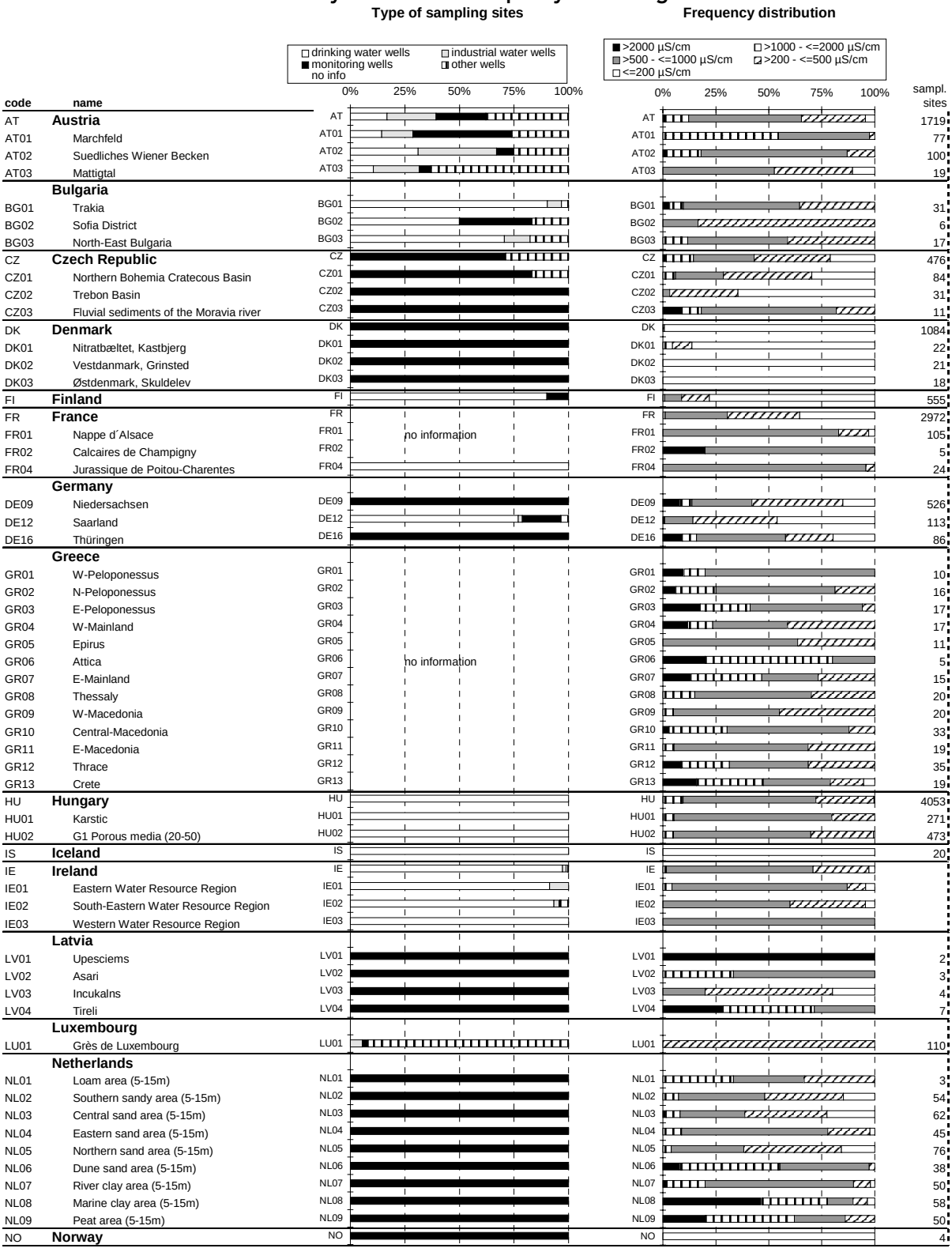
Table 40 continued

					frequency distribution absolute					frequency distribution in %				
code	**Name**	**year**	**area km²**	sampling sites	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm
HU	**Hungary**	1992		4053	16	1113	2535	380	9	**0**	**27**	**63**	**9**	**0**
HU01	Karstic	1992	9500	271	0	55	202	12	2	0	20	75	4	1
HU02	G1 Porous media (20-50)	1992	70000	473	3	140	306	24	0	1	30	65	5	0
IS	**Iceland**			20	20	0	0	0	0	**100**	**0**	**0**	**0**	**0**
IE	**Ireland**	1995		178	5	47	123	3	0	**3**	**26**	**69**	**2**	**0**
IE01	Eastern Water Resource Region	1995	7622	23	1	2	19	1	0	4	9	83	4	0
IE02	South-Eastern Water Resource Region	1995	12768	45	2	16	27	0	0	4	36	60	0	0
IE03	Western Water Resource Region	1995	9615	15	0	0	15	0	0	0	0	100	0	0
	Latvia													
LV01	Upesciems	1996		2	0	0	0	0	2	0	0	0	0	100
LV02	Asari	1996		3	0	0	2	1	0	0	0	67	33	0
LV03	Incukalns	1996		5	1	3	1	0	0	20	60	20	0	0
LV04	Tireli	1996		7	0	0	2	3	2	0	0	29	43	29
	Luxembourg													
LU01	Grès de Luxembourg		540	110	0	110	0	0	0	0	100	0	0	0
	Netherlands													
NL01	Loam area (5-15m)	1995	532	3	0	1	1	1	0	0	33	33	33	0
NL02	Southern sandy area (5-15m)	1995	5452	54	8	20	22	4	0	15	37	41	7	0
NL03	Central sand area (5-15m)	1995	2451	62	14	24	19	4	1	23	39	31	6	2
NL04	Eastern sand area (5-15m)	1995	3228	45	1	9	31	4	0	2	20	69	9	0
NL05	Northern sand area (5-15m)	1995	5123	76	12	35	26	3	0	16	46	34	4	0
NL06	Dune sand area (5-15m)	1995	794	38	0	1	16	18	3	0	3	42	47	8
NL07	River clay area (5-15m)	1995	3497	50	1	4	35	9	1	2	8	70	18	2
NL08	Marine clay area (5-15m)	1995	8823	58	2	4	7	18	27	3	7	12	31	47
NL09	Peat area (5-15m)	1995	3959	50	0	7	12	21	10	0	14	24	42	20
NO	**Norway**	1995		4	4	0	0	0	0	**100**	**0**	**0**	**0**	**0**
PL	**Poland**	1996		676	36	334	236	63	7	**5**	**49**	**35**	**9**	**1**
PL01	Czestochowa Basin	1996	4105	16	1	13	2	0	0	6	81	13	0	0
PL02	Radom Trough and Lublin Trough	1996	18670	31	0	14	13	2	2	0	45	42	6	6
PL03	Warsaw Trough	1996	51000	46	1	26	10	7	2	2	57	22	15	4
	Portugal													
PT02	Algarve	1996	5000	70	0	4	32	30	4	0	6	46	43	6
	Romania													
RO01	South Baragan Plain	1995	4600	61	0	1	6	38	16	0	2	10	62	26
SK	**Slovak Republic**	1995		282	0	48	184	47	3	**0**	**17**	**65**	**17**	**1**
SK01	Rye Island	1995	680	59	0	14	21	24	0	0	24	36	41	0
SK02	Alluvia of Ondava from Svidník to Domaša	1995	65	4	0	3	1	0	0	0	75	25	0	0
SK03	Alluvia of Ondava from Domaša to Trebišov	1995	130	9	0	1	6	2	0	0	11	67	22	0
SK04	Medzibodro ie and alluvia of Roòava	1995	240	8	0	5	3	0	0	0	63	38	0	0

Table 40 continued

					frequency distribution absolute					frequency distribution in %				
code	**Name**	**year**	**area km²**	sampling sites	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm	<=200 µS/cm	>200 - <=500 µS/cm	>500 - <=1000 µS/cm	>1000 - <=2000 µS/cm	>2000 µS/cm
SI	**Slovenia**	1996		84	0	27	57	0	0	**0**	**32**	**68**	**0**	**0**
SI01	VS	1996	59	4	0	1	3	0	0	0	25	75	0	0
SI02	KB/LB/LP/SP/KP/VP	1996	533.7	31	0	16	15	0	0	0	52	48	0	0
SI03	SD/DM/DB	1996	107.2	11	0	3	8	0	0	0	27	73	0	0
SI04	BKC	1996	245.2	13	0	4	9	0	0	0	31	69	0	0
SI05	DP	1996	434.3	15	0	0	15	0	0	0	0	100	0	0
SI06	AMP	1996	654.7	10	0	3	7	0	0	0	30	70	0	0
	Spain													
ES01	Region de los Arenales	1995	6000	31	0	7	21	2	1	0	23	68	6	3
ES02	Plana de Valencia Norte	1995	260	11	0	0	5	5	1	0	0	45	45	9
ES03	Madrid - Talavera	1995	6300	56	1	25	26	3	1	2	45	46	5	2
SE	**Sweden**	1995		114	79	27	8	0	0	**69**	**24**	**7**	**0**	**0**
SE01	Kristianstadslätten	1995	525	1	0	1	0	0	0	0	100	0	0	0
SE02	Brattforsheden	1995	80	1	1	0	0	0	0	100	0	0	0	0
SE03	Badelundaåsen		50	3	1	2	0	0	0	33	67	0	0	0
	Turkey													
TR01	Küçük Menderes	1996	1135	14	0	3	9	1	1	0	21	64	7	7
TR02	Erzurum	1996	740	18	3	7	7	1	0	17	39	39	6	0
TR03	Elazig-Uluova	1995	770	26	0	12	14	0	0	0	46	54	0	0
	United Kingdom													
UK02	Principal Jurassic Limestones Aquifers	1996	6518	206	2	15	133	34	22	1	7	65	17	11
UK03	Chalk and upper greensand chem	1996	24540	458	4	65	323	49	17	1	14	71	11	4
UK04	Permo triassic sandstones chem	1996	12650	27	0	7	13	5	2	0	26	48	19	7

