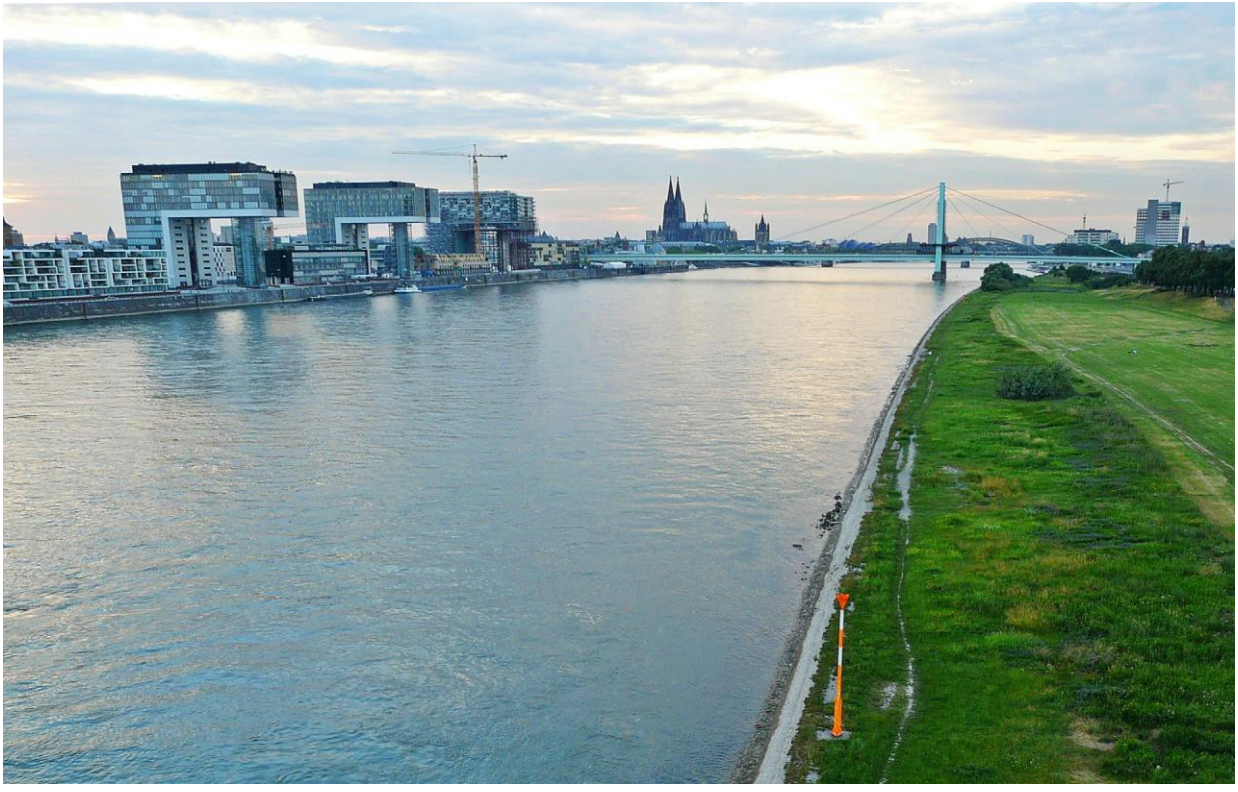
OSPAR COMMISSION

Riverine Inputs and Direct Discharges to Convention Waters

OSPAR Contracting Parties' RID 2017 Data Report



2019

Monitoring and Assessment Series

OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention") was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. It has been ratified by Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom and approved by the European Union and Spain.

Convention OSPAR

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. La Convention a été ratifiée par l'Allemagne, la Belgique, le Danemark, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède et la Suisse et approuvée par l'Union européenne et l'Espagne.

Acknowledgements

This report has been prepared by Csilla Farkas and Eva Skarbøvik of The Norwegian Institute for Bioeconomy Research.

NIBIO
NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

Contents

Contents **2**

Glossary **3**

Executive summary **5**

Récapitulatif **5**

Introduction **7**

Submission of RID data for 2017 ..... **9**

Status of historical data submission (1990-2016) **10**

Preliminary results for 2017 ..... **12**

Riverine loads 1990-2017 13

Direct discharges 1990-2017 21

Appendix I. Data corrections performed by the RID Data Centre in 2018 ..... **30**

Annex I Annual Overview Tables for the reporting year 2017 (AA Tables) **31**

AA Table 1a. 2017 32

AA Table 1b. 2017 33

AA Table 2. 2017 34

AA Table 3. 2017 35

AA Table 4a. 2017 36

AA Table 4b. 2017 37

Annex IV Statistical information on river catchment areas **38**

Addendum:

National 2017 RID data reports (excel and word files) are available in the RID Database in the OSPAR BASECAMP.

Glossary

Catchment area	The area of land delimited by watersheds draining into a body of water (river, basin, reservoir, sea).
Cd	Cadmium
Cu	Copper
Direct discharges	Point sources discharging directly to coastal or transitional waters.
Heavy metals	Five heavy metals are mandatory in the RID Programme: cadmium, copper, lead, mercury and zinc.
Hg	Mercury
LOD	Limit of Detection. The minimum concentration of a compound that can be detected.
LOQ	Limit of quantification. The minimum concentration of a compound that can be quantified confidently. LOQ is determined by assessing the variability (standard deviation) of replicate measurements of analytes at a concentration near the detection limit.
Main river	This term is on its way out of the RID Programme, as main and tributary rivers are now exchanged with the term “monitored rivers”. A main river was defined as a river that was monitored at least once a month (12 datasets) every year. Main rivers should be major load bearing rivers.
Monitored area	The catchment upstream of the RID river monitoring station.
Monitored river	All rivers that have RID water quality monitoring stations, irrespective of sampling frequency.
Monitoring station	The site at which water samples are collected for chemical analyses within the RID Programme.
Pb	Lead
Riverine inputs	A mass of a determinand carried to the maritime area by a watercourse (natural or man-made) per unit of time.
SPM	Suspended Particulate Matter
Total inputs	The sum of inputs as measured in the monitored rivers, and estimated from unmonitored areas and direct discharges.
Total-N	Total Nitrogen
Total-P	Total Phosphorus
Tributary river	This term is on its way out of the RID Programme, as main and tributary rivers are now being exchanged with the term “monitored rivers”. A tributary river would have a separate catchment from a main river and an outlet directly to

	the maritime area or to a main river downstream of a river monitoring point. A tributary river should be a minor load bearing river and can be sampled at a frequency determined by each Contracting Party.
Unmonitored area	Any land area not covered by a riverine monitoring station. This can include the part of the catchment located downstream of the riverine monitoring station and all unmonitored catchments. Unmonitored areas can have both diffuse and point sources of pollution. If point sources are discharging directly to coastal or transitional waters, they are named "direct discharges" and should be reported as such.
Zn	Zinc

Executive summary

This report presents the results of monitoring undertaken by OSPAR Contracting Parties for the Riverine Inputs and Direct Discharges Programme (RID) during 2017. The purpose of the RID Programme is to assess, as accurately as possible, all riverine inputs and direct discharges of selected pollutants to Convention waters on an annual basis, and to contribute to the implementation of the Joint Assessment and Monitoring Programme (JAMP). The OSPAR Convention area is divided into five main regions: the Arctic Waters, the Greater North Sea, the Celtic Seas, the Bay of Biscay, and the Wider Atlantic.

Determinands monitored on a mandatory basis include nutrients, heavy metals (mercury, cadmium, copper, zinc, and lead), suspended particulate matter, and salinity (in saline waters). Several more determinands can be monitored on a voluntary basis. Direct discharge sources can include sewage treatment plants, industry, and aquaculture; some Contracting Parties also report urban runoff. Not all Contracting Parties report their direct discharges.

Since the programme started in 1990, many Contracting Parties report reduced riverine loads of nutrients and metals, but there can be large variations from year to year, and there are some unexplained peaks. Direct discharges of nutrients and metals are also declining in many areas, with some exceptions.

The report also gives overviews of the efforts to improve the data quality of this programme. Despite these efforts, the long-term data series still have some gaps and inconsistencies, which is unfortunate for the quality of the RID trend assessments. Further efforts to improve the historical RID data series are therefore strongly recommended.

Récapitulatif

Le présent rapport comporte les résultats de la surveillance réalisée par les Parties contractantes OSPAR dans le cadre du Programme sur les apports fluviaux et les rejets directs (RID) en 2017. Le RID a pour but d'évaluer tous les ans, aussi précisément que possible, tous les apports fluviaux et les rejets directs de polluants sélectionnés dans les eaux de la Convention et de contribuer à la mise en œuvre du Programme conjoint d'évaluation et de surveillance (JAMP). La zone de la Convention OSPAR est sous divisées en cinq régions principales: les eaux arctiques, la mer du Nord au sens large, les mers celtes, le golfe de Gascogne et l'Atlantique au large.

Les déterminants surveillés à titre obligatoire sont notamment les nutriments, les métaux lourds (mercure, cadmium, cuivre, zinc et plomb), la matière particulaire en suspension et la salinité (des eaux salines). Plusieurs autres déterminants peuvent être surveillés à titre volontaire. Les sources de rejets directs peuvent inclure les installations de traitement des eaux usées, les installations industrielles et l'aquaculture; certaines Parties contractantes notifient également les eaux urbaines de ruissellement. Les Parties contractantes ne notifient pas toutes leurs rejets directs.

Depuis le début du programme, en 1990, nombre de Parties contractantes notifient des charges fluviales réduites de nutriments et de métaux mais celles-ci peuvent varier énormément d'une année

à l'autre et certains pics sont inexplicables. Les rejets directs de nutriments et de métaux ont diminué également dans de nombreuses zones, à quelques exceptions près.

Le présent rapport présente également un aperçu des efforts réalisés afin d'améliorer la qualité des données dans le cadre de ce programme. Mais en dépit de ces efforts les séries de données à long terme présentent encore des lacunes et incohérences, ce qui affecte malheureusement la qualité des évaluations des tendances RID. Il est donc fortement recommandé de s'efforcer d'améliorer les séries de données historiques RID.

Introduction

The Comprehensive Study on Riverine Inputs and Direct Discharges (RID; agreement 1998-5, update 2014-04)[1] is part of the wider Joint Assessment and Monitoring Programme of OSPAR. The purpose of the RID Study is to assess, as accurately as possible, all riverine inputs and direct discharges of selected pollutants to Convention waters on an annual basis. The OSPAR Convention area is divided into five main regions (Figure 1; Table 1).

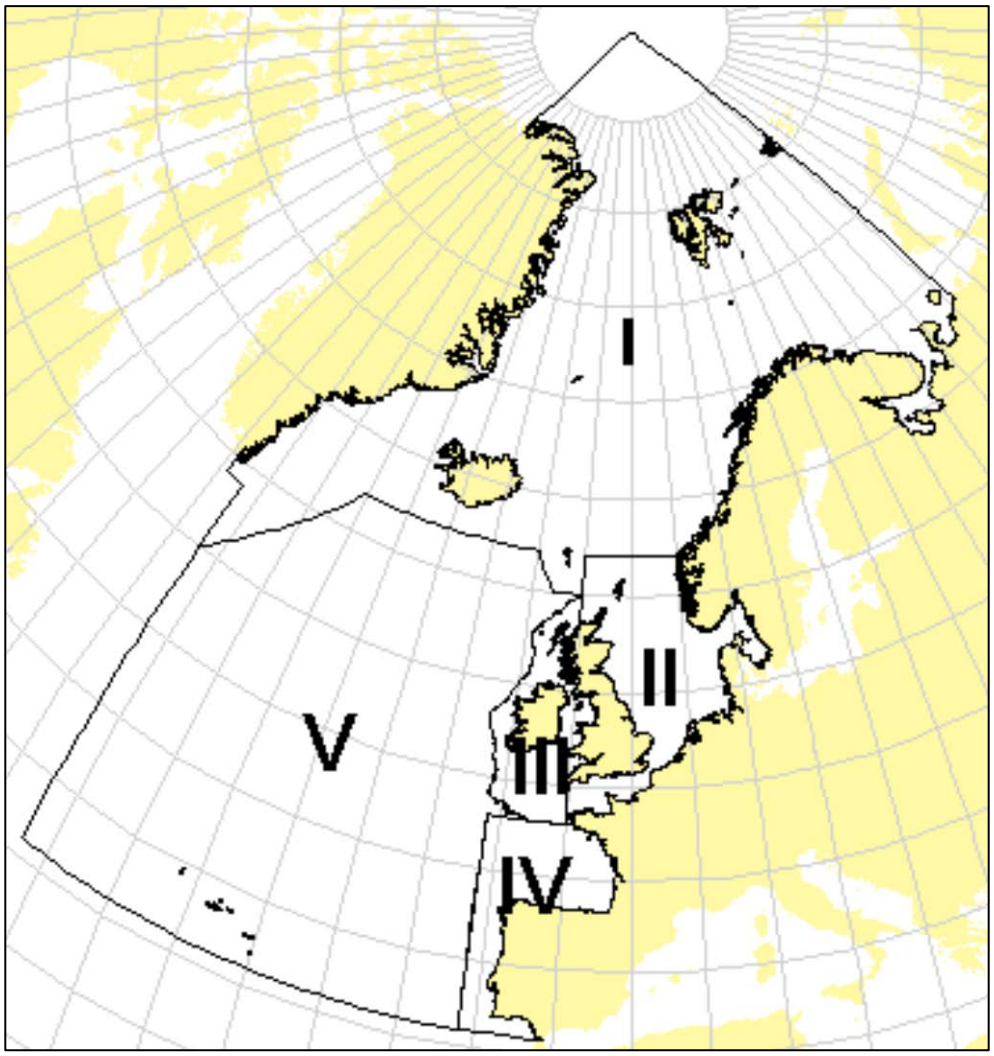


Figure 1. OSPAR Maritime Area and Regions. I: Arctic Waters, II: Greater North Sea, III: Celtic Seas, IV: Bay of Biscay and V: Wider Atlantic.

[1] 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)). The RID Principles were reviewed in 1998, 2005, and 2014 (agreement 2014-04).

