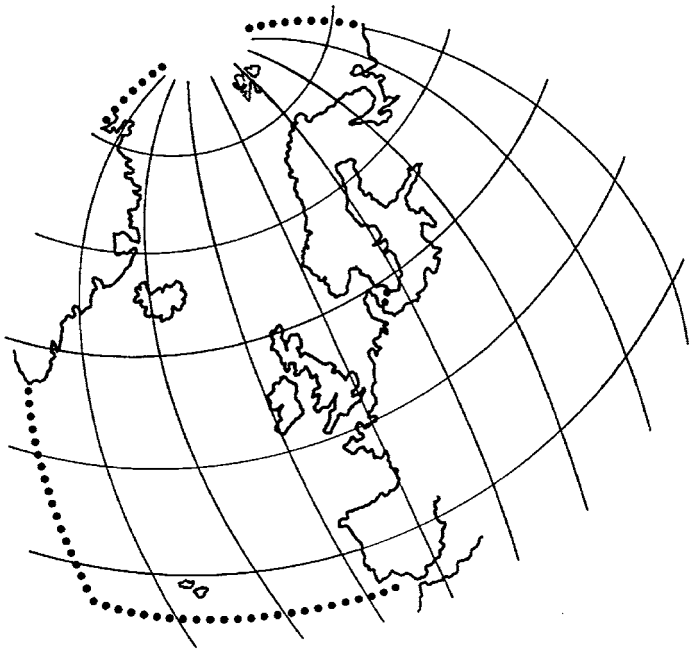
Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) in 1999



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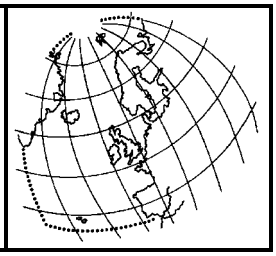

Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) in 1999

This full data report complements the report containing the overview of the results of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID) in 1999.

Previous data reports include the results of the Comprehensive Study in each of the years 1990 to 1998. A RID Summary Report 1990 – 1995 was published at the end of 1998, and a set of summary tables updated until 1998 is also available. An assessment of the 1990 to 1998 RID data can be found in Annex 5 to the INPUT 2001 Summary Record (INPUT 01/18/1) which is available from the OSPAR website.

Introduction

Background

At its Tenth Meeting (Lisbon, 1988) the Paris Commission[1] (PARCOM) adopted the Principles of the Comprehensive Study on Riverine Inputs (PARCOM 10/10/1, § 4.25 (e)). Such a comprehensive study was conducted for the first time in 1990 with the objective of assessing, as accurately as possible, all river borne and direct inputs of selected pollutants to the maritime area of the Paris Convention. Contracting Parties to the Paris Convention should aim to monitor, on a regular basis, 90 % of the inputs of each selected pollutant and are requested to report the relevant data annually (by 30 September) and provide, for a selection of their main rivers, information on the annual mean/median concentration of selected pollutant. The results of such input studies are to be reviewed periodically with the objective of determining temporal and long-term trends of contaminant concentrations and inputs as a basis for trend assessment. A review of the RID Principles will be conducted in parallel with the further ongoing revision of the Joint Assessment and Monitoring Programme (JAMP).

Substances

Contracting Parties agreed to monitor the following parameters on a mandatory basis:

- mercury (Hg)
- cadmium (Cd)
- copper (Cu)
- zinc (Zn)
- lead (Pb)
- γ-HCH (lindane)
- ammonia expressed as N
- nitrates expressed as N
- orthophosphates expressed as P
- total N
- total P
- suspended particulate matter (SPM)
- salinity (in saline waters)

The following parameters were recommended to be monitored on a voluntary basis:

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1 The Convention for the Protection of the Marine Environment of the North East Atlantic, 1992 (OSPAR Convention) entered into force on 25 March 1998. This Convention replaces the Oslo and Paris Conventions as between the Contracting Parties. Agreements continue to be applicable to the extent that they are compatible with, or not explicitly terminated by, the Convention or by the OSPAR Commission.

- PCBs (the following congeners: IUPAC Nos 28, 52, 101, 118, 153, 138, 180)
- hydrocarbons (strongly recommended)
- other stable organohalogen compounds (in order to find out which organohalogen compounds should be included in future input studies).

In March 1996, the Environmental Assessment and Monitoring Committee (ASMO 1996) revised the RID Principles, including the list of determinands, as follows:

"The following determinands are to be monitored on a mandatory basis:

- Total Mercury (Hg)
- Total Cadmium (Cd)
- Total Copper (Cu)
- Total Zinc (Zn)
- Total Lead (Pb)
- Gamma-HCH (lindane)
- Ammonia expressed as N
- Nitrates expressed as N
- Orthophosphates expressed as P
- Total N
- Total P
- Suspended particulate matter (SPM)
- Salinity (in saline waters)

2.2 The following determinands are recommended for monitoring on a voluntary basis:

a. Hydrocarbons, in particular PAHs[2] and mineral oil[3] (strongly recommended);

b. PCBs (the following congeners: IUPAC Nos 28, 52, 101, 118, 153, 138, 180);

c. Other hazardous substances (particularly organohalogen compounds - in order to determine which organohalogen compounds should be included in future input studies)[4]."

Reports on the substances that are explicitly mentioned in the revised RID Principles will be incorporated into future data reports as and when they become available.

1999 Report on input data

For the 1999 study, data sets on riverine inputs and direct discharges were provided by Germany, the Netherlands, Norway, Portugal, Sweden, Spain and the United Kingdom of Great Britain and Northern Ireland (UK). Only riverine inputs were reported by Belgium[5], Denmark (nutrients only) and Ireland[6]. France and Iceland[7] did not provide input data for 1999.

The geographical coverage for 1999 was similar to the coverage in previous years, with similar gaps. The part of the maritime area best covered remains the OSPAR Region II, the Greater North Sea, and especially the main body of the North Sea, although even here gaps exist.

The reporting of mandatory and voluntary determinands (cf. Table 1b) in 1999 was similar to 1998. Not all Contracting Parties reported data for all mandatory parameters. All reporting Contracting Parties provided data on inputs of heavy metals with the exception of Denmark (no metal data for 1999) and Spain (mainly riverine inputs). There are a number of gaps as regards the reporting of data for inputs of γ-HCH and PCBs (Denmark Ireland and Sweden for all inputs, Spain for most inputs, Norway for direct inputs) and suspended particulate matter (Denmark, Sweden for rivers). Some additional parameters, not summarised in the overview Tables 3 and 4, were reported by Norway (cf. Table 1b).

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2 These are as follows: phenanthrene, anthracene, fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*a*]pyrene, benzo[*ghi*]perylene, indeno[*1,2,3-cd*]pyrene.

3 Provided that a suitable method is available.

4 INPUT November 1995 agreed not to advocate routine monitoring of riverine inputs of pesticides Convention wide but to address specific requests from SIME or DIFF on a case by case basis.

5 Previously existing direct discharges no longer exist.

6 1990 data for direct inputs are included, since the basis for the calculation remains unchanged.

7 Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculation of riverine inputs.

Information on characteristics of the catchment areas of the rivers is included in Appendix 1.

Presentation of the 1999 data

Table 1a gives an overview of the information provided by Contracting Parties for 1999 and shows how the information was categorised:

- Direct inputs:
  - Sewage effluents
  - Industrial effluents
- Coastal areas: Data reported under "coastal areas" include discharges and run-off from coastal areas between rivers and also polder effluents. Depending on their nature, discharges from "coastal areas" are either counted under direct discharges or under riverine inputs.
- Riverine inputs:
  - Main rivers
  - Tributary rivers

Table 1b gives an overview of the determinands reported by Contracting Parties and shows where there are gaps in the reporting of mandatory determinands. Table 1b also indicates the precision of the estimate where the relevant information was provided by Contracting Parties. The last column of Table 1b informs on any additional determinands reported.