Table 41 Electrical Conductivity - Groundwater quality at the regional level



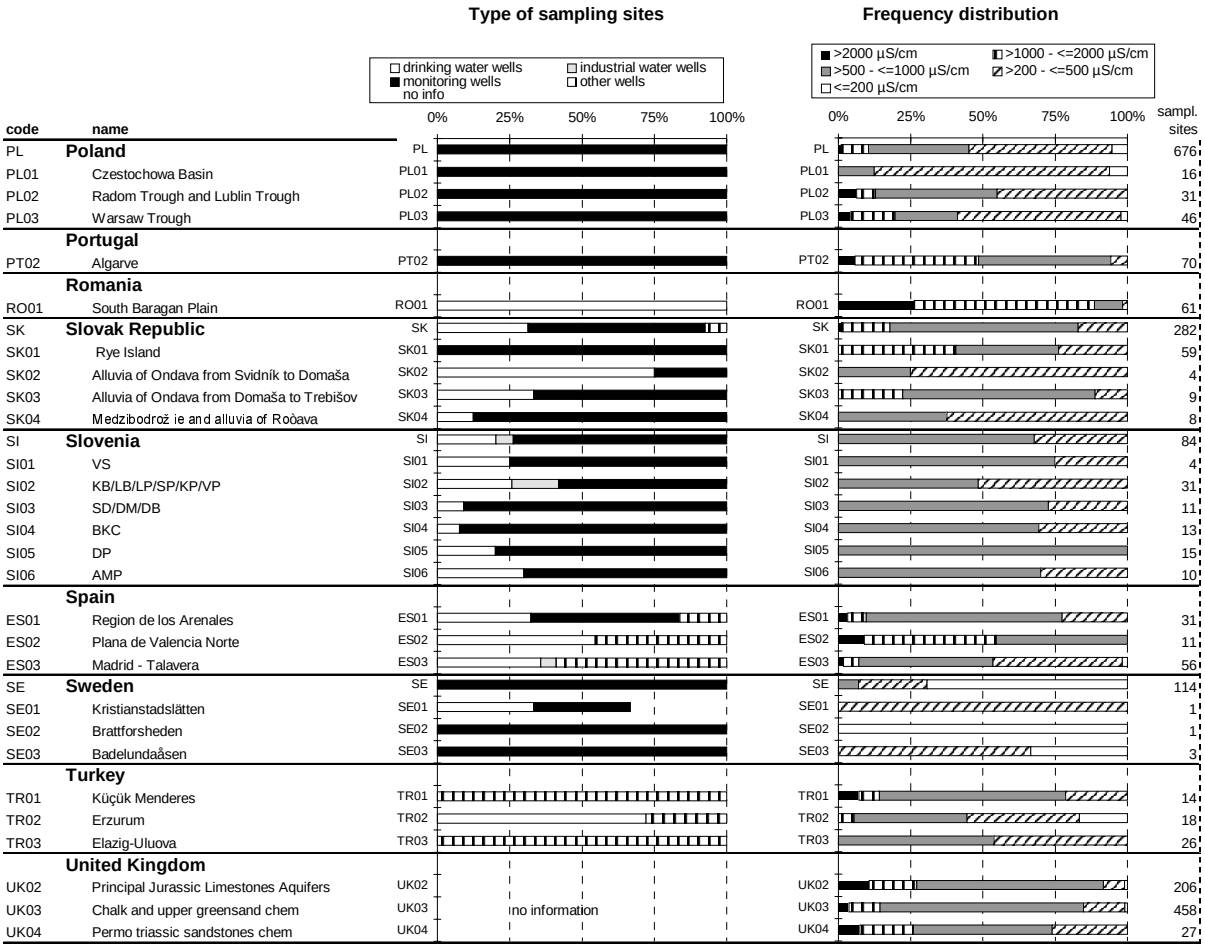

Type of sampling sites
Frequency distribution
drinking water wells
industrial water wells
monitoring wells
other wells
no info
>2000 µS/cm
>1000 - <=2000 µS/cm
>500 - <=1000 µS/cm
>200 - <=500 µS/cm
<=200 µS/cm
0%
25%
50%
75%
100%
code
name
sampl. sites
PL Poland 676
PL01 Czestochowa Basin 16
PL02 Radom Trough and Lublin Trough 31
PL03 Warsaw Trough 46
Portugal
PT02 Algarve 70
Romania
RO01 South Baragan Plain 61
SK Slovak Republic 282
SK01 Rye Island 59
SK02 Alluvia of Ondava from Svidník to Domaša 4
SK03 Alluvia of Ondava from Domaša to Trebišov 9
SK04 Medzibodrož ie and alluvia of Roòava 8
SI Slovenia 84
SI01 VS 4
SI02 KB/LB/LP/SP/KP/VP 31
SI03 SD/DM/DB 11
SI04 BKC 13
SI05 DP 15
SI06 AMP 10
Spain
ES01 Region de los Arenales 31
ES02 Plana de Valencia Norte 11
ES03 Madrid - Talavera 56
SE Sweden 114
SE01 Kristianstadslätten 1
SE02 Brattforsheden 1
SE03 Badelundaåsen 3
Turkey
TR01 Küçük Menderes 14
TR02 Erzurum 18
TR03 Elazig-Uluova 26
United Kingdom
UK02 Principal Jurassic Limestones Aquifers 206
UK03 Chalk and upper greensand chem 458
UK04 Permo triassic sandstones chem 27
no information

Table 42 Description and extent of groundwater contamination by other sources

Country Contamination	**Description / Extent / Source**
EEA	
Austria	
Chlorinated hydrocarbons	These substances are problematic regarding groundwater quality in Austria and can be observed frequently in concentrations just above the detection limit. The results of a nation wide monitoring of porous aquifers made in 1994/95 show that for tetrachloroethene 1 out of 4 sampling sites shows concentrations above 0.1µg/l, for trichloroethene as well as for 1,1,1-trichloroethane and chloroform at about 1 out of 10 sampling shows concentrations above 0.1 µg/l. Higher concentrations (several µg/l) result from **old point sources** (factories, laundries ...); the entering of those substances into the aquifers was stopped years ago, but a few sample sites with higher concentrations can still be found especially at sites around **larger towns with industrial areas**.
Denmark	
Nickel	due to the **abstraction of groundwater** and drop of groundwater level; oxidation of pyrite, locally.
Selenium	**deposited** in old gas work areas
Copper and Zinc	probably due to **agricultural practice**
Chlorinated hydrocarbons	found at old **land fills** and other **contaminated sites**
Finland	
	contaminated sites, road salt
France	
	A number of large industrial zones are associated with significant groundwater pollution from a wide range of substances: Rouen, south of Dijon, the "chemical corridor" of Lyon. Two important former mining areas have also caused widespread inorganic pollution in the Nord-Pas de Calais and Lorraine regions.
Sulphate	One extensive area of sulphate pollution exists in France in the Mulhouse area (Alsace aquifer). The origin is from **pit heaps** containing iron sulphate. Another important area of sulphate pollution exists beneath an **industrial zone** in Rouen, on the left bank of the Seine.
Iron and magnesium	Many alluvial aquifers contain high iron and magnesium concentrations, increasingly induced by heavy pumping abstractions, which have affect on the water/sediment interface. In some cases, an **industrial source** of these metals can also be identified - industrial waste, wastewater or mine spoil.
Heavy metals	A few cases of pollution due to hexavalent chromium arising from **industrial discharges** have been reported. Copper, lead, zinc and cadmium concentrations have increased in several areas, either due to **motorway pollution** or linked to specific industrial activities. In the Lorraine aquifer, increased cadmium levels have been related to intensive **agricultural practices**.
Isolated inorganic pollution	includes ammonium (e.g. from **chemical factories**), cyanides (e.g. from former **coke works/gasworks**).
Hydrocarbons	For the most part, hydrocarbon pollution derives from **oil spillage accidents** from pipelines, storage tanks, garages or along transport routes. Amongst the biggest accidents reported in terms of quantity of hydrocarbons spilled are an airport in Alsace (1971) and a train derailment in Chavanay (Loire département).
Poly-aromatic hydrocarbons (PAH)	PAH have been detected in some wells (e.g. Seine-Maritime), generally linked to major **industrial zones**.
Chlorinated solvents	There are many isolated cases of high chlorinated solvent levels, where an obvious cause can be found (**industrial**). Two serious recent incidents have been reported in the east of France: chloronitrobenzene in Mulhouse (1986) and tetrachloroethylene in Strasbourg (1990) which both affected public supply wells. However, widespread low levels are now being detected across, for example, the Rhône-Méditerranée-Corse basin (particularly chloroform) or in the Nievre region (especially tetrachloroethylene). In the Landes (Southwest France) where there is major **wood industry**, various insecticide products have been detected in groundwater.
Bacteriological pollution	Bacteriological pollution seems to be widespread, mostly arising from **slurry spreading** for agriculture and causing problems in fissured rocks which do not have a filtering capacity.

Table 42 continued

Country Contamination	**Description / Extent / Source**
Germany	Thüringen
Volatile chlorinated hydrocarbons, mineral oil	in urban sites due to industrial activities, improper handling, accidents etc. Further due to old dumping sites, contaminated sites (abandoned industrial sites and waste deposits) and suspected contaminated sites
	Baden-Württemberg
Volatile chlorinated hydrocarbons	esp. tetrachloroethene and trichloroethene in highly industrialised and urbanised areas
Iceland	
	No such sources known
Ireland	
	The EPA national groundwater quality monitoring programme commenced in Nov. 1995. At present it is too early to state whether existing pollution from point or diffuse sources.
Sweden	
Heavy metals	long-range transport of pollutants and domestic sources

PHARE

Bulgaria	
Heavy metals	Geo-technical **mining** of uranium at separate (local) places in Trakia
Czech Republic	
	The main source of groundwater pollution was an inadequately high amount of **fertilisers** and **pesticides**, etc. However, in the last seven years this amount decreased significantly. Now, **old or large industrial dumping areas** seem to be the main source of groundwater pollution, which is considered to be a diffuse source of pollution. Nowadays, most of them have been identified and many effort is being put in sanitation measures. Another important source of groundwater pollution are **old, not sufficiently controlled urban and village dumping sites**. These can be considered to be a local or point source of groundwater pollution.
Estonia	
Oil products, fuel oil	**landfills** (Tuula etc.), **accidents** in Aruküla, Kärdla, **Military air-fields** of former Soviet Army (Source: Estonian Environment 1993, Tallinn 1994)

airfield	polluted water layer		area of fuel layer (ha)
	area (ha)	depth (m)	
Tapa	1600	25	600
Haapsalu	7.3	10	2.5
Ämari	237	20	16
Rakvere	50	20	0.2

Heavy metals	**landfills** (Tuula etc.)
SO_4, Na, K	Baltic **Thermal Power Plant**
Waste water	Rakvere, Tamsalu
Hungary	
Arsenic	Arsenic of **natural origin** seems to be one of the greatest groundwater quality problem in Hungary as the standard for drinking water has decreased from 0.05 mg/l to 0.01 mg/l by the recommendation of the EU.
NH_4, Fe, Mn, Methane, Organic compounds, Low hardness	The majority of the groundwater quality problems in Hungary are of **natural origin**. For more than ten thousand years chemical components (ammonia, iron, manganese, arsenic, methane, organic compounds, low hardness) of geogenic (natural) origin have been dissolved into groundwater by the water-rock interaction of the subsurface flow. The concentrations of these components in the deeper groundwater resources (>20 m) often exceed the quality standards for drinking water, mainly in the discharge areas of the regional groundwater flow systems. The vulnerable karst water and shallow groundwater resources contain these components in low concentration.
Heavy metals, Hydrocarbons, Chlorinated hydrocarbons etc.	The micro compounds (heavy metals, hydrocarbons, chlorinated hydrocarbons etc.) as polluting materials have been repeatedly monitored around the **waste disposal sites, landfills** and **polluted industrial military sites**. These polluted sites are usually out of the protected area of the wellfields used for public water supply. **Finishing the mining activity** groundwater can fill up the former pits of mines and become polluted.