Table 1. Assignment of countries and sea areas to OSPAR Regions

Country / Sea Area	OSPAR Region	Country / Sea Area	OSPAR Region
Belgium		Norway	
- North Sea (BE)	II	- Norwegian Sea (NO)	I
Denmark		- Barents Sea (NO)	I
- Skagerrak (DK)	II	- Skagerrak (NO)	II
- Kattegat (DK)	II	- North Sea (NO)	II
- North Sea (DK)	II	Portugal	
France		- Bay of Biscay and Iberian Coast (PO)	IV
- Channel	II	Spain	
- Atlantic	IV	- Atlantic (ESP)	IV
Germany		Sweden	
- North Sea (GER)	II	- Kattegat (SWE)	II
Iceland		- Skagerrak (SWE)	II
- Atlantic	I	UK	
Ireland		- North Sea (North)	II
- Irish Sea	III	- North Sea (South)	II
- Celtic Sea	III	- Channel	II
- Atlantic	III	- Irish Sea	III
Netherlands		- Celtic Sea	III
- North Sea (NL)	II	- Atlantic	III

Submission of RID data for 2017

Table 2 provides an overview of the status of 2017 RID data submitted by Contracting Parties by 22 February 2019. All Contracting Parties except Denmark had a deadline of 1 November 2017 for submitting data and text reports. Denmark had a deadline of 1 December 2017.

Table 2. Overview of submitted 2017 RID information by Contracting Parties (green colour: submitted)

Contracting Party	RID 2017 written report submitted	RID 2017 Data submitted	RID 2017 Data validated	Comments
Belgium				
Denmark				Some missing data and the word report will be delivered with a delay.
France				France is to re-validate their data for 2017.
Germany				
Iceland				
Ireland				
Netherlands				
Norway				
Portugal				
Spain				
Sweden				
UK				

Table 3. Overview of information for 2017 on inputs to the OSPAR Maritime Area reported by Contracting Parties (Green = data submitted; White = no data submitted; Grey = no data will be submitted by this Contracting Party from this source).

Contracting Party	Sewage effluents	Industrial effluents	Aquaculture discharges	Other direct discharges	Monitored rivers	Unmonitored rivers
Belgium						
Denmark						
France						
Germany						
Iceland						
Ireland						
Netherlands						
Norway						
Portugal						
Spain						
Sweden						
United Kingdom						

Overview tables 1-4 (AA-tables) for 2017 are given in Annex I.

Status of historical data submission (1990-2016)

In 2017, Contracting Parties were asked to submit excel files with graphs of each constituent from 1990-2016. A result of this exercise has been that several Contracting Parties have found missing or erroneous data in their historical databases, and many are now in the process of correcting these. An overview of the status of the database per 22 February 2019 is provided in Table 4.

Table 4. Overview of status of the historical data in the RID database (1990-2016). Changes in this table from last year's annual report are marked with light green

Contracting Party	Status for data 1990-2016	Validation pending (1990-2016)	Other remaining tasks
Belgium	All data up to and including 2016 validated and confirmed.		Belgium and the Netherlands are in discussions on how to deal with the transboundary Channel Gent-Terneuzen to Wester Scheldt.*
Denmark	Data 1990-2012 were re-submitted for runoff (Tables 9) in January 2018. Riverine loads were re-reported for years 1990 – 2015 in February 2019.	Table 9 (runoff) for 1990-2012 has not yet been validated	NIBIO is to import the corrected tables of riverine loads for 1990 – 2015 in the database.
France	All data up to and including 2016 validated and confirmed. There are re-reported tables in Basecamp for years 2010-2012 and Table 9 for all the years, but not summarised (5, 6) or old RID format (9).		France and NIBIO are to clarify data for 2010-2012. Borders for some OSPAR areas in France are to be changed. France and NIBIO to clarify if there will be a need for data re-reporting.
Germany	Tables 6c were re-reported for years 2001-2015.	Re-reported data are validated.	No more actions are needed.
Iceland	Data from 1990-2015 received, but not all of them in RID format. Table 9 for 2016 was re-reported. Riverine loads for 2008-2016 were re-reported in February 2019 but not in RID format.	Table 9 for 2016 is validated.	Historical data needs to be transferred to the correct format; NIBIO and Iceland are in contact.
Ireland	Tables 6a and 6c were resubmitted in December 2018 for 1990-2015 and imported in the database. Tables 6a and 6c were again resubmitted in February 2019 for years 1997-2001.	Tables 6a, 6c for 1990-2015 sent for validation.	Ireland will re-report historical runoff data? NIBIO is to import Tables 6a, 6c for 1997-2001 in the database.
Netherlands	All data up to and including 2016 are in the database, but with some errors.		Netherland will resubmit historical data. Belgium and the Netherlands are in discussions on how to deal with the transboundary Channel Gent-Terneuzen to Wester Scheldt.*
Norway	All data up to and including 2016 validated and confirmed.		No further action needed
Spain	All data up to and including 2016 are in the database, but not validated. Tables 5 and 6 and discharge data (Tables 9) are re-submitted for 2011-	Data validation pending for 1990-2010. Tables 5, 6 for 2011-2016 are validated. NIBIO is to send	

	2016.	Tables 9 for 2011-2016 for validation.	
Sweden	All data up to and including 2016 validated and confirmed.		Sweden will resubmit historical data.
UK	Data up to and including 2016 are in the database.	UK is to validate the 2008-2011 and the 2015 data.	

* Belgium has suggested a solution to this problem. The issue is that the Canal Ghent-Terneuzen is monitored and reported both by Belgium and the Netherlands; the latter at a station located downstream of the Belgian station. To avoid that the inputs are counted twice, Belgium now suggests to report the Belgian inputs only in Table 6a, and exclude them from Table 6c. That way, it will be possible to assess the contribution at the border between Belgium and the Netherlands, but the Belgian contribution will not be counted in the totals. The RID Data Center supports this solution, but it is assumed that former years must be re-reported in this manner.

Apart from the data gaps in Table 4, there are still several smaller or larger errors in the database; many of these have become more visible through the excel charts that the RID Data Centre distributed. In Table 5, the most common sources of data errors are given, with suggested solutions. As a general rule, re-reporting should be done by sending excel tables in the correct format, with the corrected data, to the RID Data Centre.

Table 5. Possible sources of data error in the RID database, with suggested solutions.

Problem	Possible reason	Suggested solution
Missing data in the database	Data do not exist (e.g., because of rota system of river monitoring, or direct discharges are not reported each year).	Contracting Party is asked to fill in the data gaps using interpolation or model estimation techniques. Unmonitored areas should at any rate be estimated.
	Data exist, but are not summed up in the summary tables of the database	Contracting Party is asked to re-report the relevant tables, including aggregated (summed-up) data.
Erroneous data in the database	The value of Zero (0) is put instead of missing data (NI)	Contracting Party is asked to contact NIBIO to discuss solutions.
	Unit error in some of the data	Contracting Party is asked to re-report the relevant table(s) with correct data.
Major changes in methods	Significant changes in measurement methods or detection limits give non-consecutive datasets.	Contracting Party should report such changes in the word reports. Contracting Party is asked to assess conversion methods to get consecutive time series; and re-report.

In Appendix I a list of other work with the RID Database during 2018 is given.

Preliminary results for 2017

Graphs for riverine loads and direct discharges (1990-2017) are given in Figures 2a-h and 3a-g, respectively. Based on the submitted written reports by the Contracting Parties, the following conclusions can be given:

Belgium reported the lowest water flow for the last 25 years, with subsequent low total nitrogen and total phosphorus loads.

France reported that they observed a decline in nitrates, N-total, PO4 and P-total flows between 2016 and 2017. This decline could probably be linked to a decrease in runoff.

Germany reported increases in nutrient loads in the Elbe basin compared to previous years, mainly due to an increase in runoff in 2017. On the other hand, the loads were lower in the Rivers Ems and Jade due to lower water discharges there. No significant changes were reported for other rivers or in the direct discharges.

Iceland noted that the concentrations of zinc in River Ölfusá were higher than in previous years, particularly in a sample from July 2017.

In **Ireland** the monitored flow in 2017 was 93 % of the long-term average flow. Overall loads have decreased statistically for the entire monitoring period, but reductions have been slowing down in recent years.

Netherlands noted a decreasing trend for Tot-N and Tot-P from 1990-2017. The trend is more pronounced for Tot-P than for Tot-N; and for Tot-N there is hardly any trend in the last decade.

In **Norway,** water discharge (1990-2017) has increased significantly in Rivers Glomma, Drammenselva, Skienselva and Orreelva. Most of these rivers also had increases in the loads of TOC (total organic carbon), tot-N and silicate. P loads have increased significantly in Rivers Drammenselva

and Numedalslågen. In River Vefsna in the north, the loads of N and P have decreased significantly. In many of the Skagerrak rivers the fraction of organic nitrogen is increasing. Metal loads and concentrations show mainly downward trends in all Norwegian rivers (1990-2017), but analyses of the short-term period (2004-2017) reveal statistically significant upward trends in zinc concentrations in River Glomma and nickel concentrations in River Altaelva.

Spain reports that data availability is not the same every year, and therefore results are not fully comparable between the years.

Sweden reported rather low annual water flows in 2017, although quite variable during the year, which have resulted in somewhat lower inputs of most reported variables than normal for both monitored and unmonitored areas. The clearly dominating point source in the Swedish OSPAR area is a sewage plant that serves a large area around Göteborg. Their variation in treatment results between years thus dominates the statistics for the whole area. Another big point source in the area is the pulp and paper industry, Södra Cell Värö. This industry has reported higher emissions of Zn, Cu and Cd.

UK reported a decrease in riverine flows compared to the previous year (2016), except in the Atlantic region. The water flow was in general lower than the long term average. Some areas had an extremely dry summer. This resulted in overall lower loads in 2017 than in 2016.

With the exception of Norway, there was no change in the methodology in any of the countries reporting until 21 January 2019. In Norway, there was a decrease in monitored rivers but an increase in monitoring frequency (with the exception of metals, where there has been a decrease from 12 to 4 times a year). The new programme includes monthly monitoring in 20 rivers (instead of 46) of which 11 are “main rivers” from the previous programme. The 20 rivers are monitored monthly (earlier 10-11 rivers were monitored monthly and 36 rivers monitored four times a year).

Riverine loads 1990-2017

Graphs for water discharges (1990-2017) are given in Figure 2a, and for riverine loads in Figures 2b-2h. The water discharge series (Figure 2a) reveal that many Contracting Parties have missing data. These data are important for the trend assessments, and re-submission of data is therefore highly recommended.

Many Contracting Parties report reduced riverine loads of nutrients (Figures 2b and 2c).

Metal loads vary significantly from year to year. Many countries report reduced riverine loads of metals, although some peaks appear in some of the graphs. It could be interesting if these could be explained by the respective Contracting Parties. For Belgium it should be noted that the metals were reported as total concentrations until 2002, and from 2003 onwards only in the dissolved phase. See also Table II in the introductory note.

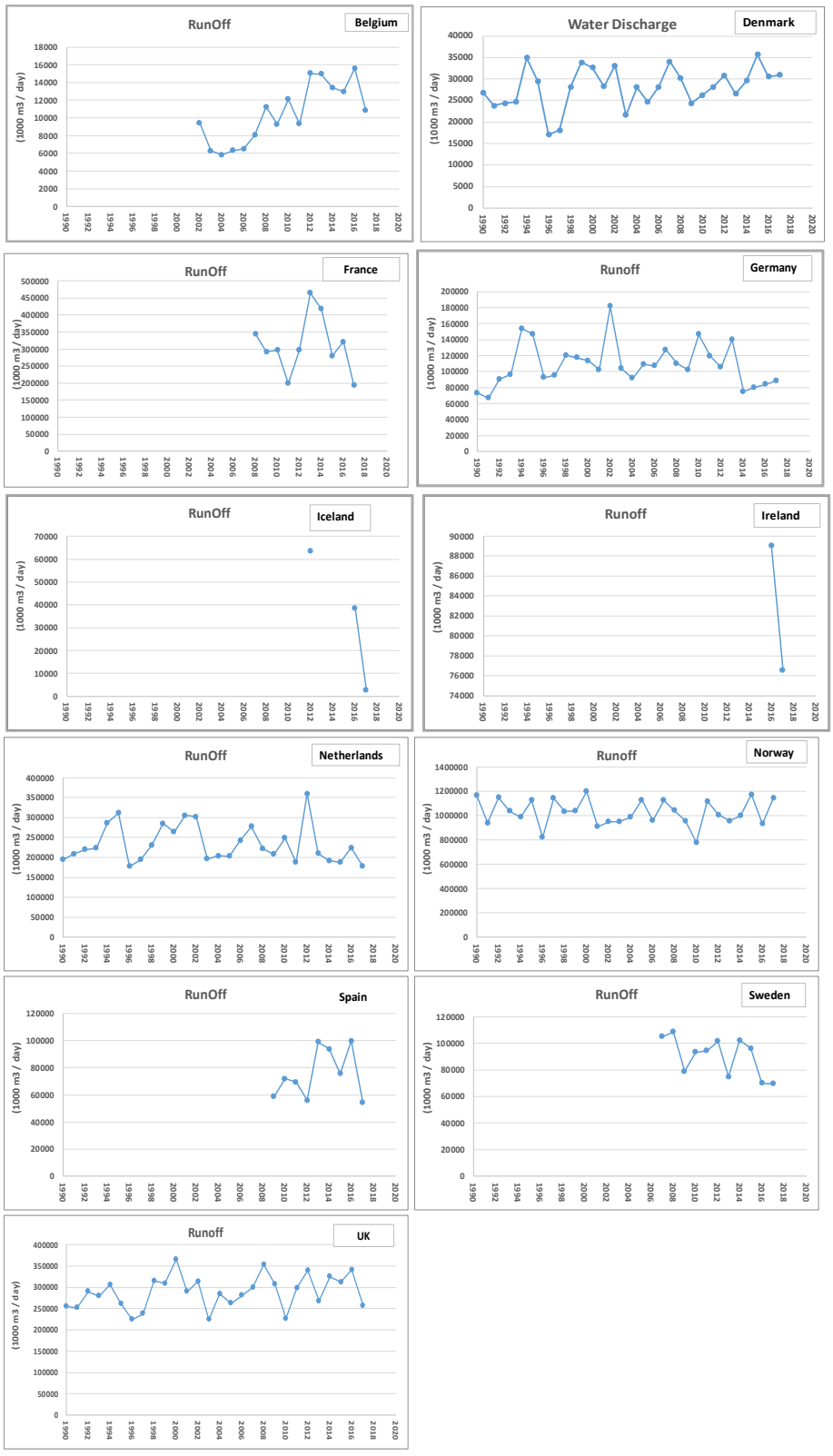


Figure 2a. Water discharge from eleven Contracting Parties (Belgium, Denmark, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