The data from Contracting Parties have in many cases[8] been rounded to one significant number for data reported less than the unit in which they appear and to two significant numbers for data reported greater than one unit; the following examples illustrate this rounding convention:

Amount reported by Contracting Party	Figure reported in the tables
0,0011	0,001
0,011	0,01
0,11	0,1
1,11	1,1
11,1	11
111 and above	not rounded

[8] Secretariat note: Not all Contracting Parties wished to have their data rounded in accordance with this procedure.

Due to this procedure, there are sometimes slight differences between the calculated totals given in this report and those calculated by Contracting Parties.

Overviews of the input information by country and sea area are given in **Tables 2 to 4 a and b**. Table 2 gives an overview of direct inputs to OSPAR Convention Waters in 1998 and summarises the information which is set out in detail in Tables 5 on a country by country basis. Table 3 gives an overview of riverine inputs to OSPAR Convention waters in 1999 and summarises the information which is set out in detail in Tables 6 on a country by country basis. Table 4a summarises the information contained in Tables 2 and 3 and gives overall figures on inputs from land-based sources. Table 4b contains the same information as Table 4a but lists inputs by sea area. Please note that, due to major gaps in the reporting, no totals for the Convention area are given in Tables 2 to 4 a and b.

Annexes (country by country)

Where submitted by the Contracting Party concerned, additional relevant information, *inter alia*, on the data originators, the methods and calculation procedures used, and on discharge areas or catchment areas is given in a separate report at the beginning of the annex.

Tables 5 give the detailed data for direct inputs (direct discharges) country by country, broken down, where applicable, in sewage effluents (Table 5a) and industrial effluents (Table 5b). A summary table for the total direct discharges is given as Table 5c.

Tables 6 give the detailed data for riverine inputs country by country, broken down, where applicable, in main rivers (Table 6a) and tributary rivers (Table 6b). A summary Table 6c is given for the total riverine inputs.

Tables 7 give statistical data of the measured concentrations in rivers, as reported by Contracting Parties.

Tables 8 give information concerning the analytical detection limits of determinands.

Tables 9 give, for those Contracting Parties reporting data in the format compatible with the new RID database at the OSPAR Secretariat (RIDAB), catchment-dependent information which, for the other Contracting Parties, is included in tables (5 and) 6.

“Extra” data on other voluntary determinands, usually added at the end of the relevant annex in the data report, have not been submitted for 1998.

List of the overview tables

List of the Annexes by Contracting Party

Table 1a. Information Received on Inputs to the Maritime Area of the OSPAR Convention in 1999

Country	Direct Discharges			Riverine Inputs	
	Sewage Effluents	Industrial Effluents	Coastal Areas (2)	Main Rivers	Tributary Rivers (1)
Belgium	NA	NA	(3)	+	+
Denmark					
- Kattegat	NI	NI	NI	+	NI
- Skagerrak	NI	NI	NI	+	NI
- North Sea	NI	NI	NI	+	NI
France					
- North Sea	NI	NI	NI	NI	NI
- Channel	NI	NI	NI	NI	NI
- Atlantic	NI	NI	NI	NI	NI
Germany	+	+	(4)	+	+
Iceland	No 1999 input data available (5)				
Ireland					
- Irish Sea	+ (7)	+ (7)	NI	+	+
- Celtic Sea	+ (7)	+ (7)	NI	+	+
- Atlantic	+ (7)	+ (7)	NI	+	+
Netherlands	+	+	(3)	+	+
Norway					
- Skagerrak	+	+	+ (6)	+	+
- North Sea	+	+	+ (6)	+	+
- Norwegian Sea	+	+	+ (6)	+	+
- Barents Sea	+	+	+ (6)	+	+
Portugal	Limited 1999 input data available				
Spain	+	+	+	+	+
Sweden					
- Kattegat	+	+	(3)	+	+
- Skagerrak	+	+	(3)	+	+
United Kingdom					
- East Coast	+	+	NI	+	NI
- Channel	+	+	NI	+	NI
- Celtic Sea	+	+	NI	+	NI
- Irish Sea	+	+	NI	+	NI
- Atlantic	+	+	NI	+	NI

+ = Information available

NI = No information

NA = Not applicable

(1) Tributary Rive - any tributary river flowing into (the estuary of) a main river, downstream from the sampling point;
- any minor river which was not deemed to be a main river.

(2) Coastal areas: - 'downstream areas' of main and tributary rivers and rivers not monitored;
- areas discharging to the maritime area which, however, are located outside the catchment area of a river.

(3) Included in data on riverine inputs ("tributary rivers")

(4) Included in data on direct inputs

(5) Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculations of riverine inputs

(6) cf. category "run-off" (i.e. estimated values for diffuse contributions) in Table 6b. for Norway

(7) same 1990 data as in previous data reports.

Table 1b. Determinands Reported by Contracting Parties in 1999

Country	Determinands													
	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1) (voluntary)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM (2)	Others
Belgium														
- direct inputs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
- riverine inputs	R (4)	R (4)	R (3)	R (3)	R (3)	R (3)	R (4)	R (3)	R (3)	R (3)	R (3)	R (3)	R (3)	
Denmark														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	NI	
France	no data submitted for 1999													
- direct inputs														
- riverine inputs														
Germany														
- direct inputs	R	R	R	R	R	R	R	+	+	+	+	+	+	
- riverine inputs*	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (4)	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- riverine inputs**	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (4)	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)(4)	
*) Elbe **) Other main rivers														
Iceland	No 1999 input data available (6)													
Ireland														
- direct inputs	+(9)	NI	+(9)	+(9)	+(9)	NI	NI	NI	NI	NI	NI	+(9)	+(9)	
- main riv. inputs	R (3)(4)	NI	+ (3)	R (3)(4)	+ (3)	NI	NI	R (3)(4)	+ (3)	+ (3)	NI	+ (3)	+ (3)	
- tributary rivers	R	NI	R	R	+	NI	NI	+	+	+	NI	+	+	
Netherlands														
- direct inputs	+	+	+	+	+	NI	NI	NI	+	NI	+	+	+	
- main riv. inputs	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- tributary rivers	+	+	+	+	+	+	+	+	+	+	+	+	+	
Norway														
- direct inputs	+	+	+	+	+	NI	NI	NI	NI	NI	+	+	NI	Cr, Ni
- main riv. inputs	+ (3)(4)	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)(4)	NI	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)(4)	As, Cr, Ni, TOC
- tributary rivers	R	R	+	+	+	+	R	+(5)	+ (5)	+ (5)	+ (5)	+ (5)	+ (5)	As, Cr, Ni, TOC
Portugal														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- main riv. Inputs (7)	+	+	+	+	+	NI	NI	+	+	+	+	+	+	
- tributary rivers	+	+	+	+	+	NI	NI	+	+	+	+	+	+	
Spain														
- direct inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	+	
- riverine inputs	+ (3)(4)	R(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	R(4)	R(4)	R(3)(4)	R(3)	+ (3)(4)	R(3)	R(3)	R(3)	
Sweden														
- sewage effluents	+	+	+	+	+	NI	NI	+	+	+	+	+	NI	
- industrial effluents	+	+	+	+	+	NI	NI	NI	NI	NI	+	+	NI	
- main riv. inputs	+	+	+	+	+	NI	NI	NI	NI	NI	+	+	NI	
United Kingdom														
- direct inputs	R	R	R	R	R	R	R	R	R	R	R	R(8)	R	
- riverine inputs	R	R	R	R	R	R	R	R	R	R	R	R(8)	R	

+ : Data provided

R: Estimate given as a range

NI: No information

NA: Not applicable; riverine inputs > 90% total inputs

DL: Detection limit

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

(3) 70 % of measurements above detection limit

(4) Less than 70 % of measurements above detection limit

(5) Includes 'run-off', i.e. estimated values for diffuse contributions.

(6) Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculations of riverine inputs

(7) River Tejo only

(8) In England and Wales Total-P was not measured. To avoid anomalies, a value equal to the orthophosphate-P has been used.

(9) 1990 data since basis for calculation remained unchanged.