Table 42 continued

Country Contamination	**Description / Extent / Source**
Latvia	
	During investigations in 70-80's (hydrogeological mapping etc.) no serious problems with agricultural contamination of groundwater by nitrogen compounds were found in confined aquifers. During investigations of the groundwater potential for Riga city water supply, 44 samples were taken inside the Riga in 1995. Chlorinated hydrocarbons, heavy metals and other micropollutants were determined in these samples using Latvian and Swiss laboratories. Concentrations of all compounds in groundwater of confined aquifers are more less than permissible [sic].
Lithuania	
	Pollution by heavy metals, chlorinated hydrocarbons, hydrocarbons are only local pollution problems (point sources of contamination).
Hydrocarbons	In a lot of **oil storage** and **petrol stations** groundwater pollution by hydrocarbons was identified. Large-scale problems occurred in the Vilnius, Valciunai and Alytus oil storage.
Nitrate, Fluorine	There are two diffuse sources of groundwater contamination.- Jonava nitrogen fertiliser factory (problem - nitrate in groundwater); Kedainiai phosphorus fertiliser factory (problem - fluorine in groundwater).
Poland	
Long-term deterioration	As a result of **industrial, agricultural and urbanisation activities**, permanent or long-term deterioration of groundwater quality has been observed in shallow aquifers over a large part of the country. The deeper aquifers have not been contaminated over large areas, however, the symptoms of pollution reaching the depth of several dozen meters have already been recorded.
Romania	
	Compared with 1992, 1994 was the year when a sensitive tendency was identified at the level of these structures aimed at curbing the water mineralisation degree, correlated with a slight diminution of the concentrations present in the water of certain polluting substances exogenous to the aquifer layer. This sensitive reduction is mainly due to continuous diminution of anthropogenic impacts, resulting from the reduction of certain intensely polluting industrial activities in the cause of the last years and also to the decrease of chemical and organic fertiliser use for agriculture. Accordingly, the presence in the groundwater of certain substances exogenous to the aquifer was also considered harmful to the direct consumer. This has to be considered in the light of - compared to previous years - much reduced background levels which reflect the current pollution generated by the diffuse or point sources.
Phosphates	Contamination of shallow groundwater bodies with phosphates ($P\text{-}PO_4^{3-}$), is to a large extent due to the same causes as nitrate pollution. However, for numerous aquifers no phosphate contamination was established in the investigation carried out in 1993.
Organic substances, Ammonia, Bacteria	The intensive contamination of the aquifers with organic substances, as well as with ammonia and, especially the bacterial contamination are altogether different. The most striking cases of multiple quality depreciation were identified in the **rural village areas**, due to the lack of even the minimum necessary sewerage facilities, the **liquid wastes** directly pollute the shallow groundwater through the water closets and street sewers which are not waterproof. Indirect pollution comes from permanent **waste deposits**, improvised **garbage holes**, etc.
Oil products	The presence of oil products was identified in the surroundings of the **oil fields**, as a result of the **accidents occurring along the pipelines** and of the lack of monitoring of the transported oil quantities. Oil products were also found near **petrochemical platforms** and near most **storage areas** for the processed hydrocarbons. These depreciated areas are insular, with a steady tendency to expand. The shallow groundwaters in these areas are frequently aggressive against the metal and concrete elements included in the underground buildings (sulphate aggressiveness, magnesium one, etc.) **Seepage loss in the oil fields** of Suplacu de Barcau, Marhita, Ticleni, Braila and Moinesti. Pollution from petroleum in shallow aquifers leading to the closure of wells for water supply **Leakage from oil pipelines** Braila - Slobozia and Ploiesti - Reni (Faurei). Pollution from oil and benzene in shallow aquifers and deterioration of groundwater resources for domestic water supply **Leakage and seepage loss** from **petroleum refining plants** of Ploiesti, Brazi, Teleajen, Campina, Pitesti and Darmanesti as well as from other **industrial sites** such as those of Arad, Borzesti, Onesti and Suceava. - Pollution from gas-oil, benzene, gasoline, fuel oil etc. in alluvial shallow aquifers and shutting of groundwater tappings and domestic wells

Table 42 continued

Country Contamination	**Description / Extent / Source**
Organic chemical contamination	**Leakage and seepage loss** from chemical **industrial sites** of Calarasi and Bacau; industrial site for synthetic fibres and threads of Savinesti; synthetic organic chemical and leather & footwear factories of Cluj-Napoca; paper & pulp factory of Zamesti; sugar factories of Oradea and Bod; dye factory of Codlea; solvent factory of Jimbolia; detergent factories of Ploiesti, Timiscara and Marasesti; tanneries of Bucharest and Oradea. Contamination from aniline, nitrobenzene, trichloroethylene, phenols, solvents, detergents, pesticides etc. in shallow and even deeper aquifers led to the shutting of groundwater tappings and deterioration of available resources
Inorganic chemical contamination	**Leakage and seepage loss** from **fertiliser or chemical industrial sites** of Arad, Targu Mures, Fagaras, Victoria, Isalnita, Ramnicu Valcea, Tumu Magurele, Giurgiu, Roznov and Navodari; material stockpiles and sludge thickeners of **coal power stations** of Turceni, Rovinari, Iasi and Suceava; **slime thickeners** of Ocna Muresuiui, Govora, Valea Calugareasca, Tohanul Vechi and Tulcea Contamination from nitrates, nitrites, ammonia, chlorides, sulphates, sulphides, cyanides, caustic soda etc. in alluvial or fissured shallow and even deeper aquifers and severe deterioration of groundwater quality **Percolation of atmospheric contaminants** close to Savinesti, Isalnita and Pitesti
Heavy metals	Seepage loss from **mine wastes** and **slime thickeners** as well as leaching of material **stockpiles and waste-dumping sites of mining areas** of Baia Mare, Baia Borsa, Iacobeni, Balan, Santimbru, Baita Bihor, Deva, Gura Barza, Moldova Noua and Gura Humorului Pollution from arsenic, cadmium, chromium, lead, mercury, uranium etc. in recharging areas of alluvial and fissured aquifers and dangerous deterioration of groundwater quality. **Percolation of atmospheric pollutants** close to beneficiation and metalworking factories of Baia Mare, Copsa Mica and Tulcea
Slovak Republic	
Heavy metals	due to **mining activities**, application of **fertilisers, waste dumps**. Problems are of local extent.
Pesticides	Local problems regarding pesticides are due to **agricultural activities** and **cooling water** (power stations, refineries ...)
PAH's, chlorinated hydrocarbons PCB	Local problems regarding industrial organic substances are coming from **petroleum refinery, chemical industry, waste dumps** and **former Soviet army sites** **waste dumps**
Slovenia	
heavy metals, chlorinated hydrocarbons	In some sampling sites heavy metals and chlorinated hydrocarbons are present. The concentrations do not exceed the standards for drinking water, but the investigations clearly showed that there are some pollution problems which should be solved (uncontrolled outlets from **industry**).

TACIS

Moldova Rep.	
Local severity problems caused by	• elevated concentrations of chloride, sulphate, TDS, especially of nitrate, hardness • Relatively high concentrations of fluoride, Se, Sr, H_2S, CH4 in drinking water due to natural sources of pollution • pollution with petrol products in the old military sites, with organic compounds in the urban territories and around from livestock breeding.

OTHERS

Cyprus	
Boron, Fluoride	High presence of boron and fluoride in certain areas arising from the **geological formations**. **Anthropogenic inputs** (housing) may be another reason for groundwater pollution with boron.
Sulphates	In special areas problems concerning sulphates and toxic substances were caused by mining and other industrial activities.

Table 43 Over-exploited groundwater areas

serial No. ref to map	name	area in km²	over-exp since	cause	leading to saltw. intrusion	leading to end. wetlands
CY Cyprus, 3500 (important groundwater areas in km²)**, 1250** (over-exploited areas in km²)**, map**						
1	W. Mesaoria	400		irrigation	I	
2	Central Mesaoria	200		irrigation		I
3	S-E Mesaoria	500		irrigation	I	
4	Kiti	12		irrigation	I	
5	Polis Coastal	16		irrigation	I	
6	Paphos Coastal	86		irrigation	I	
7	Akrotiri	42		irrigation	I	
DK Denmark, 35000, 1115, map						
1	Skagen	45	1989	public supply	I	I
2	Læsø	60	1989	public supply	I	I
3	Esbjerg	90	1989	public supply		
4	Århus	100	1989	public supply	I	
5	Juelsminde	20	1989	public supply		
6	Als	60	1989	public supply	I	
7	Fåborg	40	1989	public supply	I	
8	Ærø-Langeland	40	1989	public supply	I	
9	Odense	50	1960	public supply	I	
10	Odsherred	30	1989	public supply	I	I
11	Midtsjælland	500	1960	public supply		I
12	Nordsjælland	100	1989	public supply		
13	København	50	1989	public supply	I	
14	Køge Bugt	30	1989	public supply	I	I
EE Estonia, 26500, 25000, map						
1	Tallinn draw-down zone	16000	1945	intensive water abstraction from deep cambrian-vendian aquifer		
2	North-East Estonian draw-down zone	9000	1945	intensive water consumption and dewatering of mines and quarries		
3	Pärnu draw-down zone	200	1900	intensive water consumption	I	
HU Hungary, 80000, 16800, map						
1	Transdanubian Mountains	10000	1960	mining activity (karst water exploitation) till 1990		I
2	Sandi hill area between Danube and Tisza rivers	5000	1980	decrease of infiltration caused by dry period		I
3	Alluvial fan of river Maros	1000	1980	decrease of infiltration caused by dry period		
4	Bükk Mountains	800	1975	decrease of infiltration caused by dry period		
LV Latvia, 64700, 7600						
1	Larga Riga (D2ar-D3am aquifer) Liepaja city	6800	1954	public supply	I	
2	D2ar-D3am-aquifer	800	1961	public supply		
3	D3fm aquifer	120	1930	public supply		
MD Rep. of Moldova, 31100, --, map						
1	Telenesti (Telen.)	60		public supply	I	
2	Alexeevca (Ungheni)	21		public supply	I	