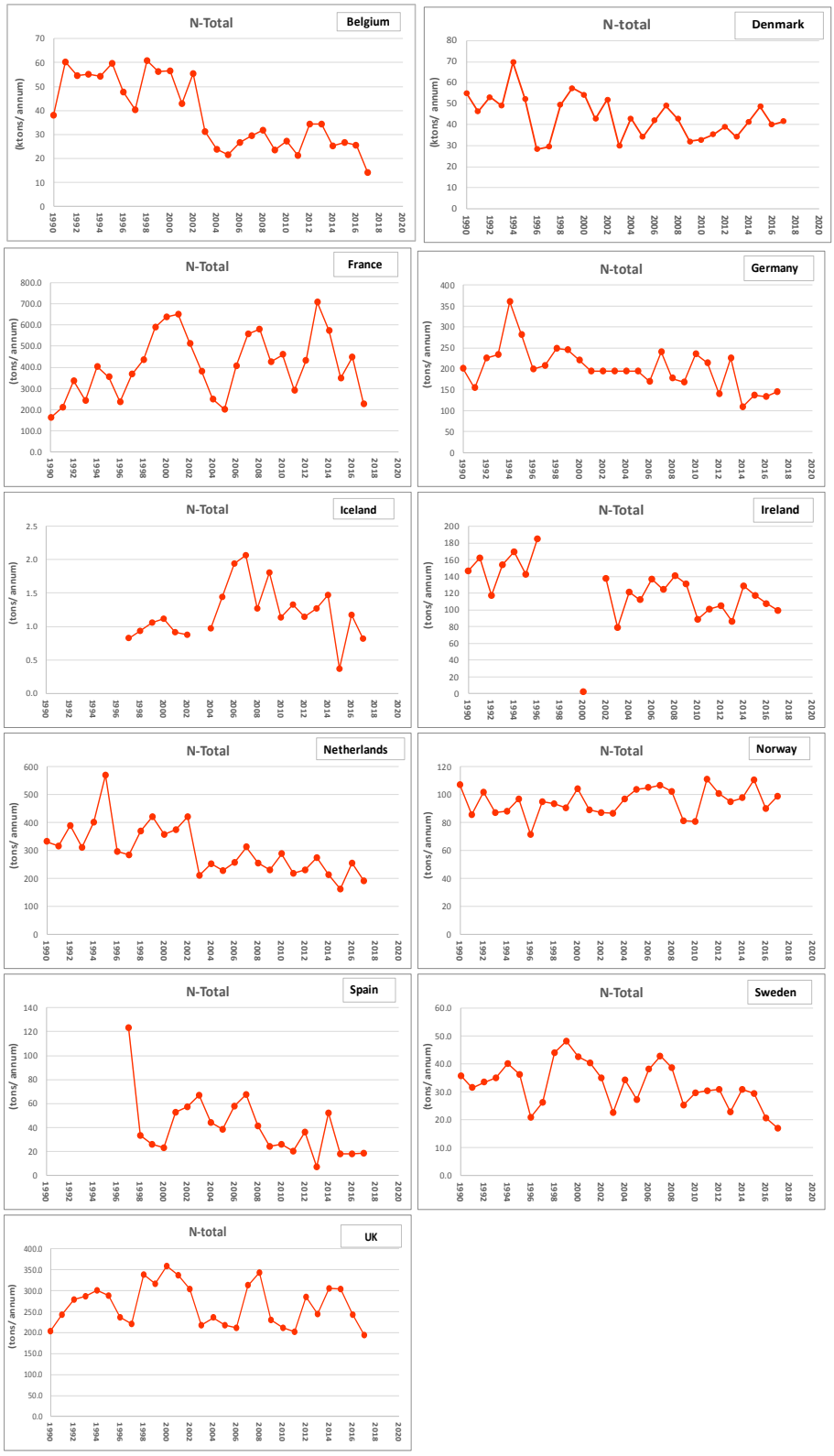


Figure 2b. Riverine loads of total nitrogen (Tot-N) from eleven Contracting Parties (Belgium, Denmark, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

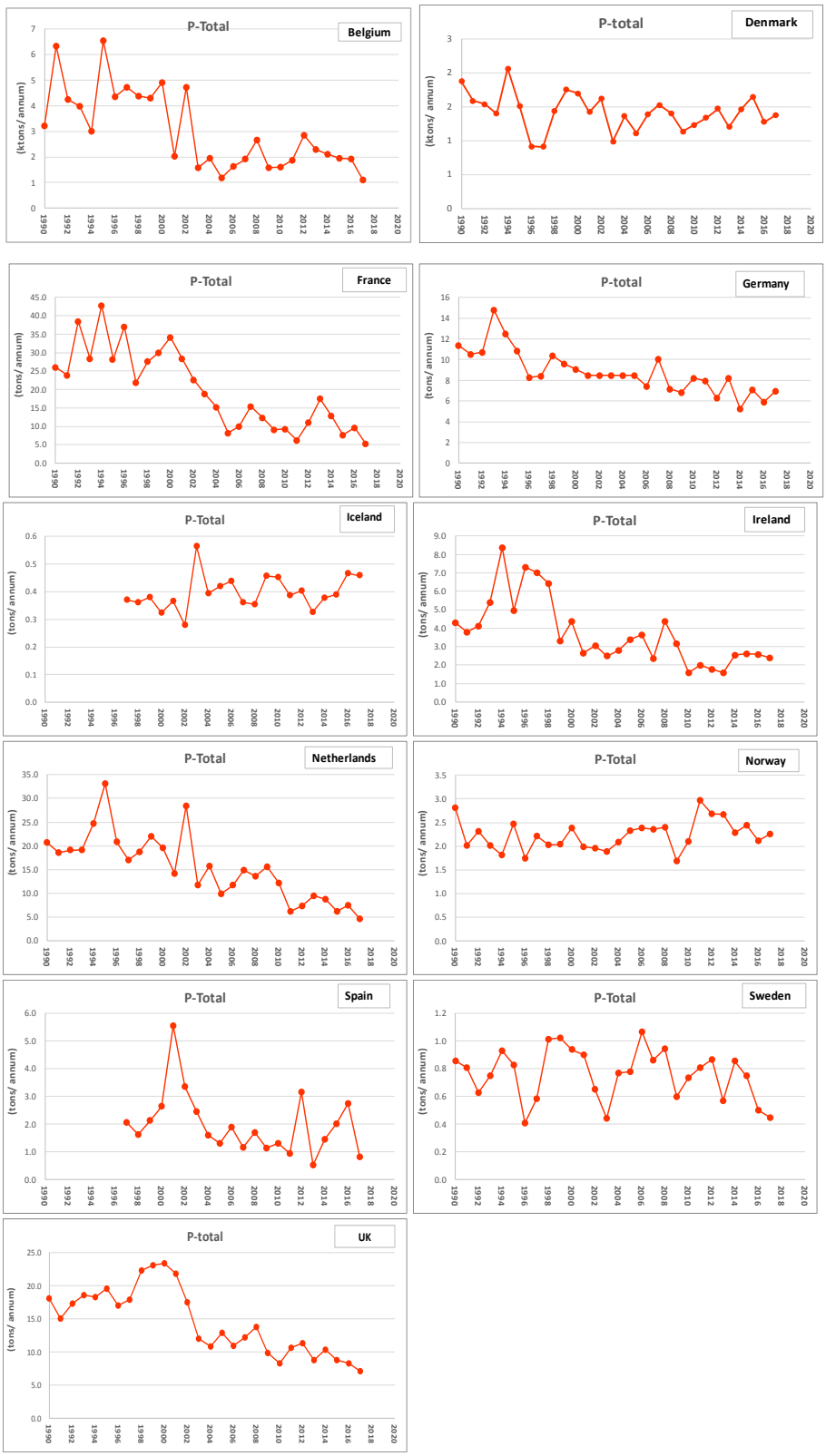


Figure 2c. Riverine loads of total phosphorus (Tot-P) from eleven Contracting Parties (Belgium, Denmark, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

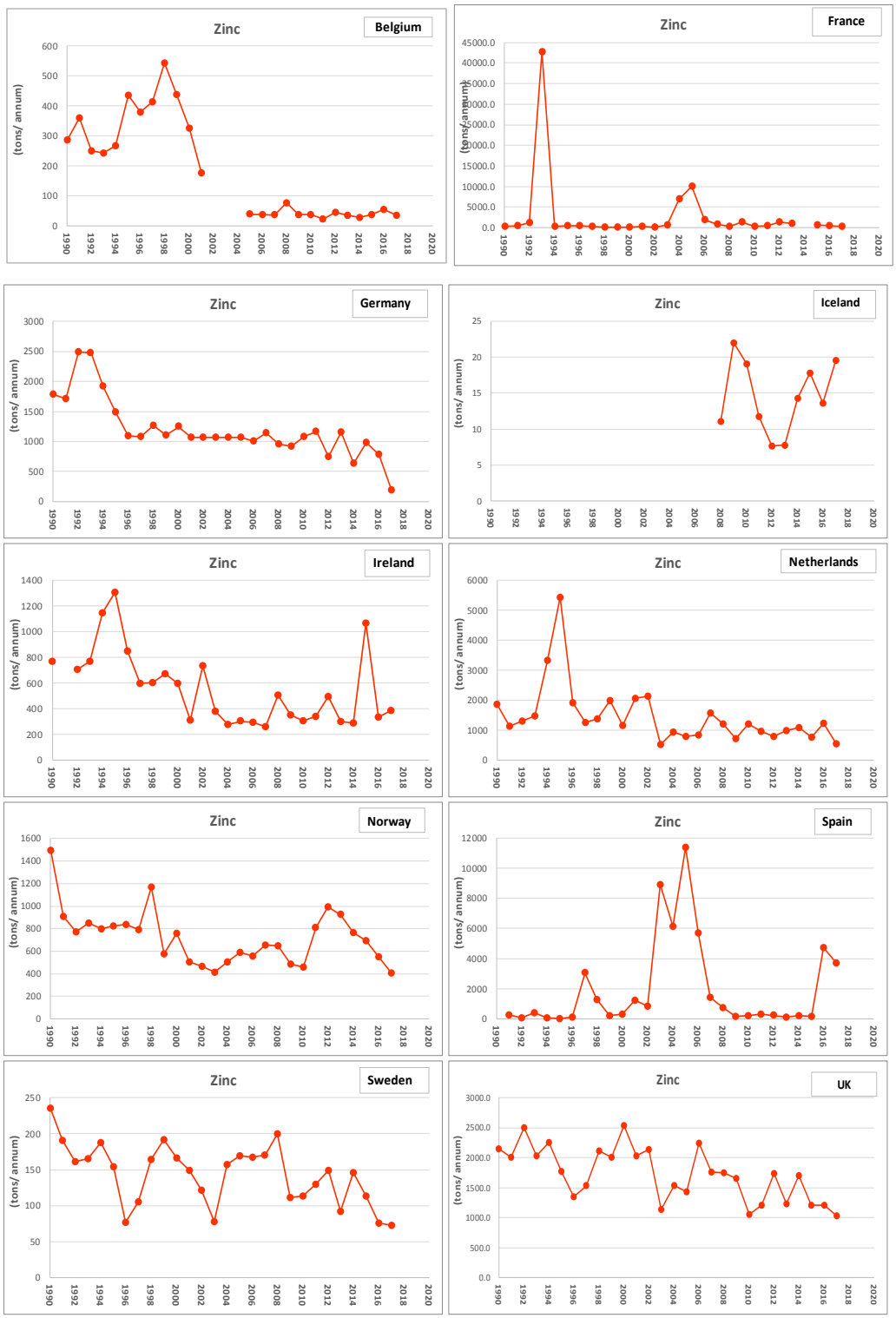


Figure 2d. Riverine loads of zinc (Zn) from ten Contracting Parties (Belgium, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