Table 2^. Direct Discharges to the Maritime Area of the OSPAR Convention in 1999 by Country

Country	Region		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(upper estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		(upper estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denmark	North Sea		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
France	Channel/North Sea		no data submitted for 1999												
	Atlantic		no data submitted for 1999												
Germany	North Sea		0.01	0.01	2.1	1.1	11	0.02	0.05	3.3	2.0	0.1	4.3	2.0	2.0
			0.06	0.06	2.9	1.7	16	0.3	2.9	3.3	2.0	0.1	4.3	2.0	2.0
Iceland	Atlantic		no data submitted for 1999												
Ireland	Irish Sea		0.06	NI	7.5	3.3	63	NI	NI	NI	NI	NI	6.8	1.6	38
	Celtic Sea		0.02	NI	3.2	4.4	22	NI	NI	NI	NI	NI	2.7	0.7	19
	Atlantic		0.01	NI	0.8	0.4	7.7	NI	NI	NI	NI	NI	0.7	0.2	4.3
Netherlands	North Sea		0.1	0.07	3.3	1.5	29	NI	NI	NI	1.8	NI	6.5	0.5	12
Norway	Skagerrak		0.07	0.02	14	0.8	16	NI	NI	NI	NI	NI	5.9	0.2	2.9
	North Sea		1.0	0.04	6.9	7.6	56	NI	NI	NI	NI	NI	4.6	0.4	1504
	Norwegian Sea		0.4	0.01	11.5	1.3	15	NI	NI	NI	NI	NI	4.6	0.6	1388
	Barents Sea		0.002	0.001	0.5	0.03	0.8	NI	NI	NI	NI	NI	0.4	0.04	198
Portugal	Atlantic		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Spain	Atlantic		9.5	0.1	25	24	57	NI	NI	9.6	0.2	0.3	18	2.9	88
Sweden	Kattegat		0.05	0.02	2.4	0.4	5.9	NI	NI	1.2	0.6	0.02	2.1	0.1	NI
	Skagerrak		0.0008	0.0006	0.01	0.002	0.04	NI	NI	NI	NI	NI	0.4	0.01	NI
United Kingdo	N Sea (East Coas	(lower estimate)	0.3	0.2	87	32	306	43	72	23	11	7.6	39	8.6	514
		(upper estimate)	0.6	0.3	87	33	306	53	138	23	11	7.7	40	8.6	514
	N Sea (Channel)	(lower estimate)	0.3	0.00	28	5.8	35	4.5	0.15	6.9	1.6	1.7	8.6	1.7	6.7
		(upper estimate)	0.3	0.00	28	5.9	36	4.7	2.5	6.9	1.7	1.7	8.6	1.7	6.7
	Total North Sea	*(lower estimate)*	*0.6*	*0.2*	*115*	*38*	*341*	*47*	*73*	*30*	*12*	*9.4*	*48*	*10*	*520*
		(upper estimate)	*0.9*	*0.3*	*115*	*39*	*341*	*58*	*141*	*30*	*12*	*9.4*	*48*	*10*	*521*
	Celtic Sea	(lower estimate)	3.1	0.01	8.2	15	164	2.1	5.0	8.0	1.4	1.4	9.6	1.4	37
		(upper estimate)	3.1	0.01	8.2	15	164	4.8	10.6	8.0	1.4	1.4	9.7	1.4	37
	Irish Sea	(lower estimate)	0.6	0.4	12	28	51	0.1	0.000	8.4	2.3	2.9	11	3.1	20
		(upper estimate)	0.8	0.4	13	30	51	5.0	0.5	8.4	2.4	2.9	11	3.1	20
	Atlantic	(lower estimate)	0.07	0.03	18	5.4	27	1.3	0	4.0	2.2	0.8	6.8	1.2	41
		(upper estimate)	0.5	0.05	19	6.8	28	12	10	4.1	2.2	0.8	6.8	1.2	41
	Total Non-North	*(lower estimate)*	*3.7*	*0.4*	*38*	*48*	*243*	*3.5*	*5.0*	*20*	*6.0*	*5.1*	*27*	*5.6*	*97*
		(upper estimate)	*4.4*	*0.5*	*40*	*52*	*244*	*22*	*21*	*20*	*6.1*	*5.1*	*28*	*5.7*	*97*

^ For explanation of data and reasons for lack of information, see Tables 1a and 1b

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

Table 3^. Riverine Inputs to the Maritime Area of the OSPAR Convention in 1999 by Country

Country	Sea area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	1.8	0.03	52	52	368	73	0.0	7.8	34	1.5	50	2.9	297
		(upper estimate)	2.8	1.4	59	61	409	81	328	9.8	38	1.8	57	5.2	339
Denmark	North Sea		NI	NI	NI	NI	NI	NI	NI	0.3	4.5	0.06	9.9	0.4	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	0.00	0.00	0.00	0.005	0.00	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	0.2	5.0	0.1	6.5	0.3	NI
France	Channel/North Sea		no data submitted for 1999												
	Atlantic		no data submitted for 1999												
Germany	North Sea	(lower estimate)	4.6	2.3	184	124	1072	25	5.0	8.0	171	2.0	237	9.0	1483
		(upper estimate)	5.3	2.4	184	124	1072	110	239	8.2	171	2.0	237	9.0	1571
Iceland	Atlantic		no data submitted for 1999												
Ireland	Irish Sea		0.7	NI	23	32	156	NI	NI	1.5	20	0.5	NI	0.8	133
			0.8	NI	23	32	156	NI	NI	1.5	20	0.5	NI	0.8	133
	Celtic Sea		0.5	NI	58	57	379	NI	NI	0.9	75	1.3	NI	1.9	184
			2.0	NI	58	59	379	NI	NI	1.0	75	1.3	NI	1.9	184
	Atlantic		0.2	NI	41	46	188	NI	NI	0.3	14	0.5	NI	0.9	147
			1.5	NI	41	48	188	NI	NI	0.4	14	0.5	NI	0.9	147
Netherlands	North Sea		11.6	2.2	405	324	1870	269	235	17	284	10.2	383	21	3088
			12.0	2.3	405	325	1974	288	236	17	284	10.2	384	21	3090
Norway	Skagerrak		1.3	0.4	87	22	312	8.6	NI	1.5	21	0.3	36	1.2	425
			1.7	0.6	87	22	312	8.6	NI	1.6	21	0.3	36	1.2	428
	North Sea		1.1	0.3	40	12	161	0.4	NI	1.1	14	0.2	22	0.7	100
			1.1	0.4	40	12	160	0.4	NI	1.1	14	0.2	22	0.7	106
	Norwegian Sea		0.4	0.2	92	9.0	133	0.3	NI	1.4	13	0.2	26	1.1	329
			0.5	0.4	92	9.0	136	0.3	NI	1.4	13	0.2	26	1.1	335
	Barents Sea		0.02	0.2	22	0.8	2.5	0.0	NI	0.6	1.4	0.1	5.6	0.3	27
			0.1	0.2	22	0.8	4.9	0.2	NI	0.6	1.5	0.1	5.6	0.3	30
Portugal	Atlantic		0.4	0.6	5.3	2.1	25	NI	NI	1.6	4.5	1.1	26	1.3	45
			0.4	0.6	5.3	2.1	25	NI	NI	1.6	4.5	1.1	26	1.3	45
Spain	Atlantic		0.9	0.0	20	4.7	181	46	157	11.4	45	1.4	26	2.0	345
			5.8	17	182	62	277	195	159	11.6	45	1.6	26	2.2	345
Sweden	Kattegat		0.7	0.1	28	13	226	NI	NI	1.9	32	0.3	53	1.0	NI
	Skagerrak		0.1	0.02	9.1	3.3	31	NI	NI	0.3	3.2	0.06	6.6	0.1	NI
United Kingdom	N Sea (East Coast)	(lower estimate)	5.4	1.1	250	291	908	56	0.1	5.7	149	13	165	13	1587
		(upper estimate)	10.3	1.3	251	296	918	141	557	5.7	149	13	165	13	1599
	N Sea (Channel)	(lower estimate)	0.6	0.02	77	18	169	10.6	0.0	0.6	24	1.1	25	1.1	161
		(upper estimate)	0.7	0.04	78	21	171	20	23.6	0.6	24	1.1	25	1.1	162
	Total North Sea	*(lower estimate)*	*6.0*	*1.1*	*327*	*309*	*1077*	*66*	*0.1*	*6.3*	*173*	*13.6*	*190*	*14.2*	*1747*
		(upper estimate)	*11.0*	*1.4*	*329*	*316*	*1089*	*161*	*580*	*6.3*	*173*	*13.7*	*190*	*14.2*	*1761*
	Celtic Sea	(lower estimate)	1.3	0.1	59	61	441	16	0.0	1.3	55	2.8	57	2.8	825
		(upper estimate)	2.2	0.2	61	68	441	78	162	1.3	55	2.8	57	2.8	826
	Irish Sea	(lower estimate)	0.9	0.3	63	64	387	4.5	4	4	42	3.4	49	3.6	570
		(upper estimate)	1.8	1.0	64	67	389	118	600	4	43	3.9	49	4.1	578
	Atlantic	(lower estimate)	0.6	0.2	54	13	94	15	0.1	2.5	14	1.4	19	2.3	125
		(upper estimate)	2.5	1.0	55	16	104	57	83	2.5	14	1.5	19	2.3	127
	Total non-North Sea	*(lower estimate)*	*2.8*	*0.6*	*176*	*138*	*922*	*36*	*4*	*7*	*111*	*7.6*	*125*	*8.7*	*1521*
		(upper estimate)	*6.5*	*2.2*	*180*	*151*	*935*	*254*	*846*	*8*	*112*	*8.2*	*126*	*9.2*	*1531*