serial No. ref to map	name	area in km²	over-exp since	cause	leading to saltw. intrusion	leading to end. wetlands
3	Iurceni (Nisporeni)	36		public supply	I	
4	Drasliceni (Straseni)	18		public supply	I	
5	Cricova (Criuleni)	8		public supply	I	
6	Jevreni (Criuleni)	5		public supply	I	
7	Ustia (Dubasari)	7		public supply	I	
8	Cruglic (Criuleni)	32		public supply	I	
9	Boscana (Criuleni)	5		public supply	I	
10	Baltata (Criuleni)	18		public supply	I	
11	Danceni (Ialoveni)	25		public supply		
12	Sinjera (Anenii Na)	95		public supply		
13	Causeni (Causeni)	18		public supply		
14	Comrat (Comrat)	12		public supply	I	
15	Basarabeasca	~20		public supply	I	
16	Ceadir-Lunga	~20		public supply	I	
17	Taraclia (Taraclia)	16		public supply	I	

PL Poland, 163440, 5537, map

1	Upper Silesia	1920		mining and industrial activities, public and industrial supply	I	
2	Lower Silesia Walbrzych area	75		mining activities		I
3	Lower Silesia	32		mining activities		I
4	Turoszow area	25		mining activities, lignite coal		I
5	Konin area	500		mining activities, lignite coal		I
6	Turek area	360		mining activities, lignite coal		I
7	Belchatow area	480		mining activities, lignite coal	I	I
8	Legnica - Glogow region	600		mining activities		I
9	Grodziecka trough			mining activities		
10	Lublin region	920		mining activities		I
11	Grzybow area	110		mining activities		I
12	Jeziorko - Machow region	200		mining activities		I
13	Lublin area	20		public and industrial supply		I
14	Kielce area	5		public and industrial supply		I
15	Lodz area	30		public and industrial supply		
16	Radom area	100		public and industrial supply		I
17	Warsaw Tertiary basin	100		public and industrial supply		
18	Gdansk Gdynia area	100		urban activity	I	I

PT Portugal, 20000, 135, map

1	Cova da Piedade	4	1987	industrial water supply	I	
2	Praias do Sado	0.8	1987	industrial water supply	I	
3	Litoral Algarve	130	1987	industrial water supply	I	

RO Romania, 18350, 1050, map

1	Bucharest zone (deep aquifer)	450	1950	industrial supply		
2	Buzau zone (shallow aquifer)	300	1960	industrial supply		
3	Ploiesti zone (shallow aquifer)	300	1940	industrial supply		

ES Spain, 174745,--, map

1	Mancha Occidental	4915		irrigation		I
2	Niebla-Posadas	358		irrigation		
3	Niebla-Posadas	621		irrigation		
4	Ballabona-Sierra Lisbona	113		irrigation		
5	Bedar-Alcornia	43		irrigation		
6	Campo de Nijar	582		irrigation		

serial No. ref to map	name	area in km²	over-exp since	cause	leading to saltw. intrusion	leading to end. wetlands
7	Andarax-Almeria	316		irrigation		
8	Campo de Dalias	374		irrigation, public supply		
9	Hellin-Tobarra	884		irrigation		
10	Jumilla-Villena	312		irrigation, public supply		
11	El Molar	319		irrigation	I	
12	Ascoy-Sopalmo	297		irrigation		
13	Serral-Salinas	116		irrigation		
14	Quibas	114		irrigation	I	
15	Sierra de Crevillente	55		irrigation		
16	Sierra Espuña	298		irrigation		
17	Yechar	103		irrigation	I	
18	Valle del Guadalentin	850		irrigation	I	
19	Sierra de Carrascoy	72		irrigation		
20	Cresta del Gallo	73		irrigation		
21	Campo de Cartagena	1580		irrigation	I	
22	Mazarron	388		irrigation		
23	Aguilas	300		irrigation		
24	Cuchillos-Cabras	731		irrigation		
25	Oropesa-Torreblanca	80		irrigation		I
26	Plana de Sagunto	133		irrigation	I	
27	Jumilla-Villena	65		irrigation, public supply		
28	Yecla-Villena-Benejama	481		irrigation, public supply		
29	Peñarrubia	47		public supply		
30	Serral-Salinas	124		irrigation		
31	Argüeña-Maigmó	158		irrigation		
32	Barrancones-Carrasqueta	428		public supply		I
33	Orcheta	464		irrigation		
34	Sierra del Cid	108		irrigation		
35	Quibas	212		irrigation	I	
36	Sierra de Crevillente	52		irrigation		
37	Cubetas del Besós	84		industrial supply		
38	Baix Llobregat	162		public and industrial supply		
39	Penedés	484		public and industrial supply		
40	S'Estremera	94		public supply		
41	Na Burguesa	73		public supply	I	
42	Sierras Centrales	380		irrigation		
43	San Antonio	98		public supply	I	
44	San Carlos	63		public supply	I	
45	Ibiza-Llano Ibiza	126		public supply	I	

TR Turkey, 131810, 17100

1	Konya plain	10000	1995	demand		I
2	Hatay-Amik	1200	1994	demand	I	I
3	Kç. Menderes	1500	1990	demand		I
4	Akarçay	1300	1992	demand		I
5	Gediz	2000	1990	demand		I
6	Misli	600	1988	demand		I
7	Mediterranean side plains	2000	1985	demand	I	
8	Aegean plains	200	1985	demand	I	
9	Yalova	100	1985	demand	I	

Table 44 Wetlands - name, area and endangering situation

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
AL	**Albania, 1997, no map**						
1		Viluni lagoon		39			
2		Kune-Vaini lagoons		550			
3		Patoku lagoon		48			I
4		Rrushkulli lagoon		26			
5		Karavasta lagoon		588			
6		Pishe Poro		67			
7		Narta lagoon		400			I
8		Orikum lagoon		13			
9		Butrinti lake		160			
10		Shkodra lake					
11		Ohrid lake					
AT	**Austria, 1997, map**						
1	Burgenland	Neusiedler See und Lacken im Seewinkel		600	I		
2	Niederösterreich	Donau-March-Auen		385	I		
3	Wien	Untere Lobau		10	I		
4	Oberösterreich	Stauseen am Unteren Inn		8.7	I		
5	Vorarlberg	Rheindelta, Bodensee		20	I		
6	Steiermark	Pürgschachen Moor		0.62	I		
7	Kärnten	Sablatnigmoor bei Eberndorf		0.97	I		
8	Salzburg	Rotmoos im Fuschertal		0.58	I		
9	Kärnten, Steiermark	Hörfeld		1.2	I		
BG	**Bulgaria 1996, map**						
1		Srebarna		6			I
2		Durankulak		3.5	I		
3		Shabla		4.04	I		
4		Kamchia		8.42	I		
5		Alepu		1.67	I		
6		Arkutino		0.97			I
DK	**Denmark, 1995, map**						
1		Skagen		45		I	
2		Læsø		25		I	
3		Thisted - Vejlerne		35		I	
4		Nibe		30	I		
5		Lille Vildmose		15	I		
6		Nissum Bredning		20	I		
7		Nissum Fjord		140	I		
8		Stadil Fjord		40	I		
9		Ringkøbing Fjord		40	I		
10		Vadehavet - Esbjerg til Tønder		200	I		
11		Silkeborg		10	I		
12		Tinglev - Moser		12	I		
13		Holmegård		10		I	
14		Åmosen		15		I	
15		Tune - Ramsø		50		I	
16		Vestamager		22			I
EE	**Estonia, 1997, map**						
1		Soomaa (mires)		371.7	I		
2		Vilsandi (island, bays)		76.6	I		
3		Alam-Pedja (mires)		260	I		
4		Endla (mires)		81.6	I		
5		Nigula (mire)		49.2	I		
6		Hiiumaa Laiud Ja Käina Laht (islet, bays)		40.8	I		
7		Emajöe Suursoo (mires)		191.3	I		
8		Muraka (mires)		122.7	I		
9		Puhatu-Laelatu-Nehatu (costal meadows and bog)		41.1	I		

	serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
	10		Matsalu (bay)		486.4	l		
FR	**France, map**							
	1	Alsace	Ried Alsacien et vallée du Rhin	river valley				
	A		Massif vosgien	peat bog				
	2	Aquitaine	Basse Garonne et Dordogne	river valley				
	3		Eyre	river valley				
	4		Barthes de l'Adour	river valley				
	5		Barrage d'Artil et saligues du Gave de Pau	river valley				
	6		Landes humides et lagunes de Gascogne	continental plain				
	7		Marais d'Orl	continental plain				
	8		Marais et estuaire de Gironde	atlantic coast				
	9		Bassin d'Arcachon et Banc d'Arguin	atlantic coast				
	99		Lacs de Carcans-Hourtin et Lacanau et zones humides associées	atlantic coast				
	10		Zones humides de l'arrière dune et "courants", de Cazaul à Léon	atlantic coast				
	B		Pyrénées occidentales	peat bog				
	11	Auvergne	Allier et Sioule (de Clermont au bec d'Allier)	river valley				
	12		Sologne bourbonnaise	continental plain				
	C		Auvergne occidentale	peat bog				
	D		Velay, Livradois-Forez	peat bog				
	13	Basse Normandie	Baie des Veys, marais du Cotentin et du Bessin	atlantic coast				
	15		Baie du Mont Saint Michel	atlantic coast				
	16		Marais périphériques, Baie du Mont	atlantic coast				
	17	Bourgogne	Bresse	continental plain				
	18		Etangs de Galetas	continental plain				
	19		Loire (de Roanne au bec d'Allier)	river valley				
	E		Massif du Morvan	peat bog				
	20	Bretagne	Rade de Brest	atlantic coast				
	21		Golfe du Morbihan	atlantic coast				
	22		Marais de la Vilaine	atlantic coast				
	23		Baie de Saint Brieuc	atlantic coast				
	24		Estuaires du Trieul et du Jaudy	atlantic coast				
	25		Baies de Morlail et Carantec	atlantic coast				
	26		Marais et Baie d'Audienne	atlantic coast				
	R		Massif armoricain	peat bog				
	27	Centre	Val de Loire (bec d'Allier / Beaugency)	river valley				
	28		Val de Loire (Beaugency / Saumur) et val de Cher.	river valley				
	29		Brenne	continental plain				
	30		Sologne	continental plain				
	31		Lac de Rillé	continental plain				
	32	Champagne Ardenne	Vallée de l'Aire et de l'Aisne	river valley				
	33		Vallées de la Seine et de l'Aube	river valley				
	34		Etangs et réservoirs de Champagne humide	continental plain				
	35		Marais de Saint-Gond	continental plain				
	S		Massif des Ardennes	peat bog				
			Champagne-Ardenne	continental plain				
	98	Corse	Golfe de Porto, presqu'ile de Scandola et golfe de Galéria	med. coast				
	36		Etang d'Urbino et zones humides associées	med. coast				
	37		Etang de Biguglia	med. coast				
	F		Montagne de Corse : Pozzines du plateau de Coscione	peat bog				
	38	Franche Comte	Val de Saône / Doubs	river valley				
	G		Massif du Jura	peat bog				