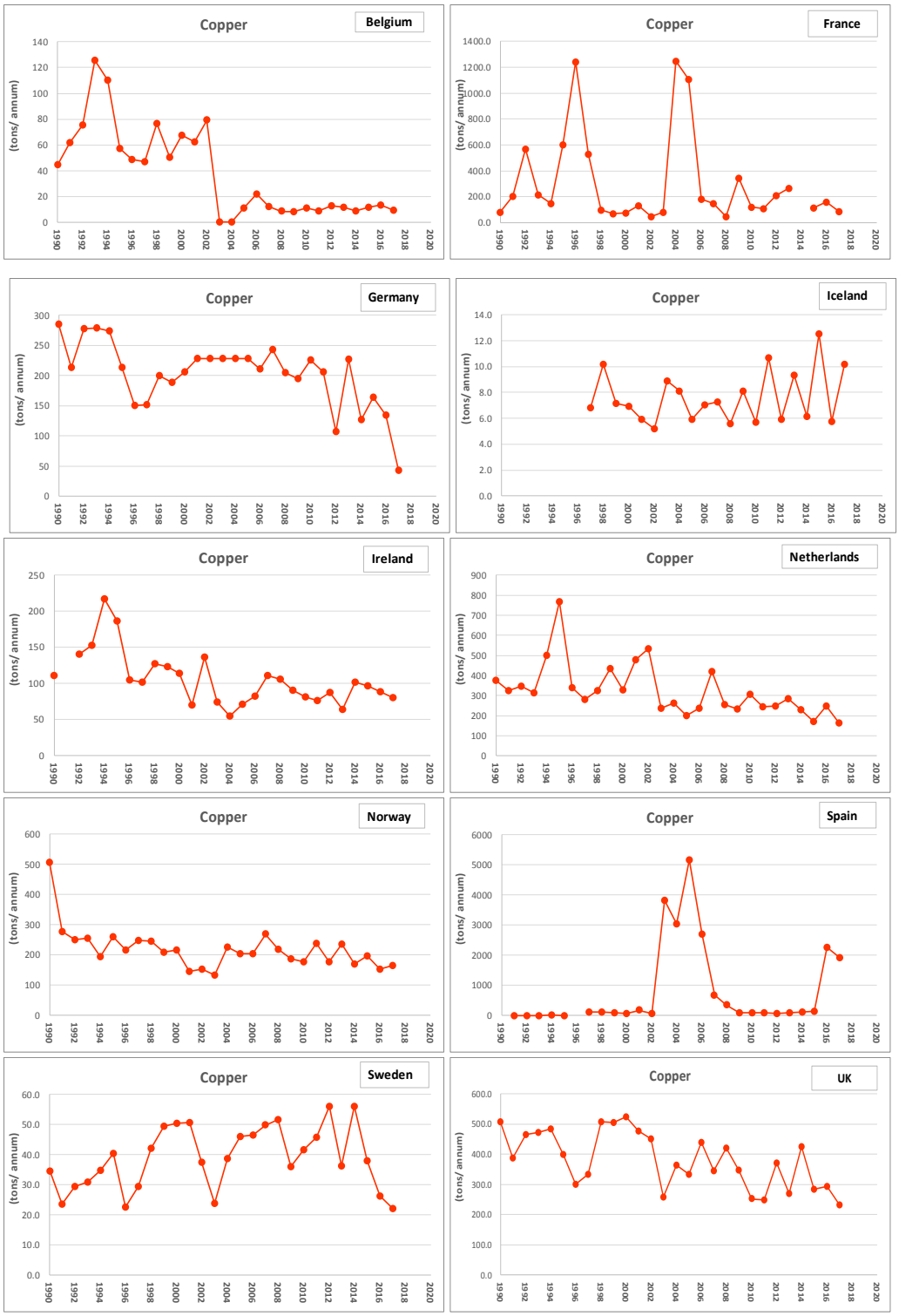


Figure 2e. Riverine loads of copper (Cu) from ten Contracting Parties (Belgium, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

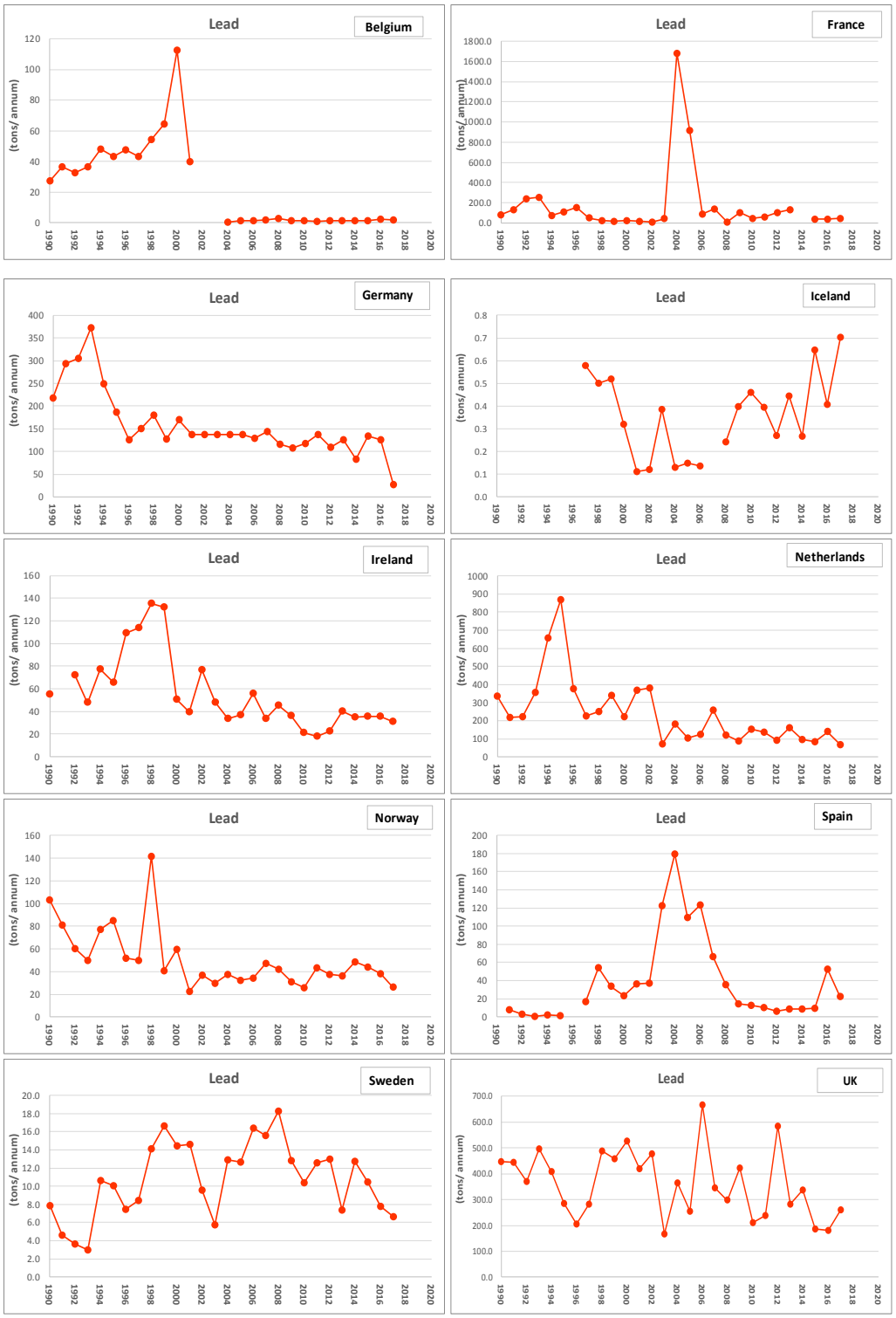


Figure 2f. Riverine loads of lead (Pb) from ten Contracting Parties (Belgium, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

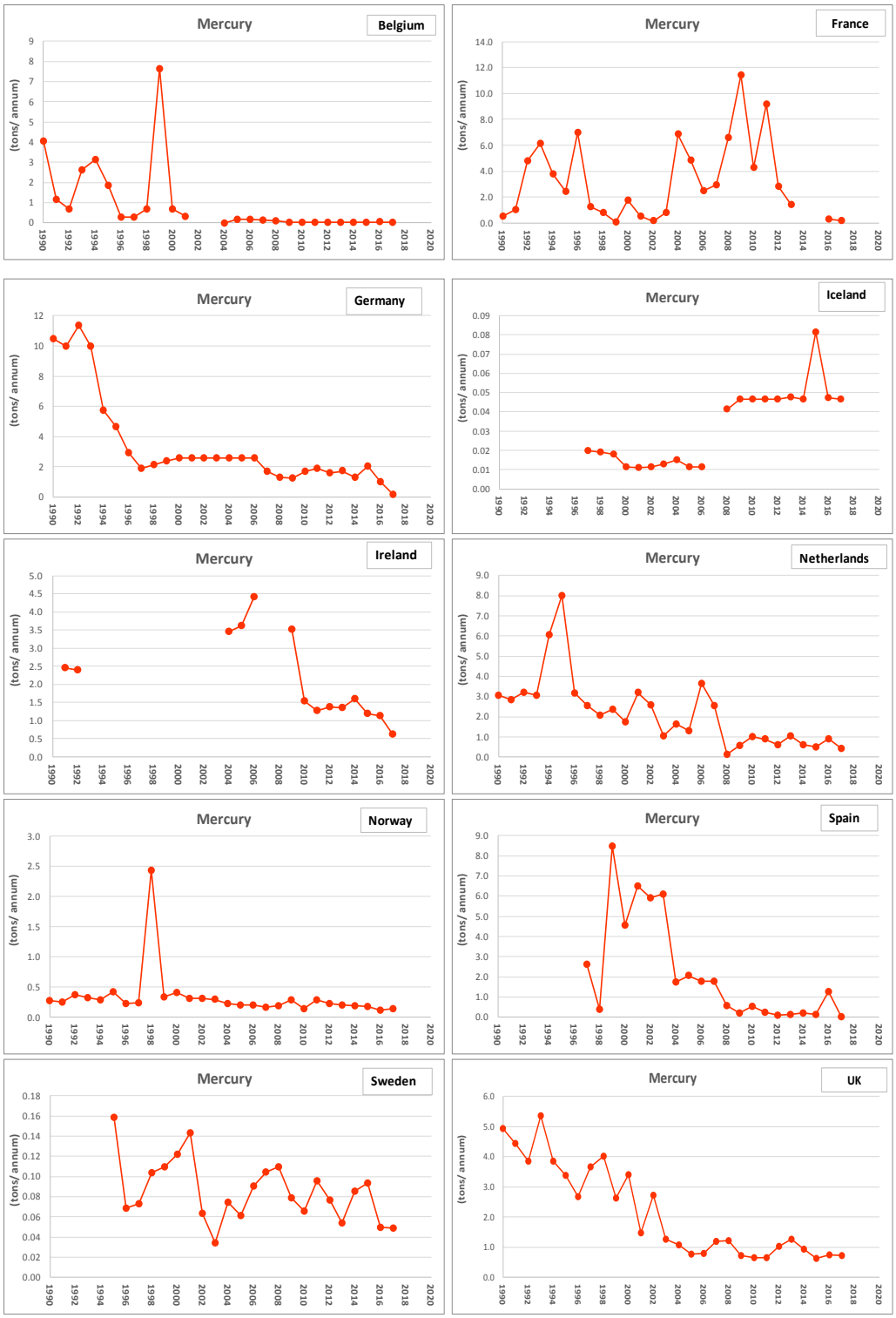


Figure 2g. Riverine loads of mercury (Hg) from ten Contracting Parties (Belgium, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

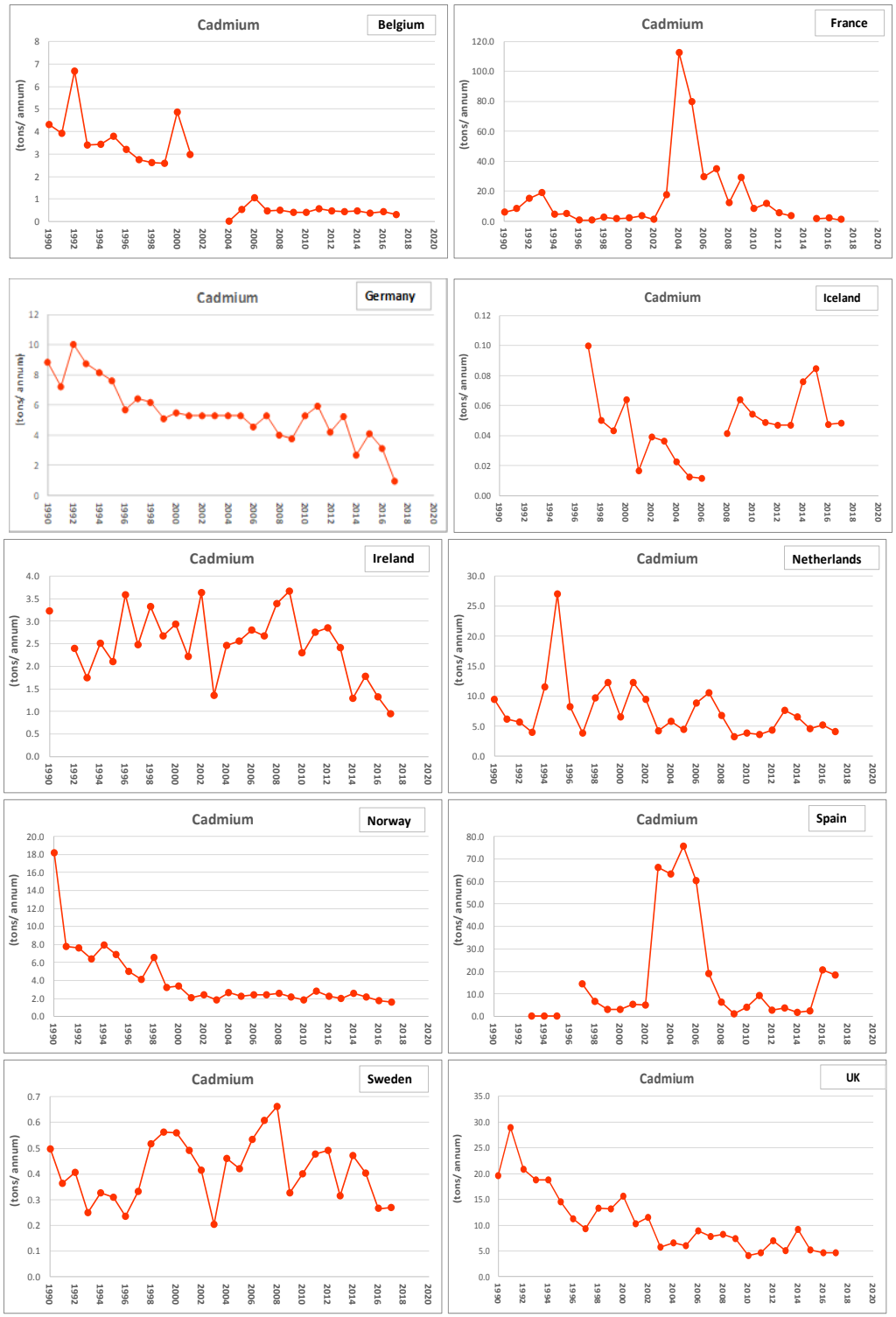


Figure 2h. Riverine loads of cadmium (Cd) from ten Contracting Parties (Belgium, France, Germany, Iceland, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

Direct discharges 1990-2017

The charts for direct discharges are shown in figures 3a-3f. For nutrients (figures 3a and 3b), many Contracting Parties report reductions in the direct discharges. However, in Norway the increasing fish

farming industry in the sea has resulted in a steady increase in both Tot-N and Tot-P since 1990. This also includes copper, which is used as an anti-fouling agent on the cages.

Belgium stopped reporting direct discharges after 1995, and Spain started to report direct discharges in 1998.

Sweden has reported that two major treatment plants dominate the direct discharges, and fluctuations in these reported discharges will give fluctuations in the total direct discharges from Sweden.