^ For explanation of data and reasons for lack of information, see Tables 1a and 1b

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

Table 4a. Summary of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 1999 by Country

Country	Sea Area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	1.8	0.03	52	52	368	73	0.0	7.8	34	1.5	50	2.9	297
		(upper estimate)	2.8	1.4	59	61	409	81	328	9.8	38	1.8	57	5.2	339
Denmark	North Sea		NI	NI	NI	NI	NI	NI	NI	0.3	4.5	0.1	10	0.4	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	0.0	0.0	0.0	0.005	0.00	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	0.2	5	0.1	6	0.3	NI
France	Channel/North Sea		no data submitted for 1999												
	Atlantic		no data submitted for 1999												
Germany	North Sea	(lower estimate)	4.6	2.3	186	125	1083	25	5.1	11	173	2.1	241	11	1485
		(upper estimate)	5.4	2.5	187	126	1088	110	242	12	173	2.1	241	11	1573
Iceland	Atlantic		no data submitted for 1999												
Ireland (2)	Irish Sea	(lower estimate)	0.7	NI	31	36	219	NI	NI	1.5	20	0.5	6.8	2.4	171
		(upper estimate)	0.9	NI	31	36	219	NI	NI	1.5	20	0.5	6.8	2.4	171
	Celtic Sea	(lower estimate)	0.5	NI	61	61	400	NI	NI	0.9	75	1.3	2.7	2.6	203
		(upper estimate)	2.0	NI	61	63	400	NI	NI	1.0	75	1.3	2.7	2.6	203
	Atlantic	(lower estimate)	0.3	NI	41	47	196	NI	NI	0.3	14	0.5	0.7	1.1	151.2
		(upper estimate)	1.5	NI	41	48	196	NI	NI	0.4	14	0.5	0.7	1.1	151.2
Netherlands(3)	North Sea		11.7	2.3	408	325	1899	269	235	17	286	10.2	390	21	3100
			12.1	2.3	408	326	2003	288	236	17	286	10.2	391	21	3102
Norway	Skagerrak	(lower estimate)	1.4	0.4	101	23	328	8.6	NI	1.5	21	0.3	41	1.4	428
		(upper estimate)	1.8	0.6	101	23	328	8.6	NI	1.6	21	0.3	41	1.4	431
	North Sea	(lower estimate)	2.1	0.3	47	20	217	0.4	NI	1.1	14	0.2	27	1.1	1604
		(upper estimate)	2.1	0.5	47	20	216	0.4	NI	1.1	14	0.2	27	1.1	1610
	Norwegian Sea	(lower estimate)	0.8	0.2	103	10	148	0.3	NI	1.4	13	0.2	30	1.7	1717
		(upper estimate)	0.9	0.4	103	10	151	0.3	NI	1.4	13	0.2	30	1.7	1723
	Barents Sea	(lower estimate)	0.0	0.2	22	0.8	3.3	0.0	NI	0.6	1.4	0.1	6.0	0.4	225
		(upper estimate)	0.1	0.2	22	0.8	5.7	0.2	NI	0.6	1.5	0.1	6.0	0.4	229
Portugal	Atlantic		0.4	0.6	5.3	2.1	24.6	NI	NI	1.6	4.5	1.1	26	1.3	45
			0.4	0.6	5.3	2.1	25	NI	NI	1.6	4.5	1.1	26	1.3	45

Table 4a Continued

Country	Sea Area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Spain	Atlantic		10.4 15	0.1 17	45 208	29 87	238 334	46 195	157 159	21 21	45 45	1.7 1.9	43 43	4.9 5.1	434 434
Sweden	Kattegat Skagerrak		0.8 0.1	0.2 0.03	31 9.1	14 3.3	232 31	NI NI	NI NI	3.1 0.3	32 3.2	0.3 0.06	55 7.0	1.1 0.1	NI NI
United Kingdom	N Sea (East Coast)	(lower estimate)	5.7	1.3	337	323	1214	99	72	29	159	20	204	22	2101
		(upper estimate)	10.9	1.6	338	328	1224	194	695	29	160	20	205	22	2113
	N Sea (Channel)	(lower estimate)	0.9	0.02	105	24	205	15.2	0.1	7.5	26	2.8	34	2.8	167
		(upper estimate)	1.0	0.05	106	27	207	25	26	7.5	26	2.8	34	2.8	168
	North Sea	*(lower estimate)*	*6.6*	*1.3*	*441*	*347*	*1419*	*114*	*73*	*36*	*185*	*23*	*238*	*24*	*2268*
		(upper estimate)	*11.9*	*1.7*	*444*	*355*	*1431*	*219*	*721*	*36*	*186*	*23*	*239*	*25*	*2281*
	Celtic Sea	(lower estimate)	4.4	0.1	67	76	605	18	5.0	9.3	57	4.2	67	4.2	862
		(upper estimate)	5.3	0.2	69	83	605	83	173	9.3	57	4.2	67	4.2	862
	Irish Sea	(lower estimate)	1.5	0.6	75	92	438	5	4.3	12	44	6.3	60	6.6	590
		(upper estimate)	2.6	1.4	77	97	440	123	600	13	45	6.9	60	7.2	598
	Atlantic	(lower estimate)	0.7	0.2	72	19	122	17	0.1	6.4	16	2.2	26	3.5	166
		(upper estimate)	3.0	1.0	75	23	133	69	93	6.6	16	2.2	26	3.5	168
	non-North Sea	*(lower estimate)*	*6.6*	*1.0*	*214*	*187*	*1165*	*39*	*9*	*28*	*117*	*13*	*153*	*14*	*1618*
		(upper estimate)	*11*	*2.6*	*220*	*203*	*1178*	*275*	*866*	*28*	*118*	*13*	*153*	*15*	*1628*
Total reported:		(lower estimate)	**49**	**9.0**	**1799**	**1282**	**7970**	**575**	**479**	**133**	**1048**	**56**	**1333**	**93**	**13745**
		(upper estimate)	**69**	**30**	**1978**	**1377**	**8247**	**1179**	**2552**	**137**	**1054**	**57**	**1342**	**96**	**13920**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) NH4-N, NO3-N,PO4-P: riverine inputs only; Total N: direct discharge only

(3) Data provided comprise approx. 90% of the total pollution loads of the Netherlands into Convention Waters

Table 4b. Summary of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 1999 by Sea Area