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
39	Haute Normandie	Estuaire et marais de la Seine	atlantic coast				
40	Ile de France	Seine entre Montereau et Nogent/Seine (la Bassée)	river valley				
41	Languedoc-Roussillon	Etangs et salins du Roussillon (de Cante à Vendres)	med. coast				
42		Etangs et salins du Languedoc (d'Agde à la Grande Motte)	med. coast				
H		Massif central Méridional (Cevennes)	peat bog				
J		Montagne Noire	peat bog				
K		Pyrénées orientales	peat bog				
43	Limousin	Etangs des Landes et étangs périphériques	continental plain				
L		Plateau du Limousin	peat bog				
44	Lorraine	Moselle (+Meurthe, Seille, Nied, Sarre)	river valley				
45		Vallées de Meuse et Chiers	river valley				
46		Etangs de la Woëvre	continental plain				
47		Etangs du Sud-Est Mosellan	continental plain				
48	Midi Pyrenees	Garonne en amont de Moissac	river valley				
M		Pyrénées centrales	peat bog				
49	Nord Pas de Calais	Scarpe et Escaut	river valley				
50	Pays de Loire	Val de Loire aval (de Saumur à Nantes) et marais de Basse Maine	river valley				
51		Marais de Brière	atlantic coast				
52		Estuaire de la Loire	atlantic coast				
53		Lac de Grand-Lieu	atlantic coast				
54		Baie de Bourgneuf, Marais Breton, et Ile de Noirmoutier	atlantic coast				
55		Marais de Guérande et Mesquer	atlantic coast				
56		Marais d'Olonne	atlantic coast				
57		Marais de Talmont	atlantic coast				
58		Marais de Mazerolles...	continental plain				
59	Picardie	littoral et marais de l'estuaire Canche à l'estuaire Somme	atlantic coast				
60		Somme	river valley				
61	Poitou Charentes	Charente de Villognon à Tonnay-Charente et affluents	river valley				
62		Marais de Rochefort, Yves, anse de Fouras et estuaire Charente	atlantic coast				
63		Marais de Brouage, de Seudre et d'Oléron	atlantic coast				
64		Sèvre niortaise et Venise verte	continental plain				
65		Marais poitevin, Baie de l'Aiguillon et marais de Ré	atlantic coast				
66	Paca	Camargue	med. coast				
67		Zones humides entre Rhône et Crau, Golfe de Fos et Etang de Berre	med. coast				
68		Zones humides hyéroises	med. coast				
N		Alpes méridionales (Alpes du Sud)	peat bog				
72		Marais de l'Ile Vieille	river valley				
69	Rhone Alpes	Val de Saône	river valley				
70		Haut-Rhône, Basse vallée de l'Ain, lac Léman, lac du Bourget, marais de Lavours et Chautagne	river valley				
71		Moyenne vallée du Rhône	river valley				
73		Val de Drôme	river valley				
74		Plaine du Forez	continental plain				
75		Dombes	continental plain				
P		Alpes du Nord	peat bog				

	serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	over-exploi-tation	other reason
HU	**Hungary, 1995, map**							
	1		Szaporca		2.6			I
	2		Dinnyés		9.7			I
							endangered by	
	3		Kardoskút		4.9			I
	4		Mártély		22.3			I
	5		Salt lakes of Kiskunság		39		I	I
	6		Pusztaszer		50		I	I
	7		Hortobágy		150			I
	8		Tata, Lake Öreg		2.7			I
	9		Lake Fertõ		28.7			I
	10		Kisbalaton		147.5			I
	11		Lake Balaton		598			I
	12		Bodrogzug		37.8			I
	13		Ócsa		10.7		I	I
	14		Biharugra, fishponds		27.9			I
	15		Gemenc, Boda Karaponcsa		180.2		I	I
	16		Lake Fertõ (eltension)		84.3			I
	17		Kisköre		36.5			I
	18		Lake Kolon		29.6			I
	19		Pacsmag fishponds		4.9			I
	20		Rétszilas fishponds		15.1			I
IT	**Italy, 1991, no map**							
	1		Torbiere d'Iseo		3.24			
	2		Pian di Spagna - Lago di Mezzola		17.4			
	3		Palude Brabbia		4.59			
	4		Palude di Ostiglia		1.23			
	5		Valli del Mincio		10.81			
	6		Isola Boscone		2.01			
	7		Lago di Tovel		0.37			
	8		Vincheto di Cellarda		0.99			
	9		Laguna di Venezia : Valle Zappa		5			
	10		Marano Lagunare - Foci dello Stella e territori limitrofi		158.5			
	11		Valle Cavanata		2.43			
	12		Punte Alberete		4.8			
	13		Valle Santa		2.61			
	14		Sacca di Bellocchio		2.23			
	15		Valle di Gorino		13.3			
	16		Valle Bertuzzi		31			
	17		Valli residue del comprensorio di Comacchio		135			
	18		Pialassa della Baiona e Risega		16.3			
	19		Saline di Cervia		7.85			
	20		Ortazzo e Ortazzino		4.4			
	21		Valle Campotto e Bassarone		13.63			
	22		Lago di Burano		4.1			
	23		Padule di Bulgheri		5.18			
	24		Laguna di Orbetello		8.87			
	25		Padule di Diaccia e Botrona		12			
	26		Palude di Colfiorito		1.57			
	27		Lago di Barrea		3.03			
	28		Lago di Nazzano		2.65			
	29		Lago di Sabaudia		14.74			
	30		Pantani dell'Inferno		0.4			
	31		Lago di Caprolace		2.29			
	32		Lago di Fogliano		3.95			
	33		Lago dei Monaci		0.94			
	34		Torre Guaceto		9.4			
	35		Bacino dell'Angitola		8.75			

36		Biviere di Gela		2.56			
37		Riserva Naturale Oasi Faunistica di Vendicari		14.5			
38		Stagno di Molentargius		14.01			
39		Stagno di Cagliari		34.66			
40		Stagno di Sale Porcus		3.3			
41		Stagno di Cabras		35.75			
42		Stagno di Mistras		6.8			

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
43		Stagno di Pauli Maiori		2.87			
44		Stagno di S'Ena Arrubia		3			
45		Stagno di Corru S'Ittiri e Stagno di S.Giovanni e Marceddi		26.1			

PL Poland, 1995, map

1		Back-swamp of Warta River near Slonsk		43	I		
2		Luknajno Lake		7	I		
3		Oswin Lake		18	I		
4		Karas Lake		8	I		
5		Swidwie Lake		9	I		
6		Delta of Swina River		40			I
7		Szczecin Lagoon		480			I
8		Kamiensk Lagoon		65			I
9		Leba Lake		1824			I
10		Bielawa Marshes		9	I		
11		Beka Meadow		2			I
12		Vistule Lagoon		330			I
13		Druzno Lake		30	I		
14		Goplo Lake		127			I
15		Biebrza Basin		1260			I
16		Valley of Narew River near Wizna		42			I
17		Valley of Narew River near Suraz		17	I		
18		Kramsk Marshes		37	I		
19		Valley of Middle Warta River		320	I		
20		Valley of Bzura and Ner River		80			I
21		Valley of Bug River		550			I
22		Retention reservoirs of Mosty and Zahajki		80	I		
23		Valley of Middle Vistula		180			I
24		Peat land near Chelm		170	I		
25		Milicz fishpound		30			I
26		Nysa retention reservoir		50	I		
27		Goczalkowice retention reservoir		450	I		

RO Romania, 1996, map

1		"Danube Delta" Biosphere Reservation		592.8			I

SK Slovak Republic, 1995, no map

1		Dunajské luhy		143.4			I
2		Èíèovské rameno		8			I
3		Šúr		0.8			I
4		Parí ske moèiare		1.4			I
5		Senné - rybníky		2.2			I
6		Latorica		43.6			I
7		Niva Moravy		49.7			I

CH Switzerland, map

1		Fanel - Chablais		11.5	I		
2		Bolle di Magadino		6.6	I		
3		Klingnauer Stausee		3.5	I		
4		Rive sud du Lac de Neuchatel		30.6	I		

5		Les Grangettes		3.3	I		
6		Rade de Genéve et Rhone en aval de Genéve		10.3	I		
7		Kaltbrunner Riet		1.5			
8		Stausee Niederried		3	I		

TR Turkey, 1993, map

1		Meriç Delta		70			
2		Büyükçekmece Lake		28.5			
3		Küyükçekmece Lake		15			
4		Lake Uluabat		135			
5		Kus Lake (Bird Lake)		160			
6		Kocaçay Delta		42			