In some Contracting Parties there are data gaps in the direct discharges. Ireland has extrapolated the direct discharges back in time from 2014.

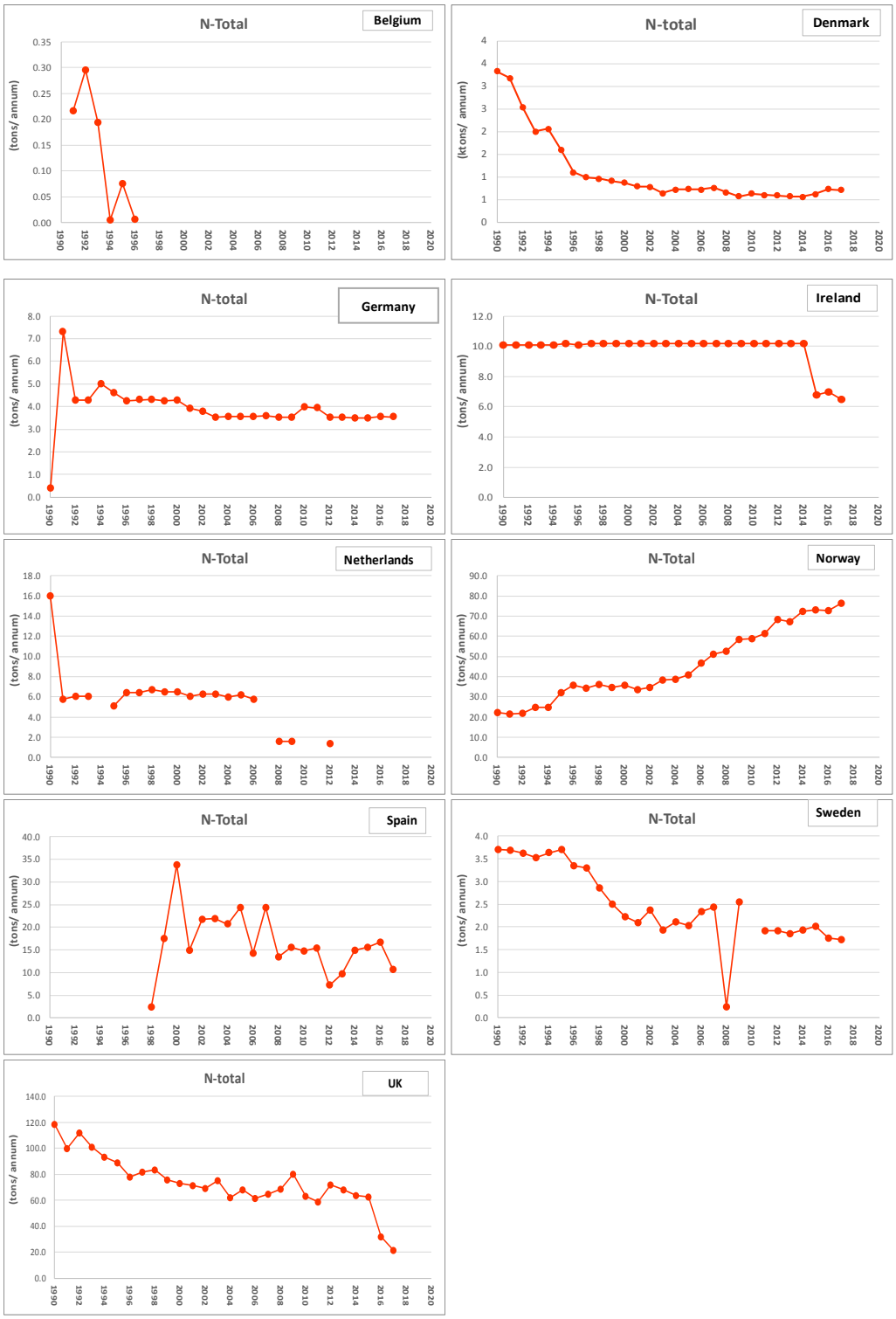


Figure 3a. Direct discharges of total nitrogen (Tot-N) from nine Contracting Parties (Belgium, Denmark, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different

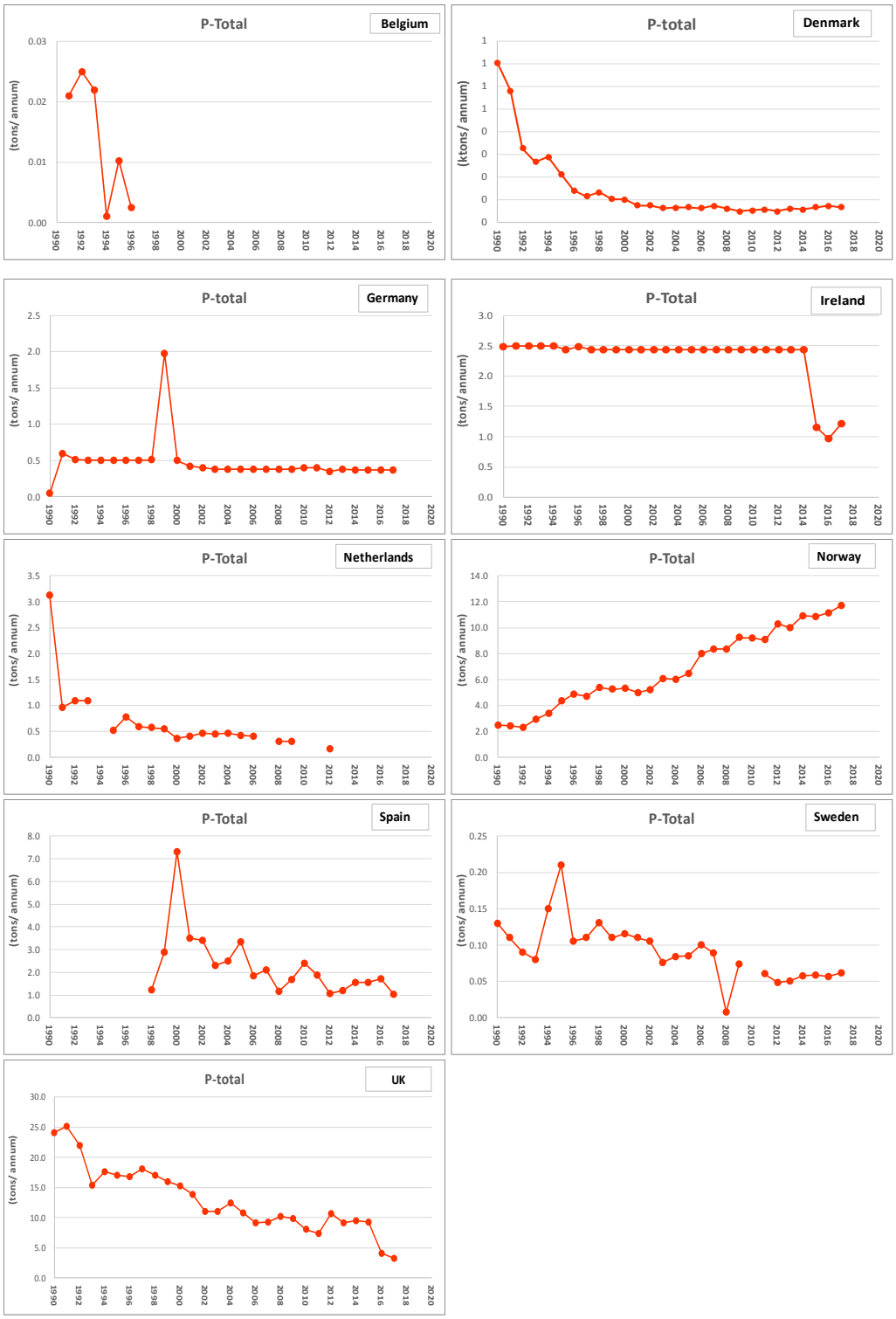


Figure 3b. Direct discharges of total phosphorus (Tot-P) from nine Contracting Parties (Belgium, Denmark, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

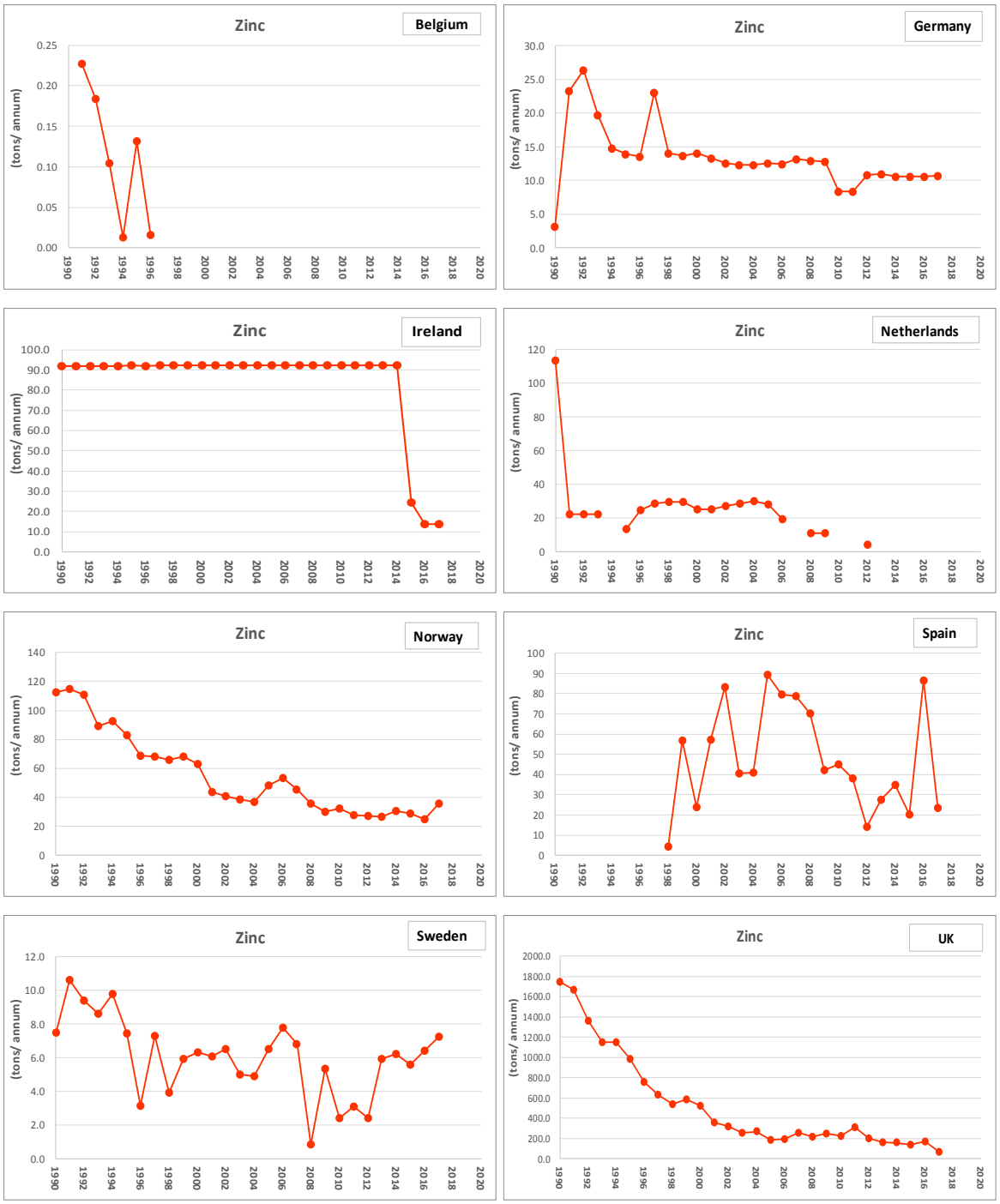


Figure 3c. Direct discharges of zinc (Zn) from eight Contracting Parties (Belgium, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

Figure 3d. Direct discharges of copper (Cu) from eight Contracting Parties (Belgium, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

Figure 3e. Direct discharges of lead (Pb) from eight Contracting Parties (Belgium, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

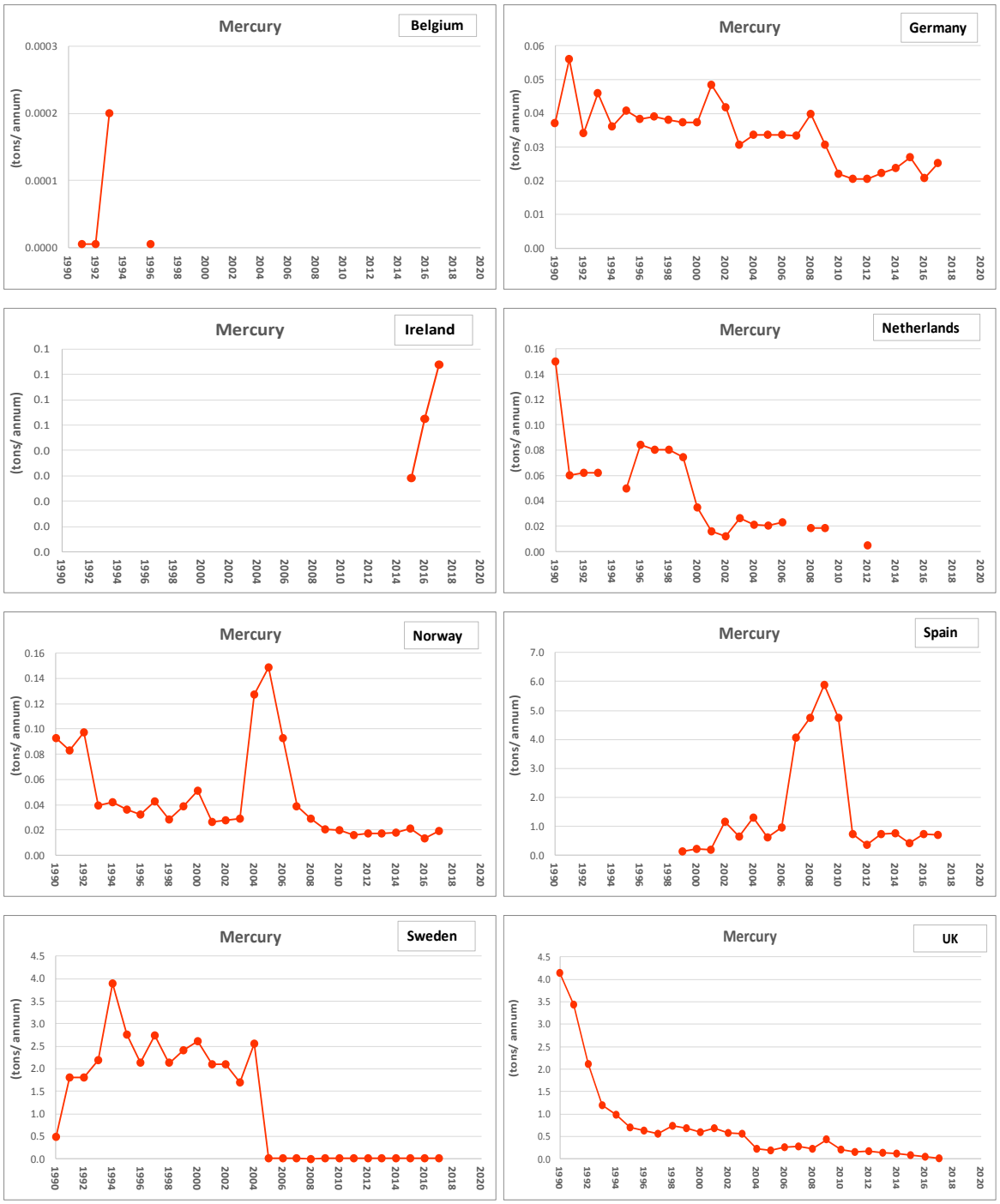


Figure 3e. Direct discharges of mercury (Hg) from eight Contracting Parties (Belgium, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