Sea Area			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs(1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
North-East	***Arctic Ocean***		0.0	0.21	22	0.8	3	0.0	NI	0.6	1.4	0.1	6.0	0.4	225
Atlantic Ocean	Barents Sea		0.1	0.24	22	0.8	6	0.2	NI	0.6	1.5	0.1	6.0	0.4	229
	Atlantic Ocean		1.0	0.2	114	65	317	17	0.1	6.7	30	2.7	26	4.6	317
	(main body)		4.5	1.0	116	71	328	69	93	7.0	30	2.7	27	4.6	319
	Bay of Biscay and Iberian Coast		10.8	0.7	51	31	263	45.9	157.0	22.6	50	2.8	69	6.2	478
			15.7	17.7	213	89	358	195	158.8	22.8	50	3.0	69	6.4	478
North Sea															
	Kattegat	(lower estimate)	0.8	0.15	31	13.6	232	NI	NI	3.3	37	0.4	61	1.4	0.0
		(upper estimate)	0.8	0.15	31	13.6	232	NI	NI	3.3	37	0.4	61	1.4	0.0
	Skagerrak	(lower estimate)	1.5	0.4	110	26	359	9	0.0	1.8	24	0.4	48	1.6	428
		(upper estimate)	1.9	0.6	110	26	359	9	0	1.8	24	0.4	48	1.6	431
	North Sea	(lower estimate)	26	6.3	1030	846	4781	466	313	66	671	34	921	58	8586
	(main body)	(upper estimate)	33	8.3	1039	861	4941	674	1501	68	675	35	930	61	8737
	Channel	(lower estimate)	0.9	0.02	105	24	205	15	0.1	7.5	26	2.8	34	2.8	167
		(upper estimate)	1.0	0.05	106	27	207	25	26.1	7.5	26	2.8	34	2.8	168
Norwegian Sea		(lower estimate)	0.8	0.2	103	10	148	0	NI	1.4	13	0.2	30	1.7	1717
		(upper estimate)	0.9	0.4	103	10	151	0	NI	1.4	13	0.2	30	1.7	1723
Irish Sea		(lower estimate)	2.2	0.6	105	128	657	5	4	13	64	6.8	67	9	761
		(upper estimate)	3.5	1.4	107	133	659	123	600	14	65	7.3	67	10	769
Celtic Sea		(lower estimate)	4.9	0.1	129	137	1005	18	5.0	10	132	5.5	69	6.7	1065
		(upper estimate)	7.3	0.2	130	146	1005	83	173	10	132	5.5	69	6.7	1066

Note: Some Contracting Parties have not submitted information on direct inputs because under the current Principles of the Comprehensive Study, these inputs do not fall under the 90 % (of total inputs) monitoring requirement.

Appendix 1

Statistical information on river catchment areas

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
Statistical Information provided by Belgium:								
Coastal Area	**2675**				**~0.497**		**2385**	NI
Western	1689	*Belgium*	>1082	NI	>305	NI	708	
		France	NI	NI	NI	NI		
Middle	499	*Belgium*			0.014		501	
Eastern	487	*Belgium*			0.177		1175	
Scheldt basin								
Scheldt	**22004**				**~10**		**9245**	1949-'97
		Belgium (1)	13324	*61*	6.9			
		France	6680	*30*	~2,7			
		Netherlands (1)	2000	*9*	0.4			
		(1) Ghent-Terneuzen canal comprised						
Ghent-Terneuzen canal	**NI**						NI	
		Belgium	NI		NI			
		Netherlands	NI		NI			
Statistical Information provided by Denmark:								
Vid å	1336	*DK*	*1081*	*81*			1732.4	78-95
		GER	*255*	*19*				
Brøns å	94.1	*DK*	*94*	*100*		*100*	106.6	74-99
Ribe å	67.5	*DK*	*675*	*100*		*100*	743.1	33-99
Kongeaen	426.6	*DK*	*427*	*100*		*100*	612.3	90-99
Sneum å	223	*DK*	*223*	*100*		*100*	280.8	66-99
Varde å	815	*DK*	*815*	*100*		*100*	1042.7	69-99
Skjern å	1558.4	*DK*	*1558*	*100*		*100*	2079.7	74-99
Stor å	1096.7	*DK*	*1097*	*100*		*100*	1399.4	71-99
Hover å	95	*DK*	*95*	*100*		*100*	125.2	81-95
Flynder å	n.m.	*DK*	*n.m.*				n.m.	n.m.
Total	**5712.3**							
	10809	**=Total of Danish rivers discharging to the North Sea**					**13644**	**71-90**
Liver å	249.8	*DK*	*250*	*100*		*100*	223.3	95-99
Uggerby å	347.5	*DK*	*348*	*100*		*100*	316.6	89-99
	597.3							
	1098	**=Total of Danish rivers discharging to the Skagerrak**					**863**	**71-90**
Karup å	626.8	*DK*	*527*	*100*		*100*	621.4	86-99
Hvidbjerg å	324.7	*DK*	*325*	*100*		*100*	1045.5	83-95
Jordbro å	110.9	*DK*	*111*	*100*		*100*	111.8	80-99
Skals å	956.4	*DK*	*556*	*100*		*100*	380.2	73-99
Simmersted å	214.9	*DK*	*215*	*100*		*100*	199	92-99
Elling å	132.2	*DK*	*132*	*100*		*100*	110.9	89-99
Voer å	238.7	*DK*	*239*	*100*		*100*	224.3	89-99
Ger å	153.8	*DK*	*154*	*100*		*100*	143.1	85-99
Lindeborg å	317.8	*DK*	*318*	*100*		*100*	297.4	83-99
Haslevgard å	75	*DK*	*75*	*100*		*100*	57.5	89-99
Kastbjerg å	96.3	*DK*	*96*	*100*		*100*	67.8	76-99
Guden å	2602.9	*DK*	*2,603*	*100*		*100*	2820.1	78-99
	5850.4							
	15828	**=Total of Danish rivers discharging to the Kattegat**					**13480**	**71-90**
Statistical Information provided by France:								
Somme	6105	France	6105	100			3111	
Seine	73793	France	73793	100	14.9	100	41707	NI
Other rivers	36435	France	36435	100	4.1	100	17266	NI
Total Region I	116333		116333		20.0		62084	
Vilaine	10482	France	10482	100	0.8	100	6446	NI
Loire (entire bassin)	116490	France	116490	100	8.0	100	80216	NI
Charente	9491	France	11819	100	0.6	100	9283	NI
Gironde	80160	France	80160	100	0.9	100	78869	NI
Adour	15895	France	16966	100	0.9	100	15285	NI
Other rivers	25909	France	25208	# 100	1.9	#100	15128	NI
Total Region IV	258427		249384		16.67		205227	