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
7		Demirköprü Dam		50.6			
8		Lake Marmara		68			
9		Gediz Delta		204			
10		Lake Isikli		73			
11		Lake Bafa		122.8			
12		Büyük Menderes Delta		98			
13		Güllük Delta		14			
14		Lake Köycegiz		80			
15		Acigöl		210			
16		Lake Karatas		11.9			
17		Lake Yarisli		14			
18		Lake Burdur		237			
19		Lake Egridir		472.5			
20		Lake Aksehir and Lake Eber		536			
21		Lake Çavusçu		12			
22		Balikdami		14.2			
23		Lake Mogan		15			
24		Sariyar Dam		84			
25		Lake Sapanca		47			
26		Lake Sarikum		7.9			
27		Sultan Marshes		390			
28		Lake Seyfe		140			
29		Hirfanli Dam		263			
30		Kizilirmak Delta		161			
31		Yedikir Dam		9.9			
32		Yesilirmak Delta		30			
33		Lake Samsam		8.3			
34		Lake Kulu		8.6			
35		Eregli Marshes		370			
36		Karapinar Plain		152			
37		Esmekaya Marshes		112.5			
38		Lake Beysehir		730			
39		Lake Sugla		165			
40		Hotamis Marshes		165			
41		Lake Bolluk		11.5			
42		Lake Tersakan		64			
43		Lake Tuz		2600			
44		Göksu Delta		144.8			
45		Lake Tuzla		28			
46		Lake Akyatan		140			
47		Lake Agyatan		22			
48		Yumurtalik Lagoon		164.3			
49		Erzurum Plain		33			
50		Bulanik Plain		80			
51		Lake Aktas		27			
52		Lake Çildir		140			
53		Lake Nemrut		45			
54		Lake Sodali		15			
55		Lake Erçek		95.2			
56		Lake Van		3900			

UK United Kingdom, 1997, no map

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
1	England	Abberton Reservoir		716	I		
2	England	Alde-Ore Estuary		2.437	I		
3	England	Alt Estuary		1.16	I		
4	England	Benfleet & Southend Marshes		2.251	I		
5	England	Blackwater Estuary (Mid-Essex Coast Phase 4)		3.657	I		
6	England	Breydon Water		514	I		
7	Scotland	Bridgend Flats, Islay		331	I		
8	England	Bridgwater Bay		2.703	I		
9	England	Broadland		3.35	I		
10	England	Bure Marshes		412	I		
11	Wales	Burry Inlet		6.66	I		
12	Scotland	Cairngorm Lochs		179	I		
13	Scotland	Cameron Reservoir		64	I		
14	Scotland	Castle Loch		109	I		
15	England	Chesil Beach & The Fleet		763	I		
16	England	Chichester & Langstone Harbours		5.764	I		
17	England	Chippenham Fen		115	I		
18	Scotland	Claish Moss		563	I		
19	Scotland	Coll		2.177	I		
20	England	Colne Estuary (Mid-Essex Coast Phase 2)		2.701	I		
21	Wales	Cors Caron		872	I		
22	Wales	Cors Fochno & Dyfi		2.497	I		
23	Wales	Crymlyn Bog		267	I		
24	England	Deben Estuary		976	I		
25	England, Wales	Dee Estuary MR		13.055	I		
26	England	Dengie (Mid-Essex Coast Phase 1)		3.127	I		
27	England	Dersingham Bog		159	I		
28	England	Derwent Ings (part of Lower Derwent Valley)		783	I		
29	Scotland	Din Moss - Hoselaw Loch		46	I		
30	Scotland	Eilean Na Muice Duibhe (Duich Moss)		574	I		
31	England	Esthwaite Water		134	I		
32	England	Exe Estuary		2.389	I		
33	Scotland	Fala Flow		323	I		
34	Scotland	Feur Lochain, Islay		384	I		
35	England	Foulness		10.969	I		
36	England	Gibraltar Point		414	I		
37	Scotland	Glac-na-Criche, Islay		265	I		
38	Scotland	Gladhouse Reservoir		186	I		
39	Scotland	Greenlaw Moor		248	I		
40	Scotland	Gruinart Flats		3.17	I		
41	England	Hamford Water		2.179	I		
42	England	Hickling Broad & Horsey Mere (part of Broadland)		884	I		
43	England	Holburn Lake & Moss		22	I		
44	England	Humber Flats, Marshes & Coast (Phase 1)		15.23	I		
45	England	Irthinghead Mires		608	I		
46	England	Leighton Moss		124	I		
47	England	Lindisfarne		3.625	I		
48	Wales	Llyn Idwal		14	I		
49	Wales	Llyn Tegid		484	I		
50	Scotland	Loch-an-Duin		3.606	I		
51	Scotland	Loch Eye		195	I		
52	Scotland	Loch Ken & River Dee Marshes		773	I		

53	Scotland	Loch Leven		1.597	I		
54	Scotland	Loch Lomond		253	I		
55	Scotland	Loch Maree		3.1	I		
56	Scotland	Loch of Kinnordy		86	I		
57	Scotland	Loch of Lintrathen		218	I		
58	Scotland	Loch of Skene		125	I		
59	Scotland	Loch of Strathbeg		485	I		
60	Scotland	Loch Ruthven		218	I		
61	Scotland	Loch Spynie		93	I		
62	Scotland	Lochs Druidibeg, a'Machair & Stilligarry		1.78	I		
63	Northern Ireland	Lough Neagh & Lough Beg		39.5	I		
64	England	Lower Derwent Valley		306	I		
65	England	Malham Tarn		289	I		
66	England	Martin Mere		119	I		
67	England	Medway Estuary & Marshes		4.682	I		
68	England	Mersey Estuary		5.004	I		
69	England	Midland Meres & Mosses (Phase 1)		513	I		
70	England	Minsmere - Walberswick		2.004	I		
71	Scotland	Montrose Basin		987	I		
72	England	Morecambe Bay		39.759	I		
73	England	Nene Washes		1.31	I		

serial No. ref to map	region	name of the wetland	type	area in km²	not endan-gered	endangered by over-exploi-tation	endangered by other reason
74	England	North Norfolk Coast		7.7	I		
75	England	Old Hall Marshes		627	I		
76	England	Ouse Washes		2.403	I		
77	England	Pagham Harbour		616	I		
78	England	Portsmouth Harbour		1.248	I		
79	Scotland	Rannoch Moor		1.499	I		
80	England	Redgrave & South Lopham Fens		125		I	
81	England	Ribble & Alt Estuaries (Phase 2)		12.12	I		
82	Scotland	Rinns of Islay		2.926	I		
83	England	River Crouch Marshes (Mid-Essex Coast Phase 3)		906	I		
84	England	Rockcliffe Marsh (part of Upper Solway Flats & Marshes		1.897	I		
85	England	Rostherne Mere		79	I		
86	England	Roydon Common		194	I		
87	England	Rutland Water		1.339	I		
88	England, Wales	Severn Estuary		20.513	I		
89	Scotland	Silver Flowe		608	I		
90	Scotland	South Tayside Goose Roosts		409	I		
91	England	Stodmarsh		481	I		
92	England	Stour & Orwell Estuaries		3.334	I		
93	England	Teesmouth & Cleveland Coast		942	I		
94	England	Thanet Coast & Sandwich Bay		2.183	I		
95	England	The New Forest		28.001	I		
96	England	The Swale		6.257	I		
97	England	The Wash		63.124	I		
98	England	Thursley & Ockley Bogs		265	I		
99	England	Upper Severn Estuary		1.357	I		
100	England, Scotland	Upper Solway Flats & Marshes		28.053	I		
101	England	Walmore Common		51	I		
102	Scotland	Westwater		51	I		
103	England	Wicken Fen		254	I		
104	England	Woodwalton Fen		208	I		

References

EUROSTAT (1995) Europe's Environment: Statistical Compendium for the Dobris Assessment.
EUROSTAT (1997) Water resources in Europe. Internal working document. Water/97/4.
FAOSTAT (1997) Information from World Wide Web. http://apps.fao.org/
OECD (1995) OECD Environmental Data, Données OCDE sur l'Environnement. Compendium 1995.
Yearbook of Nordic Statistics (1996). The Nordic Council of Ministers, Copenhagen 1996.

Groundwater quantity and quality questionnaire

1. Objectives
This questionnaire will contribute to a report providing overviews of important groundwater quality and quantity issues to support the further development of the EC Commission's draft proposal for a Groundwater Action and Water Resources Management Program (GWAP) and to provide information in support of the EEA's Report to the Commission (5EAP) and Dobris+3 Report.

These overviews should reveal the distributions of measured values for certain important indicators of raw/untreated **groundwater quality** largely in form of maps, other graphical applications and tables. Therefore to make data comparable annual mean values per sampling site are required.

Required indicators are nitrate, pesticides, chloride, alkalinity, pH-value and electrical conductivity.

For an evaluation of **groundwater quantity**, problem areas with groundwater over-exploitation, saltwater intrusion and endangered wetlands due to groundwater over-exploitation have to be identified in order to update maps 5.5 and 5.6 in the Dobris report (see Annex).

Further, the severity of the most important human interventions in the hydrological cycle with regard to groundwater will be assessed. Consequences for sustainable use and management of resources will be considered.

The investigation will be carried out in each European country.

2. Contents
This questionnaire comprises questions on measured values with regard to groundwater quality for certain indicators and questions on geographical distributions regarding groundwater quality and quantity to be marked on maps.

Groundwater quality
- **Part 1** General data
- **Part 2** Nitrate - monitoring data
- **Part 3** Pesticide - monitoring data
- **Part 4** Determinand - monitoring data (Chloride, pH-value, Electrical Conductivity and Alkalinity)
- **Part 5** For defining other relevant sources of pollution as well (e.g. heavy metals, hydrocarbons, acidification,…)

Groundwater quantity
- **Part 6** Quantity data on inland water / groundwater
- **Part 7** Groundwater over-exploitation - average long term
- **Part 8** Wetlands, wet ecosystems
- **Part 9** Human interventions

Required maps
- **Part 10** Maps on important groundwater areas, determinands, groundwater over-exploitation, wetlands, saltwater intrusion.

National strategies
- **Part 11** National strategies to improve groundwater quality and quantity

.1 USERS GUIDE - HOW TO FILL IN

A. Extent of data inventory

Spatial extent

1. Data are required **on country level as well as on the scale of important groundwater areas** to assure comparability between countries.

   If investigations are merely made in specific regions (NUTS-region or major administrative unit) and therefore the results are not representative for the whole country, please mark those regions at appropriate level in a map of the whole country, label regions with **serial numbers** (R # - e.g. R 1, R 2,…) and give the approx. **area** in km².

2. Please submit data on **at least 3 important groundwater areas** with special emphasis on groundwater in porous media. Mark those important groundwater areas in a map of the whole country, label them with serial numbers (G # - G 1, G 2,…) and give the approx. area in km².

3. In general groundwater data are required from the **shallow groundwater body**. Otherwise give a remark on the forms.

Temporal extent

1. Data are required from the **latest year available**.
2. If there are more than one value per sampling site and year, please give **annual mean values per sampling site** to assure comparability.
3. **Time series** of each determinand should be sent if available, a minimum of five years would be acceptable but would ideally be as long as possible.