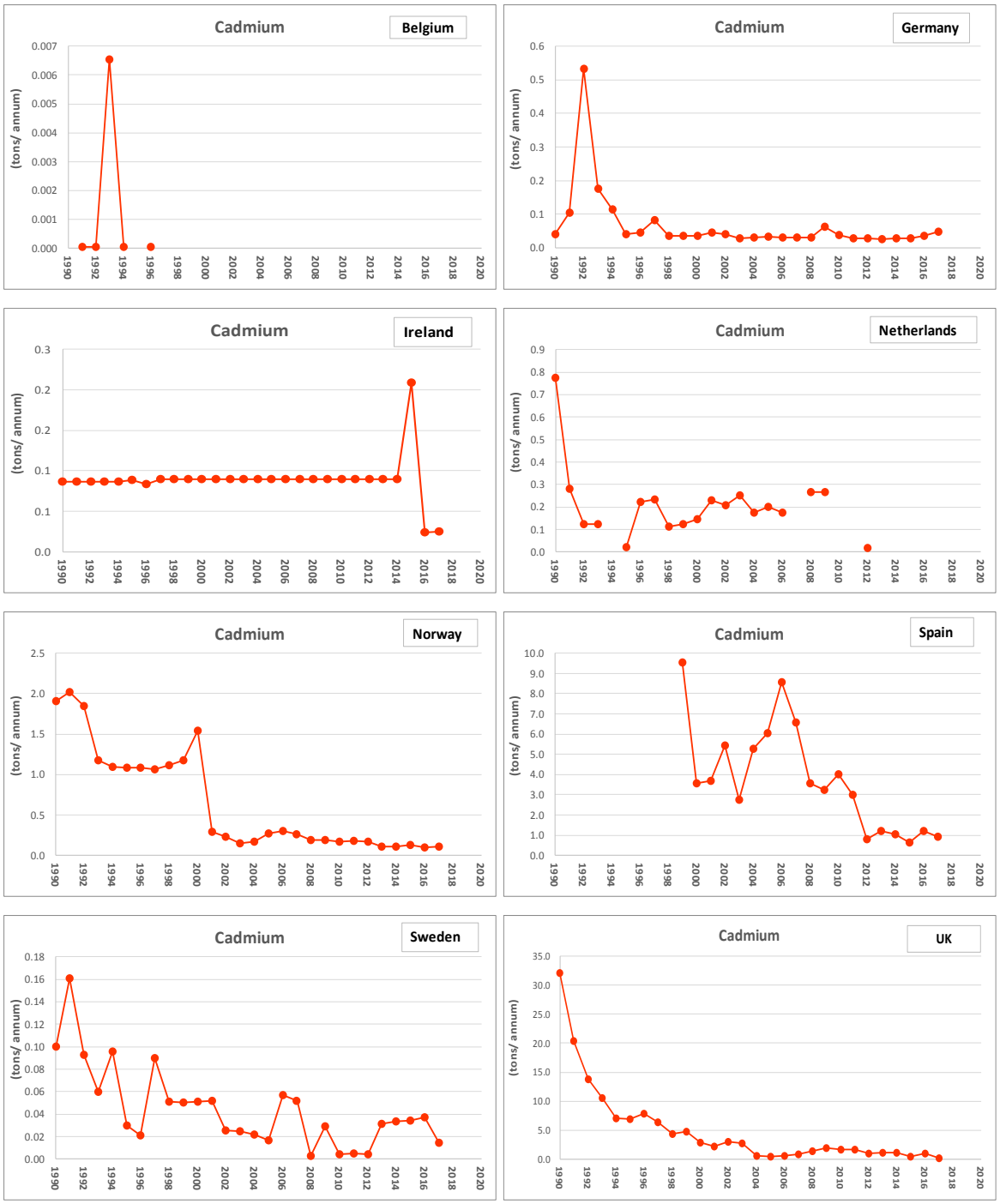


Figure 3f. Direct discharges of Cadmium from eight Contracting Parties (Belgium, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, and UK) in the period 1990-2017. Note that the scales on the y-axis are different.

Appendix I. Data corrections performed by the RID Data Centre in 2018

The corrections made in 2018 were mainly based on the analyses of the graphs of main constituents from 1990-2016 and are summarised in the table below. The corrected Excel Tables (outputs from the database) have been or will be sent to Contracting Parties for verification.

Corrections, performed in RID database in 2018 in addition to what is mentioned in Table 4.

Contracting Party	Year(s)	Table(s)	Corrections made
Belgium	1991-1996	5e	Zero values, appearing instead of missing data were corrected.
	2011-2012	6c	Zero values, appearing instead of missing PSBs data were corrected.
Germany	1990-1995	5a, 5b, 5e, 6a,6b,6c, 9	Suspicious zero values were marked and will be discussed with the Contracting Party whether they should be corrected.
Ireland	2009	5e	Zero values, appearing instead of missing data were corrected. "NI" appearing in cells where there should not be data, were deleted.
	1991-2008	6a, 6c	
Netherlands	1990 1995-2008	5e	Zero values, appearing instead of missing data were corrected.
	1990 2004-2005	6c	Zero values, appearing instead of missing data were corrected.
Norway	1990-2012	6c	Shift in data was corrected. Lower, upper and mean appeared in upper, mean and comments, respectively.
Spain	1998-1999	5e	Zero values, appearing instead of missing data were corrected.
	1990-1998 2011	6c	Zero values, appearing instead of missing data were corrected.
Sweden	1990-2006	5e	Zero values, appearing instead of missing data were corrected.
UK	1990	5e, 6c	Zero value for Ammonium instead of no data

Annex I Annual Overview Tables for the reporting year 2017 (AA Tables)

AA Table 1a Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2017

AA Table 1b Determinands Reported by Contracting Parties in 2017

AA Table 2 Direct Discharges to the Maritime Area of the OSPAR Convention in 2017 by Country

AA Table 3 Riverine Inputs to the Maritime Area of the OSPAR Convention in 2017 by Country

AA Table 4a Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2017 by Country

AA Table 4b Sum of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 2017 by Sea Area

AA Table 1a. 2017

Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2017

Country	Direct Discharges					Riverine Inputs	
	Sewage Effluents	Industrial Effluents	Aquaculture Discharges	Other Discharges	Coastal Areas	Monitored Rivers	Unmonitored Areas
Belgium							
- North Sea (BE)	NA	NA	NA	NA		+	NA
Denmark							
- Skagerrak (DK)	+	+	+	NI		+	+
- Kattegat (DK)	+	+	+	NI		+	+
- North Sea (DK)	+	+	+	NI		+	+
France							
- Channel	NI	NI	NI	NI		+	+
- Atlantic	NI	NI	NI	NI		+	+
Germany							
- North Sea (GER)	+	+	NI	NI		+	+
Iceland							
- Atlantic	NI	NI	NI	NI		+	NI
Ireland							
- Irish Sea	+	+	NI	NI		+	+
- Celtic Sea	+	+	+	NI		+	+
- Atlantic	+	+	+	NI		+	+
Netherlands							
- North Sea (NL)	NI	NI	NI	NI		+	NI
Norway							
- Norwegian Sea (NO)	+	+	+	NI		+	+
- Barents Sea (NO)	+	+	+	NI		+	+
- Skagerrak (NO)	+	+	+	NI		+	+
- North Sea (NO)	+	+	+	NI		+	+
Portugal							
- Bay of Biscay and Iberian Coast (PO)	NI	NI	NI	NI		NI	NI
Spain							
- Atlantic (ESP)	+	+	+	NI		+	NI
Sweden							
- Kattegat (SWE)	+	+	NI	NI		+	+
- Skagerrak (SWE)	+	+	NI	NI		+	+
UK							
- North Sea (North)	+	+	+	NI		+	NI
- North Sea (South)	+	+	NI	NI		+	NI
- Channel	+	+	NI	NI		+	NI
- Irish Sea	+	+	NI	NI		+	NI
- Celtic Sea	+	+	NI	NI		+	NI
- Atlantic	+	+	+	NI		+	NI

+ = Information available
NI = No information
NA = Not applicable

AA Table 1b. 2017

Determinands reported by Contracting Parties in 2017

Country	Determinands													
	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	N-Total	P-Total	SPM	others
Belgium														
- direct inputs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
- riverine inputs	+	+	+	+	+	NA	NA	+	+	+	+	+	+	
Denmark														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	+	+	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	+	
France														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	R+(4)	R+(4)	R+(4)	R+(4)	R+(4)	R+(4)	NI(4)	R+(4)	R+(3)	R+(4)	R+(4)	R+(3)	R+(4)	
Germany														
- direct inputs	+	+	+	+	+	+	+	+	+	+	+	+	+	
- riverine inputs	+(3)	+(3)	+(3)	+(3)	+(3)	+(4)	+(4)	+(3)	+(3)	+(4)	+(3)	+(3)	+(4)	
Iceland														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	+	
Ireland														
- direct inputs	+	+	+	+	+	NI	NI	NI	NI	NI	+	+	+	
- riverine inputs	+(4)	+(4)	+(4)	+(4)	+(3)	NI	NI	+(4)	+(3)	+(3)	+(3)	+(3)	+(4)	
Netherlands														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	+	+	+	+	+	+	+	+	+	+	+	+	+	Mineral Oil,EOX,PAK6
Norway														
- direct inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	+	As,Total Cr,Ni,TOC
- riverine inputs	+(3)	+(4)	+(3)	+(3)	+(3)	NI	NI	+(4)	+(3)	+(4)	+(3)	+(3)	+(3)	As,Total Cr,Ni,TOC
Portugal														
- 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	NI	NI	NI	NI	NI	
Spain														
- direct inputs	+	+	+	+	+	+	NI	+	+	+	+	+	+	
- riverine inputs	+(4)	+(4)	+(4)	+(4)	+(4)	+(4)	+(4)	+(4)	+(3)	+(4)	+(4)	+(4)	+(4)	
Sweden														
- direct inputs	+	+	+	+	+	NI	NI	+	NI	NI	+	+	NI	
- riverine inputs	+(4)	+(4)	+(4)	+(4)	+(4)	NI	NI	+(4)	+(4)	+(4)	+(4)	+(4)	NI	
UK														
- direct inputs	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	
- riverine inputs	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	

+ : Data provided
R: Estimate given as a range
(3) 70 % of measurements above detection limit
(4) Less than 70 % of measurements above detection limit
NI: No information
NA: Not applicable

AA Table 2. 2017

Direct Discharges to the Maritime Area of the OSPAR Convention in 2017 by Country