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
Other rivers region II - Catchment areas : Côtiers picards (without the Somme), Côtiers haut-normands, Basse - Normandie, Cotentin, Bretagne Nord.								
Other rivers région IV - Catchments areas : Bretagne sud, Côtiers vendéens, Charente - Seurdre - île d'Oléron (without Charente), Côtiers aquitains, Adour-Nivelle-Bidassoa (without Adour)								
Population : from INSEE for each catchment area (RNDE)								
Statistical Information provided by Germany:								
Ems	15552						7540	1941-1997
		Germany	13152	85.00	3.75	85		
		Netherlands	2400	15.00	0.6	15		
Weser	46306	*Germany*	-	-	9.0	-	30900	1901-1994
Elbe	148268		148268	100	25.11	-	74700	1926-1991
		Germany	*96932*	*65.38*	*19.09*	*76.03*		
		Czech Republic	*50176*	*33.84*	*5.97*	*23.78*		
		Austria	*920*	*0.62*	*0.05*	*0.20*		
		Poland	*240*	*0.16*	*NI*	*NI*		
Eider	2065	*Germany*	-	-	0.159	-	2425	1974-1999
Statistical Information provided by Ireland:								
Boyne	2695	Ireland	-	-	NI	-	3555	1975-1997
Liffey	1256	Ireland	-	-	NI	-	1555	1950-1997
Avoca	652	Ireland	-	0	NI	-	1711	1967-1997
Slaney	1762	Ireland	-	-	NI	-	3297	1980-1997
	6365	**=Total of main Irish rivers discharging to the Irish Sea**						
Barrow*	3067	Ireland	-	-	NI	-	3235	1946-1969
*New gauge recently installed. LTA still based on the period of reliable record for the old gauge.								
Nore	2530	Ireland	-	-	NI	-	3742	1972-1997
Suir	3610	Ireland	-	-	NI	-	5855	1954-1997
Blackwater	3324	Ireland	-	-	NI	-	7302	1956-1997
Lee	1253	Ireland	-	-	NI	-	3405	1957-1997
Bandon	608	Ireland	-	-	NI	-	1808	1975-1997
Deel	486	Ireland	-	-	NI	-	622	1983-1997
Maigue	1052	Ireland	-	-	NI	-	1397	1977-1997
Shannon Old Chan	11700	Ireland	-	-	NI	-	4655	1932-1997
Shannon Tailrace		Ireland					13176	1932-1997
Fergus	1042	Ireland	-	-	NI	-	1657	1973-1997
	28672	**=Total of main Irish rivers discharging to the Celtic Sea**						
Corrib	3138	Ireland	-	-	NI	-	8447	1973-1997 (Excl. 86-90, 92-93)
Moy	2086	Ireland	-	-	NI	-	5054	1970-1997
Erne	4372	Ireland/UK	2572/1800	60/40	NI	-	8720	1951-1997
	9596	**=Total of main Irish rivers discharging to the Atlantic**						
Statistical Information provided by The Netherlands (with assistance from Germany and Belgium								
Rhine	156500						166700	1911-1995
		Switzerland	9500	6	3.0	6		
		France	22000	14	3.7	7		
		Luxembourg	2500	2	0.3	1		
		Germany	100000	64	32.5	65		
		Netherlands	22500	14	10.9	21		
Meuse	34900						67800	1911-1995
		France	10000	29				
		Luxembourg	100	1				
		Belgium	13000	37				
		Germany	4000	11				
		Netherlands	7800	22	3.6			
Scheldt	22004				~10		9331	1949-1995
		France	6680	30.00	~2.7	~27		
		Belgium	13324	61.00	6.9	69		
		Netherlands	2000	9.00	0.4	4		
Ems	15552						7630	1941-1995

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
		Germany	13152	85.00	3.75	85		
		Netherlands	2400	15.00	0.6	15		
Statistical Information provided by Norway:								
Glomma (1)	41918	Norway		100.00	0.62	100	60324	1961-1990
Drammenselva (2)	17034	Norway		100.00	0.2	100	26743	1961-1990
Numedalslågen (3)	5577	Norway		100.00	0.04	100	10082	1961-1990
Skienselva (4)	10772	Norway		100.00	0.11	100	22611	1961-1990
Otra (5)	3738	Norway		100.00	0.03	100	12841	1961-1990
	79039	**=Total of Norwegian rivers discharging to the Skagerrak**						
Orreelva (6)	105	Norway		100.00	0.01	100	333	1961-1990
Suldalslågen (7)	1457	Norway		100.00	0.003	100	7422	1961-1990
	1562	**=Total of Norwegian rivers discharging to the North Sea**						
Orkla (8)	3053	Norway		100.00	0.02	100	5374	1961-1990
Vefsna (9)	4122	Norway		100.00	0.01	100	15620	1961-1990
	7175	**=Total of Norwegian rivers discharging to the Norwegian Sea**						
Altaelva (10)	7373	Norway		100.00	0.005	100	7487	1961-1990
	7373	**=Total of Norwegian rivers discharging to the Barents Sea**						
Statistical Information provided by Portugal:								
Tejo	80629	Portugal	24860	30.8	2.89	32.0	15900	50
		Spain	55769	69.2	6.14	68.0	34800	50
Douro	97600	Portugal	18600	19.1	1.76	43.5	22500	50
		Spain	79000	80.9	2.28	56.5	40900	50
Miño/Minho	17000	Portugal	900	5.3	0.07	7.9	6000	15
		Spain	16100	94.7	0.86	92.1	29000	15
Statistical Information provided by Spain:								
Oyarzun	74	Spain	74	100				
Urumea	266	Spain	266	100				
Oria	860	Spain	860	100				
Urola	342	Spain	342	100				
Deva	531	Spain	531	100				
Nervión	1764	Spain	1764	100				
Saja	955	Spain	955	100				
Nalón	4866	Spain	4866	100				
Mero	345	Spain	345	100	0.042	100	572	1970-82
Tambre	1530	Spain	1530	100	0.059	100	3309	1943-82
Ulla	2803	Spain	2803	100	0.104	100	5573	
Umia	440	Spain	440	100	0.052	100	774	1970-82
Miño	17247	Spain	16347	94.8	0.88		18910	1975-95
		Portugal	900	5.2				
Duero	97670	Spain	78960	80.8	6.14			
		Portugal	18710	19.2				
Tajo	80190	Spain	55810	69.6	2.28			
		Portugal	24380	30.4				
Guadiana	67122	Spain	55597	82.8	1.67		4192	1975-94
		Portugal	11525	17.2				
Odiel	2417	Spain	2417	100				
Tinto	1727	Spain	1727	100				
Guadalquivir	63241	Spain	63241	100	4.70		19808	1942-88
Statistical Information provided by Sweden:						1995		
Vege å (95)	498	-	-	-	0.04300	100	NI	NI
Rönne å (96)	1890	-	-	-	0.08810	100	1814	1931-1960
Stensån (97)	284	-	-	-	0.00710	100	NI	NI
Lagan (98)	6444	-	-	-	0.11890	100	6134	1931-1960
Genevadsån (99)	225	-	-	-	0.00470	100	NI	NI
Fylleån (100)	359	-	-	-	0.00900	100	NI	NI
Nissan (101)	2682	-	-	-	0.08280	100	3640	1931-1960
Suseån (102)	441	-	-	-	0.00760	100	NI	NI
Ätrån (103)	3343	-	-	-	0.06560	100	4260	1931-1960
Himleån (104)	214	-	-	-	0.00820	100	NI	NI
Viskan (105)	2201	-	-	-	0.12120	100	2678	1931-1960