Maps:

1. Please **mark respective areas** required in suitable country maps. Preferred size of the maps: A3
2. Please use **separate maps for each question** with respect to each determinand.

B. General information

1. Please answer the questionnaire in (readable) **CAPITAL LETTERS** or put your answers into this electronic MS Word document.
2. Please mark the relevant boxes (Part 1, 2, 3, 4, 7, 8) with a cross:
   - ☒ single choice
   - ☐ multiple choice
3. **Use extra copies** of the relevant forms if necessary.
4. **Attach pages** for descriptions or comments if necessary.

C. Deadline

Please return the answered questionnaire until:	to:	
28. 03. 1997		**Umweltbundesamt Wien** **Dr. Vogel** **AWW / Topic Centre** **Spittelauer Lände 5** **A-1090 Wien** **Austria**

PART 1 GENERAL DATA - INFORMATION AT COUNTRY LEVEL

MAP 1 REQUIRED - SEE PART 9

PESTICIDE DATA:

The amounts of pesticide active ingredients used each year are requested.

Active ingredients are the substances in a commercial pesticide that cause the desired effects on agriculturally harmful fungi, plants or animals.

Reference year of data		1020
Total number of approved active ingredients		1025

Data are in accordance with:	**total**	1030		**t/year**
1023 ☐ **annual usage**	**fungicides**	1031		**t/year**
1024 ☐ **annual sales**	**herbicides**	1032		**t/year**
Consumption data preferred !	**insecticides**	1033		**t/year**
	other pesticides (include fumigants, rodenticides and anti-coagulants)	1034		**t/year**

PART 2 NITRATE - MONITORING DATA

- Use one form for country or region level and one form for each of the (at least) 3 groundwater areas. (Make extra copies)
- Please select country level or region level or groundwater level (give serial number, name and approximate area)

1 ○ Country — Reference year of data [ ] 2006

2 ○ Region → 2004 [ ] → [ ]

3 ○ Groundwater area — serial number referring to map 2 — name of region / groundwater area 2005

approx. area 201([ ] km²

MAP 2 REQUIRED - SEE PART 9

NUMBER AND TYPE OF SAMPLING SITES MONITORING NITRATE:

	Main purpose of sampling site	Number
2110	• drinking water well	
2120	• industrial water well	
2130	• monitoring well	
2140	• other	
2150	• total	

SAMPLING FREQUENCY: How many sampling sites with regard to nitrate will be investigated for how many times per year

	Number of sampling sites	Sampling frequency per year
2210/2215		
2220/2225		
2230/2235		
2240/2245		
2250/2255		
2260/2265		

FREQUENCY DISTRIBUTION OF NITRATE ANNUAL MEAN VALUES/SAMPLING SITE

- For each concentration class insert the number of sampling sites.
- Criteria is the annual mean value (respectively single value)of the sampling site within the reference year.

NITRATE (in mg/l)	≤10 mg/l	>10 - ≤25	>25 - ≤50	>50 mg/l
Number of sampling sites per class				
	2510	2520	2530	2540

PART 3 PESTICIDES - MONITORING DATA

- Use one form for country or region level and one form for each of the (at least) 3 groundwater areas. (Make extra copies)
- Please select country- region- or groundwater level (give serial #, name and approx. area)

1 ○ Country — Reference year of data 3006

2 ○ Region → 3004 serial number → name of region / groundwater area 3005

3 ○ Groundwater area — referring to map 3 — approx. area 3010 km²

COMPLETE LIST OF ANALYSED PESTICIDES (ACTIVE INGREDIENTS) 3400-3999

- Please give a complete list of the analysed pesticides (active ingredients) for the respective country / region / groundwater area and label the list with a serial number (L #) which has to be inserted in the following box.

3020 L Serial number of the list of analysed pesticides

MAP 3 REQUIRED - SEE PART 9

NUMBER AND TYPE OF SAMPLING SITES MONITORING PESTICIDES:

	Main purpose of sampling site	Number
3110	• drinking water well	
3110	• industrial water well	
3120	• monitoring well	
3130	• other	
3140	• total	

SAMPLING FREQUENCY: How many sampling sites with regard to pesticide will be investigated for how many times per year

	Number of sampling sites	Sampling frequency per year	Number of analysed pesticides
3210/3212/3214			
3220/3222/3224			
3230/3232/3234			
3240/3242/3244			
3250/3252/3254			
3260/3262/3264			

FREQUENCY DISTRIBUTION FOR THE 5 MOST IMPORTANT PESTICIDE SUBSTANCES
(important = endangering groundwater):

- For each concentration class insert the number of sampling sites. Criteria is the annual mean value (respectively single value)of the sampling site within the reference year.

If the Detection Limit (D.L.) is > 0.1 µg/l, please note it here: D.L. [ ] 3300

3301-3336 Pesticide substance	< detection limit (D.L.)	≥D.L. - ≤0.1	>0.1 - ≤0.5	>0.5 µg/l	max. value	number of samples

Country	

PART 4	DETERMINAND - MONITORING DATA

- Use one form for country or region level and one form for each of the (at least) 3 groundwater areas. (Make extra copies)
- Please select country level or region level or groundwater level (give serial number, name and approx. area)

1 ○ Country — Reference Year of Data [ ] 4006

2 ○ Region → 4004 [ ] → [ ]

3 ○ Groundwater area

approx. area of region / groundwater area [ ] km² 4010 — serial number referring to map — name of region / groundwater area 4005

MAPS 4-7 REQUIRED - SEE PART 9

FREQUENCY DISTRIBUTION OF DETERMINAND - ANNUAL MEAN VALUES/SAMPLING SITE

- For each class insert the number of sampling sites.
- Criteria is the annual mean value (or single value) of the sampling site within the reference year.

CHLORIDE (mg/l)	≤ 25 mg/l	>25 - ≤50	>50 - ≤100	>100 - ≤250	> 250 mg/l
Number of sampling sites per class					
	4510	4520	4530	4540	4550

PH-VALUE (in mg/l)	≤ 5.5	> 5.5 - ≤6.5	>6.5 - ≤7.5	>7.5 - ≤8.5	> 8.5
Number of sampling sites per class					
	4610	4620	4630	4640	4650

ELECTRICAL CONDUCTIVITY (in µS/cm) at reference temp. of 25°C

	≤ 200 µS/cm	> 200 - ≤ 500	>500 - ≤1000	>1000 - ≤2000	> 2000
Number of sampling sites per class					
	4710	4720	4730	4740	4750

ALKALINITY (in mval/l)	≤ 1 mval/l	> 1 - ≤ 4	> 4 mval/l
Number of sampling sites per class			
	4810	4820	4830

INFORMATION ON NETWORK AND SAMPLING

- If there are differences in the network and sampling regarding to the determinands please make an extra copy of this form for each determinand.

NUMBER AND TYPE OF SAMPLING SITES MONITORING RESPECTIVE DETERMINAND(S)

4100-4120	number of sampling sites			
Main purpose of sampling site	Cl	pH	El. Cond.	Alk.
• drinking water well				
• industrial water well				
• monitoring well				
• other				
• total				

SAMPLING FREQUENCY:
How many sampling sites with regard to the respective determinand(s) will be analysed for how many times per year

4200-4300	Number of sampling sites	Sampling frequency per year	Determinand(s) (Cl, pH, El. Cond., Alk.)

PART 5 | OTHER RELEVANT SOURCES OF POLLUTION

WHICH SUBSTANCES ARE PROBLEMATIC REGARDING GROUNDWATER QUALITY AS WELL.

Please give information of other relevant sources of pollution e.g. heavy metals, chlorinated hydrocarbons, hydrocarbons, acidification,... with indication of point / diffuse sources, severity of resulting problems,... 5001

PART 6 QUANTITY DATA ON INLAND WATER / GROUNDWATER

Latest Year Available:		6001

DEFINITIONS: in accordance with the OECD / EUROSTAT questionnaire)

(Fresh) surface water:

Water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. For purposes of this questionnaire, bank filtration is covered under surface water but sea-water, permanent bodies of stagnant water both natural and artificial and transitional waters, such as brackish swamps, lagoons and estuarine areas are not considered surface water.

(Fresh) ground water:

Fresh water is being held in, and can usually be recovered from or via an underground formation. All permanent and temporary deposits of water both artificially charged and naturally, in the subsoil, of sufficient quality for at least seasonal use. This category includes phreatic water bearing strata as well as deep strata under pressure or not, contained in porous or fracture soils. For purposes of this questionnaire, groundwater includes springs both concentrated and diffused, which may be subaqueous. Excluded from groundwater is bank filtration (covered under surface water).

GENERAL DATA:

Average long term annual atmospheric precipitation Average of annual atmospheric precipitation over a long period, normally 20 years or more.		mill m³	6010
Average long term annual evapotranspiration The average of annual evapotranspiration over a long period, normally 20 years or more.		mill m³	6020
Average long term annual inflow into country The average of the annual inflow of surface waters into a country, averaged over a period of at least 20 consecutive years.		mill m³	6030
Average long term annual outflow The total volume of the outflow of surface waters from a country into the sea or a neighbouring country, annual data averaged over a period of at least 20 consecutive years.		mill m³	6040

TIME SERIES:
Please give the following data for the years 1985, 1990 and the latest year available

(data in mill m³)	1985	1990	latest year available
Groundwater available for annual abstraction in mill m³ 6110/6112/6114 Estimate of the maximum volume of water that can be withdrawn annually from the national groundwater resources under prevailing economic and technical conditions, without leading to the depletion of the resource base in the long term.			
Total annual groundwater abstraction 6120/ Difference between the total amount of water withdrawn from aquifers and the total amount charged artificially or injected into aquifers. The amounts of water artificially charged or injected are attributed to abstractions from that water resources from which they were originally withdrawn.			