Country	Region		Cd [t/a]	Hg [t/a]	Cu [t/a]	Pb [t/a]	Zn [t/a]	g-HCH [kg/a]	PCBs [kg/a]	NH4-N [kt/a]	NO3-N [kt/a]	PO4-P [kt/a]	N-Total [kt/a]	P-Total [kt/a]	SPM [kt/a]
Belgium	North Sea (BE)	lower	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		upper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denmark	Kattegat (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.46778	0.0455	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.46778	0.0455	NI
	North Sea (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.10577	0.0099	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.10577	0.0099	NI
	Skagerrak (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.15071	0.0123	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.15071	0.0123	NI
France	Atlantic	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Channel	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Germany	North Sea (GER)	lower	0.00	0.00	1.63	0.72	8.25	0.01	0.03	1.70	1.71	0.07	3.55	0.37	1.54
		upper	0.10	0.05	2.36	1.51	13.25	0.27	1.84	1.70	1.71	0.07	3.55	0.37	1.54
Iceland	Atlantic	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Ireland	Atlantic	lower	0.00	0.00	0.25	0.06	1.00	NI	NI	NI	NI	NI	0.99	0.16	1.54
		upper	0.00	0.00	0.25	0.06	1.00	NI	NI	NI	NI	NI	0.99	0.16	1.54
	Celtic Sea	lower	0.01	0.07	0.91	0.25	3.84	NI	NI	NI	NI	NI	1.96	0.30	4.33
		upper	0.01	0.07	0.91	0.25	3.84	NI	NI	NI	NI	NI	1.96	0.30	4.33
	Irish Sea	lower	0.01	0.00	2.18	0.59	8.75	NI	NI	NI	NI	NI	3.53	0.75	11.39
		upper	0.01	0.00	2.18	0.59	8.75	NI	NI	NI	NI	NI	3.53	0.75	11.39
Netherlands	North Sea (NL)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Norway	Barents Sea (NC	lower	0.0	0.0	286.6	0.0	0.2	NI	NI	13.6	1.8	2.0	17.1	2.9	7.8
		upper	0.0	0.0	286.6	0.0	0.2	NI	NI	13.6	1.8	2.0	17.1	2.9	7.8
	North Sea (NO)	lower	0.1	0.0	349.1	0.9	13.7	NI	NI	18.5	2.3	2.6	23.4	3.8	28.4
		upper	0.1	0.0	349.1	0.9	13.7	NI	NI	18.5	2.3	2.6	23.4	3.8	28.4
	Norwegian Sea (	lower	0.0	0.0	455.8	0.1	5.8	NI	NI	22.7	2.9	3.3	28.6	4.8	6.7
		upper	0.0	0.0	455.8	0.1	5.8	NI	NI	22.7	2.9	3.3	28.6	4.8	6.7
	Skagerrak (NO)	lower	0.0	0.0	7.1	0.4	15.9	NI	NI	5.5	0.4	0.1	7.3	0.2	3.8
		upper	0.0	0.0	7.1	0.4	15.9	NI	NI	5.5	0.4	0.1	7.3	0.2	3.8
Portugal	Bay of Biscay ar	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Spain	Atlantic (ESP)	lower	0.009	0.005	0.906	0.194	6.816	0.176	NI	3.5285	0.3114	0.5146	5.14748	0.3309	3.464
		upper	0.09	0.007	1.137	0.261	13.32	0.351	NI	3.5308	0.3183	0.5192	5.18936	0.3409	3.473
Sweden	Kattegat (SWE)	lower	0.01	0.01	1.50	0.07	6.59	NI	NI	0.82	NI	NI	1.48	0.05	NI
		upper	0.01	0.01	1.50	0.07	6.59	NI	NI	0.82	NI	NI	1.48	0.05	NI
	Skagerrak (SWE	lower	0.00	0.00	0.13	0.00	0.68	NI	NI	0.12	NI	NI	0.25	0.01	NI
		upper	0.00	0.00	0.13	0.00	0.68	NI	NI	0.12	NI	NI	0.25	0.01	NI
UK	Atlantic	lower	0.00	0.00	50.42	0.18	24.26	0.09	NI	0.30	0.16	0.18	8.82	1.55	3.14
		upper	0.02	0.00	51.74	0.63	32.65	0.77	NI	2.45	1.39	0.77	11.24	1.92	9.27
	Celtic Sea	lower	0.05	0.00	6.43	0.01	1.86	NI	0.00	1.24	0.54	0.18	0.06	0.18	7.44
		upper	0.06	0.00	6.44	0.09	1.88	NI	0.17	1.44	0.55	0.19	0.06	0.19	8.66
	Channel	lower	0.00	NI	0.25	0.02	0.24	NI	NI	0.46	NI	NI	0.82	NI	3.57
		upper	0.00	NI	0.25	0.02	0.24	NI	NI	0.47	NI	NI	0.82	NI	3.71
	Irish Sea	lower	0.01	0.00	0.28	0.25	5.69	0.00	0.00	0.19	0.24	0.03	2.66	0.08	3.14
		upper	0.01	0.00	0.30	0.26	5.85	0.00	0.49	0.24	0.24	0.03	2.71	0.09	3.52
	North Sea (North	lower	0.01	0.00	18.48	0.08	14.71	0.26	0.00	5.21	1.68	0.12	4.92	0.72	5.34
		upper	0.04	0.01	25.70	0.63	24.58	0.58	0.02	9.85	2.93	0.89	11.38	1.88	15.99
	North Sea (South	lower	0.02	0.00	4.08	1.46	11.06	NI	NI	0.81	0.02	NI	NI	NI	38.64
		upper	0.04	0.00	4.18	1.46	12.63	NI	NI	0.87	0.02	NI	NI	NI	38.75

NI: No information
NA: Not applicable

AA Table 3. 2017

Riverine Inputs to the Maritime Area of the OSPAR Convention in 2017 by Country

Country	Sea Area		Cd [t/a]	Hg [t/a]	Cu [t/a]	Pb [t/a]	Zn [t/a]	g-HCH [kg/a]	PCBs [kg/a]	NH4-N [kt/a]	NO3-N [kt/a]	PO4-P [kt/a]	N-Total [kt/a]	P-Total [kt/a]	SPM [kt/a]
Belgium	North Sea (BE)	lower	0.32	0.03	9.76	1.91	35.64	NA	NA	1.19	10.23	0.68	14.06	1.10	129.6
		upper	0.32	0.03	9.76	1.91	35.64	NA	NA	1.19	10.23	0.68	14.06	1.10	129.6
Denmark	Kattegat (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	21.578	0.734	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	21.578	0.734	NI
	North Sea (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	18.447	0.583	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	18.447	0.583	NI
	Skagerrak (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1.561	0.063	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1.561	0.063	NI
France	Atlantic	lower	0.1	0.0	42.8	7.6	75.3	0.8	NI	2.5	118.8	1.7	49.5	2.6	272.6
		upper	0.7	0.3	46.0	11.1	101.9	16136.4	NI	2.7	123.3	1.7	153.2	2.6	576.9
	Channel	lower	0.4	0.0	39.6	36.2	189.8	8.5	NI	2.1	126.5	1.9	104.5	2.8	532.2
		upper	0.6	0.0	41.1	36.4	190.9	336.9	NI	2.1	126.5	1.9	145.1	2.8	532.8
Germany	North Sea (GER)	lower	0.94	0.17	42.75	27.36	194.40	2.27	18.13	4.74	114.51	1.80	145.11	6.96	1636.3
		upper	0.97	0.19	42.75	27.46	194.40	28.74	28.95	4.74	114.51	1.87	145.12	6.96	1834.2
Iceland	Atlantic	lower	0.05	0.05	10.14	0.70	19.62	NI	NI	0.23	0.36	0.39	0.95	0.48	991.1
		upper	0.05	0.05	10.14	0.70	19.62	NI	NI	0.23	0.36	0.39	0.95	0.48	991.1
Ireland	Atlantic	lower	0.14	0.05	23.36	0.99	118.41	NI	NI	0.21	6.77	0.30	17.71	0.58	42.3
		upper	0.43	0.38	29.14	17.96	120.82	NI	NI	0.45	7.54	0.39	18.07	0.58	99.1
	Celtic Sea	lower	0.21	0.13	37.77	3.84	173.49	NI	NI	0.89	49.83	0.72	64.90	1.29	136.1
		upper	0.66	0.60	43.17	28.50	173.62	NI	NI	1.07	49.85	0.75	64.90	1.29	192.4
	Irish Sea	lower	0.21	0.01	13.22	3.77	95.14	NI	NI	0.22	13.62	0.22	16.90	0.53	62.6
		upper	0.25	0.10	13.91	7.50	95.14	NI	NI	0.26	13.62	0.23	16.90	0.53	72.8
Netherlands	North Sea (NL)	lower	4.07	0.43	162.48	67.42	537.01	10.08	18.40	6.63	136.84	3.29	190.11	4.60	1012.3
		upper	4.27	0.43	162.48	67.42	544.49	10.41	27.48	6.68	136.99	3.30	192.08	4.65	1103.7
Norway	Barents Sea (NC	lower	0.10	0.02	35.81	1.17	35.60	NI	NI	0.68	4.93	0.17	12.35	0.39	80.2
		upper	0.10	0.02	35.81	1.17	35.60	NI	NI	0.68	4.93	0.17	12.35	0.39	80.2
	North Sea (NO)	lower	0.40	0.03	24.48	8.14	93.91	NI	NI	1.25	18.24	0.16	30.20	0.53	74.3
		upper	0.40	0.03	24.48	8.14	93.91	NI	NI	1.25	18.24	0.16	30.20	0.53	74.3
	Norwegian Sea (	lower	0.26	0.03	45.42	2.76	91.69	NI	NI	1.15	13.13	0.18	24.67	0.56	138.6
		upper	0.26	0.03	45.42	2.76	91.69	NI	NI	1.15	13.13	0.18	24.67	0.56	138.6
	Skagerrak (NO)	lower	0.86	0.06	59.15	14.20	185.55	NI	NI	0.96	18.27	0.37	31.91	0.78	293.4
		upper	0.86	0.06	59.15	14.20	185.55	NI	NI	0.96	18.27	0.37	31.91	0.78	293.4
Portugal	Bay of Biscay an	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Spain	Atlantic (ESP)	lower	18.27	0.00	1909.18	21.17	3697.52	1.14	0.00	4.87	17.46	0.40	17.76	0.80	190.62
		upper	18.35	0.06	1911.07	23.03	3703.92	12.25	4.31	4.94	17.60	0.43	19.59	0.87	192.72
Sweden	Kattegat (SWE)	lower	0.30	0.05	23.80	7.39	76.90	NI	NI	0.68	14.11	0.12	22.95	0.54	NI
		upper	0.30	0.05	23.80	7.39	76.90	NI	NI	0.68	14.11	0.12	22.95	0.54	NI
	Skagerrak (SWE	lower	0.04	0.01	3.07	0.93	18.70	NI	NI	0.08	1.10	0.01	2.29	0.11	NI
		upper	0.04	0.01	3.07	0.93	18.70	NI	NI	0.08	1.10	0.01	2.29	0.11	NI
UK	Atlantic	lower	0.04	0.03	21.12	2.99	41.11	NI	NI	0.37	5.26	0.43	5.84	1.02	79.43
		upper	0.58	0.16	33.64	12.18	89.59	NI	NI	1.05	11.58	0.72	15.20	1.49	133.46
	Celtic Sea	lower	0.38	0.05	32.66	18.41	196.03	0.53	0.00	0.73	29.67	0.75	24.59	0.75	232.40
		upper	1.04	0.13	33.45	27.80	202.58	1.03	16.27	0.79	29.67	0.76	24.59	0.76	237.90
	Channel	lower	0.21	0.01	17.38	6.14	68.25	0.30	0.00	0.18	17.71	0.47	19.90	0.47	55.00
		upper	0.23	0.05	17.42	6.33	68.46	1.86	42.19	0.26	17.71	0.47	19.90	0.47	57.08
	Irish Sea	lower	2.24	0.27	104.60	183.30	474.38	0.99	0.41	1.96	26.62	1.56	45.99	1.64	1092.78
		upper	2.68	0.41	108.20	189.80	488.40	8.33	91.38	2.21	29.49	1.64	50.34	1.81	1124.20
	North Sea (North	lower	0.19	0.02	7.21	10.78	59.29	0.11	0.00	0.20	6.22	0.17	8.91	0.21	78.23
		upper	0.61	0.22	24.04	19.51	125.29	2.19	68.32	1.00	26.43	0.50	35.65	0.88	187.69
	North Sea (South	lower	0.55	0.01	32.87	20.63	131.18	4.16	0.00	1.26	65.73	2.38	68.40	2.38	100.14
		upper	0.57	0.09	32.90	20.78	131.88	6.69	77.18	1.30	65.73	2.38	68.40	2.38	102.86

NI: No information

NA: Not applicable

AA Table 4a. 2017

Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime area of the OSPAR Convention in 2017 by Country