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
Rolfsån (106)	723	-	-	-	0.02710	100	NI	NI
Kungsbackaån (107)	310	-	-	-	0.03740	100	NI	NI
Göta älv (108)	50230	Norway	7450.00	14.80	0.82190	ni	2678	1931-1960
	69844	**=Total of Swedish rivers discharging to the Kattegat**						
Bäveån (109)	302	-	-	-	0.02130	100	289	1931-1960
Örekilsälven (110)	1327	-	-	-	0.01450	100	1620	1931-1960
Strömsån (111)	253	-	-	-	0.00490	100	NI	NI
Enningsdalsälven (112	704	-	-	-	0.00319	100	1210	1931-1960
	2586	**=Total of Swedish rivers discharging to the Skagerrak**						
Statistical Information provided by the United Kingdom:								
Dionard (SC2b)	NI	-	-	-	NI	-	NI	NI
Hope (SC2b)	NI	-	-	-	NI	-	NI	NI
Borgie (SC2b)	NI	-	-	-	NI	-	NI	NI
Naver (SC2b)	NI	-	-	-	NI	-	NI	NI
Strathy (SC2b)	NI	-	-	-	NI	-	NI	NI
Halladale (SC2b)	NI	-	-	-	NI	-	NI	NI
Thurso (SC2b)	NI	-	-	-	NI	-	NI	NI
Wick (SC2b)	NI	-	-	-	NI	-	NI	NI
Dunbeath (SC2b)	NI	-	-	-	NI	-	NI	NI
Berriedale (SC2b)	NI	-	-	-	NI	-	NI	NI
Langwell (SC2b)	NI	-	-	-	NI	-	NI	NI
Helmsdale (SC2b)	NI	-	-	-	NI	-	NI	NI
Brora (SC2b)	NI	-	-	-	NI	-	NI	NI
Oykle (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Cassley (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Shin (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Alness (SC2b)	NI	-	-	-	NI	-	NI	NI
Cannon (SC2b)	NI	-	-	-	NI	-	NI	NI
Beauly (SC2b)	NI	-	-	-	NI	-	NI	NI
Ness (SC2b)	NI	-	-	-	NI	-	7600	NI
Nairn (SC2b)	NI	-	-	-	NI	-	NI	NI
Findhorn (SC2b)	NI	-	-	-	NI	-	NI	NI
Spey (SC3)	NI	-	-	-	NI	-	5600	NI
Deveron (SC3)	NI	-	-	-	NI	-	NI	NI
Ugie (SC3)	NI	-	-	-	NI	-	NI	NI
Ythan (SC3)	NI	-	-	-	NI	-	NI	NI
Lossie (SC3)	NI	-	-	-	NI	-	NI	NI
Don (SC3)	NI	-	-	-	NI	-	NI	NI
Dee (SC3)	NI	-	-	-	NI	-	NI	NI
Bervie (SC3)	NI	-	-	-	NI	-	NI	NI
Dighty (SC4)	NI	-	-	-	NI	-	NI	NI
Earn (SC4)	NI	-	-	-	NI	-	NI	NI
Eden (SC4)	NI	-	-	-	NI	-	NI	NI
North Esk (SC4)	NI	-	-	-	NI	-	NI	NI
South Esk (SC4)	NI	-	-	-	NI	-	NI	NI
Lunan (SC4)	NI	-	-	-	NI	-	NI	NI
Tay (SC4)	NI	-	-	-	NI	-	14000	NI
Leven (SC5)	NI	-	-	-	NI	-	NI	NI
Black Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Allan (SC5)	NI	-	-	-	NI	-	NI	NI
Teith (SC5)	NI	-	-	-	NI	-	NI	NI
Forth (SC5)	NI	-	-	-	NI	-	4300	NI
Avon (SC5)	NI	-	-	-	NI	-	NI	NI
Carron (SC5)	NI	-	-	-	NI	-	NI	NI
Almond (SC5)	NI	-	-	-	NI	-	NI	NI
Leith (SC5)	NI	-	-	-	NI	-	NI	NI
Esk (SC5)	NI	-	-	-	NI	-	NI	NI
Tyne (SC5)	NI	-	-	-	NI	-	3900	NI
Whiteadder (SC5)	NI	-	-	-	NI	-	NI	NI
Eye (SC5)	NI	-	-	-	NI	-	NI	NI
Tweed (E1)	NI	-	-	-	NI	-	NI	NI
Coquet (E1)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Wansbeck (E1)	NI	-	-	-	NI	-	NI	NI
Blyth (E1)	NI	-	-	-	NI	-	NI	NI
Tyne (E2)	NI	-	-	-	NI	-	NI	NI
Derwent (E2)	NI	-	-	-	NI	-	NI	NI
Team (E2)	NI	-	-	-	NI	-	NI	NI
Wear (E3)	NI	-	-	-	NI	-	NI	NI
Skerne (E5)	NI	-	-	-	NI	-	NI	NI
Tees (E5)	NI	-	-	-	NI	-	NI	NI
Aire (E7A)	NI	-	-	-	NI	-	NI	NI
Derwent (E7A)	NI	-	-	-	NI	-	NI	NI
Don (E7A)	NI	-	-	-	NI	-	NI	NI
Ouse (E7A)	NI	-	-	-	NI	-	NI	NI
Wharfe (E7A)	NI	-	-	-	NI	-	NI	NI
Ancholme (E7A)	NI	-	-	-	NI	-	NI	NI
Trent (E7A)	NI	-	-	-	NI	-	7800	NI
Idle (E7A)	NI	-	-	-	NI	-	NI	NI
Welland (E9)	NI	-	-	-	NI	-	NI	NI
Nene (E9)	NI	-	-	-	NI	-	NI	NI
Ouse (E9)	NI	-	-	-	NI	-	NI	NI
Witham (E9)	NI	-	-	-	NI	-	NI	NI
Glan (E9)	NI	-	-	-	NI	-	NI	NI
Hundred Foot River (E9	NI	-	-	-	NI	-	NI	NI
Ten Mile River (E9)	NI	-	-	-	NI	-	NI	NI
Bure (E10)	NI	-	-	-	NI	-	NI	NI
Wensum (E10)	NI	-	-	-	NI	-	NI	NI
Stour (E10)	NI	-	-	-	NI	-	NI	NI
Gipping (E10)	NI	-	-	-	NI	-	NI	NI
Waveney (E10)	NI	-	-	-	NI	-	NI	NI
Yare (E10)	NI	-	-	-	NI	-	NI	NI
Colne (E11)	NI	-	-	-	NI	-	NI	NI
Chalmer (E11)	NI	-	-	-	NI	-	NI	NI
Blackwater (E11)	NI	-	-	-	NI	-	NI	NI
Thames (E12)	NI	-	-	-	NI	-	6700	NI
Beam (E12)	NI	-	-	-	NI	-	NI	NI
Beverley Brook (E12	NI	-	-	-	NI	-	NI	NI
Brent (E12)	NI	-	-	-	NI	-	NI	NI
Crane (E12)	NI	-	-	-	NI	-	NI	NI
Ingrebourne (E12)	NI	-	-	-	NI	-	NI	NI
Lee (E12)	NI	-	-	-	NI	-	NI	NI
Ravensbourne (E12	NI	-	-	-	NI	-	NI	NI
Roding (E12)	NI	-	-	-	NI	-	NI	NI
Wandle (E12)	NI	-	-	-	NI	-	NI	NI
Tot.N.Sea catchm.	112000				121300			
Medway (E13)	NI	-	-	-	NI	-	NI	NI
Stour (E13)	NI	-	-	-	NI	-	1130	NI
Rother (E13)	NI	-	-	-	NI	-	NI	NI
Adur (E14)	NI	-	-	-	NI	-	NI	NI
Ouse (E14)	NI	-	-	-	NI	-	NI	NI
Cuckmere (E14)	NI	-	-	-	NI	-	NI	NI
Arun (E14)	NI	-	-	-	NI	-	NI	NI
Itchen (E15)	NI	-	-	-	NI	-	NI	NI
Test (E15)	NI	-	-	-	NI	-	NI	NI
Blackwater (E15)	NI	-	-	-	NI	-	NI	NI
Frome (E16)	NI	-	-	-	NI	-	NI	NI
Stour (E16)	NI	-	-	-	NI	-	NI	NI
Avon (E16)	NI	-	-	-	NI	-	1330	NI
Axe (E17)	NI	-	-	-	NI	-	NI	NI
Dart (E17)	NI	-	-	-	NI	-	NI	NI
Exe (E17)	NI	-	-	-	NI	-	1360	NI
Gara (E17)	NI	-	-	-	NI	-	NI	NI
Otter (E17)	NI	-	-	-	NI	-	NI	NI
Teign (E17)	NI	-	-	-	NI	-	NI	NI