Continuing PART 6: QUANTITY DATA ON INLAND WATER / GROUNDWATER

TIME SERIES:
Please give the following data for the years 1985, 1990 and the latest year available

(data in mill m³)	1985	1990	latest year
Total annual fresh water abstraction 6130/6134 Water removed from any source, either permanently or temporarily. Mine water and drainage water are included.			
Total annual water abstraction for public water supply 6140/6144 Water supply by water works. Deliveries of water from one public supply undertaking to another are excluded.			
Total annual fresh water abstraction for domestic sector - Private households 6150/6154			
Total annual surface water abstraction 6160/			
Total annual artificial groundwater injection or recharge 6170/6172			

(data in %)	1985	1990	latest year
Amount of population being supplied by public drinking water (treatment) works (%) 6210			
=> <u>of which:</u> supplied from groundwater (%) 6220			
Amount of population being self supplied by groundwater (%) 6230/6234			

ANNUAL FRESH GROUNDWATER ABSTRACTION BY ACTIVITY

(data in mill m³)	1985	1990	latest year
Public water supply 6310/6314 Water supply by water works. Deliveries of water from one public supply undertaking to another are excluded.			
=> <u>of which:</u> domestic sector (private households) 3			
Private self supply 6320/6324			
Agriculture 6330/6334			
=> <u>of which</u>: Irrigation use 6340/6344 Artificial application of water on lands to assist in the growing of crops and pastures. Can be done by spraying water under pressure on the land concerned („spray irrigation") or by pumping water onto the land concerned („flood irrigation).			
Mining and quarrying 6350/6354			
Manufacturing industry 6360/6364 exc. cooling water for the production of electricity (covered under cooling water for the production of electricity).			
Cooling water for the production of electricity Water which is used to absorb and remove heat for the generation of electricity in power stations. 6370			

PART 7 GROUNDWATER OVER-EXPLOITATION - AVERAGE LONG TERM

MAP 8 REQUIRED - SEE PART 9

Total area of important groundwater areas		km² 7010

Total area of over-exploited groundwater areas ____ **km²** 7020

Criteria for *over-exploitation*: groundwater abstraction exceeds the recharge and leads to lowering of the groundwater table.

LIST OF AREAS WITH GROUNDWATER OVER-EXPLOITATION: 7100-7999

- **Give a list of the over-exploited areas, the serial number referring to map 8, name, approximate area (km²), a short description of the main cause for groundwater over-exploitation** (e.g. mining activities, abstraction for public supply, industrial supply, irrigation, etc.)**, time series indicating over-exploitation since when? leading to salt water intrusion and/or endangered wetlands?**

serial No. ref. to map 8	name of area	approx. area [km²]	time series indicating over-exploitation since:	main cause for over-exploitation	over-exploitation leading to salt water intrusion	over-exploitation leading to endan-gered wetlands
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐

PART 8 WETLANDS AND ENDANGERED WETLANDS DUE TO GROUNDWATER OVER-EXPLOITATION

Year		8001

MAP 9 REQUIRED - SEE PART 9

LIST OF WETLANDS (WET ECOSYSTEMS): 8100-8999

- **Give a list of the wetlands, the serial number referring to map 9, name of the area, approximate area (km²) and following information about the endangering situation.**

  Selection criteria: RAMSAR-areas and most important wetlands (larger than 40 ha), where strongly endangered species or species threatened by extinction occur, regarding to national Red Lists.

serial number ref. to the map 9	name of area	approx. area [km²]	endangering situation		
			not endangered	endangered by gw over-exploitation	endangered by other reasons
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐
			○	☐	☐

PART 9	MOST IMPORTANT HUMAN INTERVENTIONS WITH RELATED ADVERSE EFFECTS ON GROUNDWATER QUANTITY

- Select the most important human interventions with adverse effects on groundwater quantity and rank them in accordance with your criteria.
- Which criteria did you use to define importance?

- Choose at least 3 and a maximum 6 aspects of the main categories
- Please give a brief description of the intervention and a description about the extent of the intervention/problem.

DECREASE OF GROUNDWATER QUANTITY

GROUNDWATER ABSTRACTION / WITHDRAWAL (BY ACTIVITY)

4.1.4 9010	☐	Public water supply *(drinking water supply)* incl. domestic sector		
4.1.5 9020	☐	Agriculture		
4.1.5.1 9021	☐	Irrigation		
4.1.5.2 9022	☐	other *(e.g. fish farming,…)*		8023
4.1.6 9030	☐	Industrial water supply *(for cooling purpose, water for production, mining and quarrying,…exc. for cooling purpose due to the production of electricity)*		
4.1.7 9040	☐	Cooling water for the production of electricity *(incl. production of electricity in the industry)*		
4.1.8 9050	☐	Water for Construction		
4.1.9 9060	☐	For other purposes *(e.g. snow making, …)*		
4.1.10 9070	☐	Due to artificial buildings *(Operating of dumping grounds, tunnelwork, mining,…)*		
4.1.11 9080	☐	Land drainage due to		
4.1.11 9081	☐	Cultivation		
4.1.11 9082	☐	Flood control *(loss of percolation area)*		
4.1.11 9083	☐	Urbanization *(including industrial areas)*		
4.1.11 9084	☐	Infrastructure for traffic *(road, rail,…)*		
4.1.11 9085	☐	Other use		9086
4.1.11 9087	☐	not site fulfilling cultivated plants		

		LOWERING OF THE SURFACE WATER TABLE		
4.1.12 9210		Surface water abstraction/withdrawal		
4.1.13 9220		River channelisation *(straightening of water courses)* due to		
4.1.13.1 9221	.2	Flood control *(torrent damming, breaking-up of avalanches, ...)*		
4.1.13.2 9223	.3	Flooding for irrigation purpose		
4.1.13.3 9224	.4	Drainage of surrounding land		
4.1.13.4 9225	.5	Navigation		
4.1.13.5 9226	.6	Other use		9227
4.1.14 9240		Dredging of river channels due to		
4.1.14.1 9241	.7	Navigation		
4.1.14.2 9242	.8	Drainage of the surrounding land		
4.1.14.3 9243	.9	Mining of river bed gravel		
4.1.14.4 9244	.10	Other use		9245
4.1.14.5 9246		Dredging in groundwater bodies		
		INCREASE OF THE SURFACE WATER RUNOFF, REDUCTION OF INFILTRATION		
4.1.15 9410		Land sealing *(changes in land use)* due to		
4.1.15.1 9411	.11	Urbanization *(including industrial areas)*		
4.1.15.2 9412	.12	Infrastructure for traffic *(road, rail, ...)*		
4.1.15.3 9413/9414		Other use *(e.g. skiing grounds)*		
4.1.15.4 9415	.13	Agricultural activities *(including changes in land use, Intensification of agriculture,...)*		
4.1.16 8420		Deforestation		

INCREASING GROUNDWATER QUANTITY				
		PERCOLATION OF SURFACE WATER DUE TO		
4.1.17 9610	.14	Stabilise or raise of the groundwater table		
4.1.18 9620	.15	Removal of surface water *(e.g. flood control,...)*		
		RAISING UP THE SURFACE WATER TABLE		
4.1.19 9710	.16	Damming/ managing of rivers, lakes, estuaries		
		INCREASE OF THE INFILTRATION RATE		
4.1.20 9810		Changes in land use		
4.1.21 9820		Irrigation		

Description - Extent:

PART 10	REQUIRED MAPS

SCALE: Preferred size of the maps is A3

LEGEND: The legends should correspond to the listed points of map 1- map 10

MAP 1 - GENERAL INFORMATION (see Part 1)

Please mark:

- At least the three most important groundwater areas as well as karst areas, attach hydrogeological map if available;
- Areas with no groundwater;
- Areas with no information about groundwater occurrence

MAP 2 - NITRATE (see Part 2)

Please mark:

- Important groundwater areas investigated on nitrate. Label them with serial numbers referring to the form of Part 2.
- Problem areas with 2 zones. Proposed criteria for problem areas:
  - Zone 1: ≥25% of the sampling sites within a region/area, where the annual mean value exceeds 25 mg/l but is ≤ 50 mg/l
  - Zone 2: ≥25% of the sampling sites within a region/area, where the annual mean value exceeds 50 mg/l

MAP 3 - PESTICIDES (see Part 3)

Please mark:

- Important groundwater areas investigated on pesticides. Label them with serial numbers referring to the form of Part 3.
- Problem areas. Proposed criteria for problem areas:
  ≥25% of the sampling sites within a region/area, where the annual mean value exceeds 0.1 µg/l for the most detected (important) substances.

MAP 4 - CHLORIDE (see Part 2)

Please mark:

- Important groundwater areas investigated on chloride. Label them with serial numbers referring to the form of Part 2.
- Problem areas. Proposed criteria for problem areas:
  ≥25% of the sampling sites within a region/area where the annual mean value exceeds 250 mg/l.

MAP 5 - PH-VALUE (see Part 2)

Please mark:

- Important groundwater areas investigated on pH-value. Label them with serial numbers referring to the form of Part 2.
- Problem areas with 2 zones. Proposed criteria for problem areas:
  - Zone 1: ≥25% of the sampling sites within a region/area where the annual mean value falls below pH 5.5.
  - Zone 2: ≥25% of the sampling sites within a region/area where the annual mean value exceeds pH 8.5.

MAP 6 - ELECTRICAL CONDUCTIVITY (see Part 2)

Please mark:

- **Important groundwater areas investigated on electrical conductivity. Label them with serial numbers referring to the form of Part 2.**
- **Problem areas.** Proposed criteria for problem areas:
  ≥25% of the sampling sites within a region/area where the annual mean value exceeds 2000 µS/cm.

Continuing PART 10 - REQUIRED MAPS

MAP 7 - ALKALINITY (see Part 2)

Please mark:

- **Important groundwater areas investigated on alkalinity. Label them with serial numbers referring to the form of Part 2.**
- **Problem areas.** Proposed criteria for problem areas:
  ≥25% of the sampling sites within a region/area where the annual mean value is below 1 mval/l.

MAP 8 - GROUNDWATER OVER-EXPLOITATION (see Part 6)

Please mark:

- **Areas with groundwater over-exploitation. Label them with serial numbers referring to the form of Part 6.**

  Criteria for *over-exploitation*: groundwater abstraction exceeds the recharge and leads to lowering of the groundwater table.

MAP 9 - WETLANDS (see Part 7)

Please mark:

- **Endangered wetlands due to groundwater over-exploitation.**
- **Wetlands not endangered.**
- **Label them with serial numbers referring to the form of part 7.**

MAP 10 - SALTWATER INTRUSION

Please mark:

- **Locations (points or coast lines/areas) with saltwater intrusion.**

  ***Saltwater intrusion*: The flow of saltwater into the aquifer due to groundwater over-exploitation**

PART 11 NATIONAL STRATEGIES TO IMPROVE GROUNDWATER

QUALITY: 9900

Please give a brief description on political strategies and instruments in order to ensure groundwater quality (concerning sustainable groundwater protection, conservation, remediation of groundwater, development of new sources etc.) that have already been realised or will be realised within the next five years.

QUANTITY: 9950

Please give a brief description on political strategies and instruments for integrated and sustainable planning and management ensuring quantitative maintenance of groundwater resources that have already been realised or will be realised within the next five years.