Cober (E18)	NI	-	-	-	NI	-	NI	NI
Erme (E18)	NI	-	-	-	NI	-	NI	NI
Fal (E18)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Fowey (E18)	NI	-	-	-	NI	-	NI	NI
Gara (E18)	NI	-	-	-	NI	-	NI	NI
Lynher (E18)	NI	-	-	-	NI	-	NI	NI
Par (E18)	NI	-	-	-	NI	-	NI	NI
Plym (E18)	NI	-	-	-	NI	-	NI	NI
Porthleven (E18)	NI	-	-	-	NI	-	NI	NI
St Austel (E18)	NI	-	-	-	NI	-	NI	NI
Tavy (E18)	NI	-	-	-	NI	-	NI	NI
Tamar (E18)	NI	-	-	-	NI	-	1940	NI
Tot.Channel catch.	22000						16500	
Camel (E19)	NI	-	-	-	NI	-	NI	NI
Hayle (E19)	NI	-	-	-	NI	-	NI	NI
Menalhyl (E19)	NI	-	-	-	NI	-	NI	NI
Red River (E19)	NI	-	-	-	NI	-	NI	NI
Taw (Yeo) (E19)	NI	-	-	-	NI	-	NI	NI
Taw (2) (E20)	NI	-	-	-	NI	-	NI	NI
Torridge (E20)	NI	-	-	-	NI	-	NI	NI
Parrett (E21)	NI	-	-	-	NI	-	NI	NI
Tone (E21)	NI	-	-	-	NI	-	NI	NI
Bristol Avon (E22)	NI	-	-	-	NI	-	NI	NI
Severn (2) (E22)	NI	-	-	-	NI	-	9100	NI
Wye (E23)	NI	-	-	-	NI	-	6200	NI
Usk (E23)	NI	-	-	-	NI	-	NI	NI
Rhymney (E23)	NI	-	-	-	NI	-	NI	NI
Ely (E23)	NI	-	-	-	NI	-	NI	NI
Afon Lwyd (E23)	NI	-	-	-	NI	-	NI	NI
Ebbw Fawr (E23)	NI	-	-	-	NI	-	NI	NI
Taff (E23)	NI	-	-	-	NI	-	NI	NI
Cadoxton (E24)	NI	-	-	-	NI	-	NI	NI
Neath (E24)	NI	-	-	-	NI	-	NI	NI
Ogmore (E24)	NI	-	-	-	NI	-	NI	NI
Thaw (E24)	NI	-	-	-	NI	-	NI	NI
Tawe (E24)	NI	-	-	-	NI	-	NI	NI
Ewenny (E24)	NI	-	-	-	NI	-	NI	NI
Nant Y Fendrod (E24)	NI	-	-	-	NI	-	NI	NI
Thaw Kenson (E24)	NI	-	-	-	NI	-	NI	NI
Dafen (E25)	NI	-	-	-	NI	-	NI	NI
W Cleddau (E25)	NI	-	-	-	NI	-	NI	NI
Tywi (E25)	NI	-	-	-	NI	-	3700	NI
Taf (E25)	NI	-	-	-	NI	-	NI	NI
Loughor (E25)	NI	-	-	-	NI	-	NI	NI
Tot.Celtic S. catch.	32000						36400	
Teifi (E26)	NI	-	-	-	NI	-	NI	NI
Ystwyth (E26)	NI	-	-	-	NI	-	NI	NI
Rheidol (E26)	NI	-	-	-	NI	-	NI	NI
Mawddach (E26)	NI	-	-	-	NI	-	NI	NI
Dyfi (E26)	NI	-	-	-	NI	-	NI	NI
Glaslyn (E26)	NI	-	-	-	NI	-	NI	NI
Afon Goch (2) (E27)	NI	-	-	-	NI	-	NI	NI
Clwyd (E27)	NI	-	-	-	NI	-	NI	NI
Cefni (E27)	NI	-	-	-	NI	-	NI	NI
Conwy (E27)	NI	-	-	-	NI	-	NI	NI
Dee (E27)	NI	-	-	-	NI	-	3020	NI
Nant Glywdyr (E27)	NI	-	-	-	NI	-	NI	NI
Alt (E28)	NI	-	-	-	NI	-	NI	NI
Mersey (E28)	NI	-	-	-	NI	-	3540	NI
Weaver (E28)	NI	-	-	-	NI	-	NI	NI
Darwen (E29)	NI	-	-	-	NI	-	NI	NI
Douglas (E29)	NI	-	-	-	NI	-	NI	NI
Ribble (E29)	NI	-	-	-	NI	-	NI	NI
Kent (E29)	NI	-	-	-	NI	-	NI	NI
Lune (E29)	NI	-	-	-	NI	-	3020	NI
Wyre (E29)	NI	-	-	-	NI	-	NI	NI
Leven (E29)	NI	-	-	-	NI	-	NI	NI
Derwent (E30)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Fowey (E18)	NI	-	-	-	NI	-	NI	NI
Gara (E18)	NI	-	-	-	NI	-	NI	NI
Lynher (E18)	NI	-	-	-	NI	-	NI	NI
Par (E18)	NI	-	-	-	NI	-	NI	NI
Plym (E18)	NI	-	-	-	NI	-	NI	NI
Porthleven (E18)	NI	-	-	-	NI	-	NI	NI
St Austel (E18)	NI	-	-	-	NI	-	NI	NI
Tavy (E18)	NI	-	-	-	NI	-	NI	NI
Tamar (E18)	NI	-	-	-	NI	-	1940	NI
Tot.Channel catch.	22000						16500	
Camel (E19)	NI	-	-	-	NI	-	NI	NI
Hayle (E19)	NI	-	-	-	NI	-	NI	NI
Menalhyl (E19)	NI	-	-	-	NI	-	NI	NI
Red River (E19)	NI	-	-	-	NI	-	NI	NI
Taw (Yeo) (E19)	NI	-	-	-	NI	-	NI	NI
Taw (2) (E20)	NI	-	-	-	NI	-	NI	NI
Torridge (E20)	NI	-	-	-	NI	-	NI	NI
Parrett (E21)	NI	-	-	-	NI	-	NI	NI
Tone (E21)	NI	-	-	-	NI	-	NI	NI
Bristol Avon (E22)	NI	-	-	-	NI	-	NI	NI
Severn (2) (E22)	NI	-	-	-	NI	-	9100	NI
Wye (E23)	NI	-	-	-	NI	-	6200	NI
Usk (E23)	NI	-	-	-	NI	-	NI	NI
Rhymney (E23)	NI	-	-	-	NI	-	NI	NI
Ely (E23)	NI	-	-	-	NI	-	NI	NI
Afon Lwyd (E23)	NI	-	-	-	NI	-	NI	NI
Ebbw Fawr (E23)	NI	-	-	-	NI	-	NI	NI
Taff (E23)	NI	-	-	-	NI	-	NI	NI
Cadoxton (E24)	NI	-	-	-	NI	-	NI	NI
Neath (E24)	NI	-	-	-	NI	-	NI	NI
Ogmore (E24)	NI	-	-	-	NI	-	NI	NI
Thaw (E24)	NI	-	-	-	NI	-	NI	NI
Tawe (E24)	NI	-	-	-	NI	-	NI	NI
Ewenny (E24)	NI	-	-	-	NI	-	NI	NI
Nant Y Fendrod (E24)	NI	-	-	-	NI	-	NI	NI
Thaw Kenson (E24)	NI	-	-	-	NI	-	NI	NI
Dafen (E25)	NI	-	-	-	NI	-	NI	NI
W Cleddau (E25)	NI	-	-	-	NI	-	NI	NI
Tywi (E25)	NI	-	-	-	NI	-	3700	NI
Taf (E25)	NI	-	-	-	NI	-	NI	NI
Loughor (E25)	NI	-	-	-	NI	-	NI	NI
Tot.Celtic S. catch.	32000						36400	
Teifi (E26)	NI	-	-	-	NI	-	NI	NI
Ystwyth (E26)	NI	-	-	-	NI	-	NI	NI
Rheidol (E26)	NI	-	-	-	NI	-	NI	NI
Mawddach (E26)	NI	-	-	-	NI	-	NI	NI
Dyfi (E26)	NI	-	-	-	NI	-	NI	NI
Glaslyn (E26)	NI	-	-	-	NI	-	NI	NI
Afon Goch (2) (E27)	NI	-	-	-	NI	-	NI	NI
Clwyd (E27)	NI	-	-	-	NI	-	NI	NI
Cefni (E27)	NI	-	-	-	NI	-	NI	NI
Conwy (E27)	NI	-	-	-	NI	-	NI	NI
Dee (E27)	NI	-	-	-	NI	-	3020	NI
Nant Glywdyr (E27)	NI	-	-	-	NI	-	NI	NI
Alt (E28)	NI	-	-	-	NI	-	NI	NI
Mersey (E28)	NI	-	-	-	NI	-	3540	NI
Weaver (E28)	NI	-	-	-	NI	-	NI	NI
Darwen (E29)	NI	-	-	-	NI	-	NI	NI
Douglas (E29)	NI	-	-	-	NI	-	NI	NI
Ribble (E29)	NI	-	-	-	NI	-	NI	NI
Kent (E29)	NI	-	-	-	NI	-	NI	NI
Lune (E29)	NI	-	-	-	NI	-	3020	NI
Wyre (E29)	NI	-	-	-	NI	-	NI	NI
Leven (E29)	NI	-	-	-	NI	-	NI	NI
Derwent (E30)	NI	-	-	-	NI	-	NI	NI