Sea Area	Region		Cd [t/a]	Hg [t/a]	Cu [t/a]	Pb [t/a]	Zn [t/a]	g-HCH [kg/a]	PCBs [kg/a]	NH4-N [kt/a]	NO3-N [kt/a]	PO4-P [kt/a]	N-Total [kt/a]	P-Total [kt/a]	SPM [kt/a]
Belgium	North Sea (BE)	lower	0.3	0.0	9.8	1.9	35.6	NA	NA	1.2	10.2	0.7	14.1	1.1	129.6
		upper	0.3	0.0	9.8	1.9	35.6	NA	NA	1.2	10.2	0.7	14.1	1.1	129.6
Denmark	Kattegat (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	22.05	0.8	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	22.05	0.8	NI
	North Sea (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	18.55	0.6	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	18.55	0.6	NI
	Skagerrak (DK)	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1.71	0.1	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1.71	0.1	NI
France	Atlantic	lower	0.1	0.0	42.8	7.6	75.3	0.8	NI	2.5	118.8	1.7	49.5	2.6	272.6
		upper	0.7	0.3	46.0	11.1	101.9	16136.4	NI	2.7	123.3	1.7	153.2	2.6	576.9
	Channel	lower	0.4	0.0	39.6	36.2	189.8	8.5	NI	2.1	126.5	1.9	104.5	2.8	532.2
		upper	0.6	0.0	41.1	36.4	190.9	336.9	NI	2.1	126.5	1.9	145.1	2.8	532.8
Germany	North Sea (GER)	lower	0.9	0.2	44.4	28.1	202.7	2.3	18.2	6.4	116.2	1.9	148.7	7.3	1637.8
		upper	1.1	0.2	45.1	29.0	207.7	29.0	30.8	6.4	116.2	1.9	148.7	7.3	1835.7
Iceland	Atlantic	lower	0.0	0.0	10.1	0.7	19.6	NI	NI	0.2	0.4	0.4	1.0	0.5	991.1
		upper	0.0	0.0	10.1	0.7	19.6	NI	NI	0.2	0.4	0.4	1.0	0.5	991.1
Ireland	Atlantic	lower	0.1	0.0	23.6	1.1	119.4	NI	NI	0.2	6.8	0.3	18.7	0.7	43.8
		upper	0.4	0.4	29.4	18.0	121.8	NI	NI	0.4	7.5	0.4	19.1	0.7	100.6
	Celtic Sea	lower	0.2	0.2	38.7	4.1	177.3	NI	NI	0.9	49.8	0.7	66.9	1.6	140.4
		upper	0.7	0.7	44.1	28.7	177.5	NI	NI	1.1	49.8	0.7	66.9	1.6	196.7
	Irish Sea	lower	0.2	0.0	15.4	4.4	103.9	NI	NI	0.2	13.6	0.2	20.4	1.3	74.0
		upper	0.3	0.1	16.1	8.1	103.9	NI	NI	0.3	13.6	0.2	20.4	1.3	84.2
Netherlands	North Sea (NL)	lower	4.1	0.4	162.5	67.4	537.0	10.1	18.4	6.6	136.8	3.3	190.1	4.6	1012.3
		upper	4.3	0.4	162.5	67.4	544.5	10.4	27.5	6.7	137.0	3.3	192.1	4.7	1103.7
Norway	Barents Sea (NC	lower	0.1	0.0	322.4	1.2	35.8	NI	NI	14.3	6.7	2.2	29.5	3.3	88.0
		upper	0.1	0.0	322.4	1.2	35.8	NI	NI	14.3	6.7	2.2	29.5	3.3	88.0
	North Sea (NO)	lower	0.5	0.0	373.5	9.1	107.6	NI	NI	19.8	20.6	2.7	53.6	4.3	102.7
		upper	0.5	0.0	373.5	9.1	107.6	NI	NI	19.8	20.6	2.7	53.6	4.3	102.7
	Norwegian Sea (	lower	0.3	0.0	501.2	2.9	97.5	NI	NI	23.9	16.1	3.5	53.3	5.4	145.2
		upper	0.3	0.0	501.2	2.9	97.5	NI	NI	23.9	16.1	3.5	53.3	5.4	145.2
	Skagerrak (NO)	lower	0.9	0.1	66.3	14.6	201.4	NI	NI	6.4	18.6	0.5	39.2	1.0	297.1
		upper	0.9	0.1	66.3	14.6	201.4	NI	NI	6.4	18.6	0.5	39.2	1.0	297.1
Portugal	Bay of Biscay an	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Spain	Atlantic (ESP)	lower	18.3	0.0	1910.1	21.4	3704.3	1.3	0.0	8.4	17.8	0.9	22.9	1.1	194.1
		upper	18.4	0.1	1912.2	23.3	3717.2	12.6	4.3	8.5	17.9	0.9	24.8	1.2	196.2
Sweden	Kattegat (SWE)	lower	0.3	0.1	25.3	7.5	83.5	NI	NI	1.5	14.1	0.1	24.4	0.6	NI
		upper	0.3	0.1	25.3	7.5	83.5	NI	NI	1.5	14.1	0.1	24.4	0.6	NI
	Skagerrak (SWE	lower	0.0	0.0	3.2	0.9	19.4	NI	NI	0.2	1.1	0.0	2.5	0.1	NI
		upper	0.0	0.0	3.2	0.9	19.4	NI	NI	0.2	1.1	0.0	2.5	0.1	NI
UK	Atlantic	lower	0.0	0.0	71.5	3.2	65.4	0.1	NI	0.7	5.4	0.6	14.7	2.6	82.6
		upper	0.6	0.2	85.4	12.8	122.2	0.8	NI	3.5	13.0	1.5	26.4	3.4	142.7
	Celtic Sea	lower	0.4	0.0	39.1	18.4	197.9	0.5	0.0	2.0	30.2	0.9	24.6	0.9	239.8
		upper	1.1	0.1	39.9	27.9	204.5	1.0	16.4	2.2	30.2	0.9	24.6	0.9	246.6
	Channel	lower	0.2	0.0	17.6	6.2	68.5	0.3	0.0	0.6	17.7	0.5	20.7	0.5	58.6
		upper	0.2	0.1	17.7	6.4	68.7	1.9	42.2	0.7	17.7	0.5	20.7	0.5	60.8
	Irish Sea	lower	2.2	0.3	104.9	183.6	480.1	1.0	0.4	2.2	26.9	1.6	48.7	1.7	1095.9
		upper	2.7	0.4	108.5	190.1	494.3	8.3	91.9	2.4	29.7	1.7	53.0	1.9	1127.7
	North Sea (North	lower	0.2	0.0	25.7	10.9	74.0	0.4	0.0	5.4	7.9	0.3	13.8	0.9	83.6
		upper	0.6	0.2	49.7	20.1	149.9	2.8	68.3	10.9	29.4	1.4	47.0	2.8	203.7
	North Sea (South	lower	0.6	0.0	37.0	22.1	142.2	4.2	0.0	2.1	65.7	2.4	68.4	2.4	138.8
		upper	0.6	0.1	37.1	22.2	144.5	6.7	77.2	2.2	65.7	2.4	68.4	2.4	141.6

NI: No information
NA: Not applicable

AA Table 4b. 2017

Sum of Direct and Riverine Inputs to the Maritime area of the OSPAR Convention in 2017 by Sea Area

Sea Area		Cd [t/a]	Hg [t/a]	Cu [t/a]	Pb [t/a]	Zn [t/a]	g-HCH [kg/a]	PCBs [kg/a]	NH4-N [kt/a]	NO3-N [kt/a]	PO4-P [kt/a]	N-Total [kt/a]	P-Total [kt/a]	SPM [kt/a]
Arctic Ocean	lower	0.1	0.0	322.4	1.2	35.8	NI	NI	14.3	6.7	2.2	29.5	3.3	88.0
	upper	0.1	0.0	322.4	1.2	35.8	NI	NI	14.3	6.7	2.2	29.5	3.3	88.0
Atlantic Ocean	lower	0.2	0.1	95.2	4.2	184.8	0.1	NI	0.9	12.2	0.9	33.4	3.3	126.4
	upper	1.0	0.5	114.8	30.8	244.1	0.8	NI	3.9	20.5	1.9	45.5	4.2	243.4
Bay of Biscay and Iberian Coast	lower	18.4	0.0	1952.8	29.0	3779.6	2.1	0.0	10.9	136.6	2.6	72.4	3.7	466.7
	upper	19.2	0.4	1958.2	34.4	3819.1	16149.0	4.3	11.2	141.3	2.7	178.0	3.8	773.1
Celtic Sea	lower	0.7	0.3	77.8	22.5	375.2	0.5	0.0	2.9	80.0	1.7	91.5	2.5	380.3
	upper	1.8	0.8	84.0	56.6	381.9	1.0	16.4	3.3	80.1	1.7	91.5	2.5	443.3
Channel	lower	0.6	0.0	57.2	42.4	258.3	8.8	0.0	2.7	144.2	2.4	125.2	3.3	590.8
	upper	0.9	0.1	58.8	42.8	259.6	338.7	42.2	2.8	144.2	2.4	165.8	3.3	593.6
Irish Sea	lower	2.5	0.3	120.3	187.9	584.0	1.0	0.4	2.4	40.5	1.8	69.1	3.0	1169.9
	upper	2.9	0.5	124.6	198.1	598.1	8.3	91.9	2.7	43.4	1.9	73.5	3.2	1211.9
Kattegat	lower	0.3	0.1	25.3	7.5	83.5	NI	NI	1.5	14.1	0.1	46.5	1.4	NI
	upper	0.3	0.1	25.3	7.5	83.5	NI	NI	1.5	14.1	0.1	46.5	1.4	NI
North Sea (main body)	lower	6.6	0.7	652.8	139.4	1099.2	16.9	36.6	41.5	357.5	11.2	507.2	21.3	3104.8
	upper	7.4	1.1	677.7	149.8	1189.8	48.9	203.8	47.1	379.1	12.4	542.4	23.1	3517.1
Norwegian Sea	lower	0.3	0.0	501.2	2.9	97.5	NI	NI	23.9	16.1	3.5	53.3	5.4	145.2
	upper	0.3	0.0	501.2	2.9	97.5	NI	NI	23.9	16.1	3.5	53.3	5.4	145.2
Skagerrak	lower	0.9	0.1	69.5	15.5	220.8	NI	NI	6.6	19.7	0.5	43.4	1.2	297.1
	upper	0.9	0.1	69.5	15.5	220.8	NI	NI	6.6	19.7	0.5	43.4	1.2	297.1

NI: No information

Annex IV 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**		**2367**	NI
Western	1689	*Belgium*	>1082	NI	>0,305	NI	708	
		France	NI	NI	NI	NI		
Middle	499	*Belgium*			0.014		501	
Eastern	487	*Belgium*			0.177		1158	
Scheldt basin								
Scheldt	**22004**				**~10**		**11139**	1949-2008
		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**						**1 885**	1991-2008
		Belgium	NI		NI			
		Netherlands	NI		NI			
Statistical Information provided by Denmark:								
Vid å	248.3	*DK*	*248*	*81*			300.5	78-07
Brøns å	94.1	*DK*	*94*	*100*		*100*	107.0	74-07
Ribe å	675	*DK*	*675*	*100*		*100*	756.6	33-07
Kongeaen	426.6	*DK*	*427*	*100*		*100*	627.0	90-07
Sneum å	223	*DK*	*223*	*100*		*100*	283.1	66-07
Varde å	815	*DK*	*815*	*100*		*100*	1048.8	69-07
Skjern å	1558.4	*DK*	*1558*	*100*		*100*	2108.2	74-07
Stor å	1096.7	*DK*	*1097*	*100*		*100*	1427.3	71-07
Brede å	290	*DK*	*290*	*100*		*100*	311.0	22-07
Omme å	612	*DK*	*612*	*100*		*100*	743.1	83-07
Grøn å	563	*DK*	*563*	*100*		*100*	606.2	59-07
Total	**10809**	**=Total of Danish rivers discharging to the North Sea**					**8230**	**71-90**
Liver å	249.8	*DK*	*250*	*100*		*100*	226.4	89-07
Uggerby å	347.5	*DK*	*348*	*100*		*100*	351.3	89-07
	1097	**=Total of Danish rivers discharging to the Skagerrak**					**863**	**71-90**
Karup å	626.8	*DK*	*527*	*100*		*100*	635.2	86-07
Jordbro å	110.9	*DK*	*111*	*100*		*100*	110.7	80-07
Skals å	556.4	*DK*	*556*	*100*		*100*	389.7	73-07
Simmersted å	214.9	*DK*	*215*	*100*		*100*	207.6	92-07
Elling å	132.2	*DK*	*132*	*100*		*100*	123.2	89-07
Voer å	238.7	*DK*	*239*	*100*		*100*	247.6	89-07
Ger å	153.8	*DK*	*154*	*100*		*100*	149.6	85-07
Lindeborg å	317.8	*DK*	*318*	*100*		*100*	310.3	83-07
Haslevgard å	75	*DK*	*75*	*100*		*100*	62.3	89-07
Kastbjerg å	96.3	*DK*	*96*	*100*		*100*	70.1	76-07
Guden å	2602.9	*DK*	*2 603*	*100*		*100*	2837.8	78-07
Ry å	285	*DK*	*285*	*100*		*100*	264.7	72-07
	15828	**=Total of Danish rivers discharging to the Kattegat**					**5284**	**71-90**

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Statistical Information provided by France:								
Coastal area	2308	*France*		*100*	0.61	*100*	2764	1989 - 2006
Canche	3895	*France*		*100*	0.38	*100*	4579	1961 - 2006
Somme	5916	*France*		*100*	0.59	*100*	3197	1963 - 2006
Béthune et Bresle	2153	*France*		*100*	0.16	*100*	2074	1998 - 2006
Saane	1718	*France*		*100*	0.16	*100*	2938	1996 - 2006
Seine	64953	*France*		*100*	13.94	*100*	44842	1974 - 2006
Andelle	789	*France*		*100*	0.05	*100*	691	1972 - 2006
Eure	6023	*France*		*100*	0.60	*100*	2246	1971 - 2006
Coastal area	2439	*France*		*100*	0.93	*100*	1599	1989 - 2006
Risle	2545	*France*		*100*	0.16	*100*	1642	1976 - 2006
Dives	1815	*France*		*100*	0.11	*100*	1296	1968 - 2006
Douve	1474	*France*		*100*	0.08	*100*	625	1989 - 2006
Orne	2976	*France*		*100*	0.40	*100*	2506	1984 - 2006
Seulles	547	*France*		*100*	0.06	*100*	346	1970 - 2006
Touques	1311	*France*		*100*	0.10	*100*	1037	1981 - 2006
Vire	2077	*France*		*100*	0.15	*100*	2246	1993 - 2006
Coastal area	1302	*France*		*100*	0.16	*100*	1174	1989 - 2006
Sélune et Sée	1623	*France*		*100*	0.09	*100*	1987	1994 - 2006
Sienne	1135	*France*		*100*	0.09	*100*	1328	1989 - 2006
Aulne	4312	*France*		*100*	0.52	*100*	6653	1969 - 2006
Rance et Couesnon	2848	*France*		*100*	0.27	*100*	2160	1983 - 2006
Coastal area	4961	*France*		*100*	0.49	*100*	3654	1989 - 2006
	119122	=Total of rivers discharging in ZONE II			20.10		91 582	
Blavet et Scorff	4649	*France*		*100*	0.50	*100*	5702	1982 - 2006
Coastal area	2868	*France*		*100*	0.32	*100*	4558	1989 - 2006
Vilaine	10144	*France*		*100*	0.90	*100*	5443	2001 - 2006
Coastal area	3636	*France*		*100*	0.82	*100*	2847	1989 - 2006
Loire	110178	*France*		*100*	6.67	*100*	73526	1868 - 2006
Sèvre Nantaise	4664	*France*		*100*	0.52	*100*	4234	1993 - 2006
Lay	4522	*France*		*100*	0.39	*100*	3456	1971 - 2006
Sèvre Niortaise	4363	*France*		*100*	0.42	*100*	4752	1992 - 2006
Coastal area	291	*France*		*100*	0.02	*100*	239	1989 - 2006
Boutonne	2141	*France*		*100*	0.14	*100*	1754	1989 - 2006
Charente	7526	*France*		*100*	0.43	*100*	5357	1979 - 2006
Coastal area	1172	*France*		*100*	0.09	*100*	446	1989 - 2006
Seudre	988	*France*		*100*	0.06	*100*	432	1971 - 2006
Eyre	2036	*France*		*100*	0.03	*100*	1814	1967 - 2006
Coastal area	2810	*France*		*100*	0.10	*100*	2264	1989 - 2006
Dordogne	14605	*France*		*100*	0.55	*100*	21859	1997 - 2006
Isle	8472	*France*		*100*	0.40	*100*	6912	1971 - 2006
Coastal area	870	*France*		*100*	0.09	*100*	647	1989 - 2006
Dropt	2672	*France*		*100*	0.21	*100*	1989	1989 - 2006
Garonne	38227	*France*		*100*	2.24	*100*	40003	1966 - 2006
Lot	11541	*France*		*100*	0.35	*100*	12614	2000 - 2006
Coastal area	3875	*France*		*100*	0.75	*100*	10983	1989 - 2006
Coastal area	3105	*France*		*100*	0.15	*100*	2501	1989 - 2006
Adour	7977	*France*		*100*	0.37	*100*	7690	1920 - 2006
Bidouze	1041	*France*		*100*	0.04	*100*	938	1989 - 2006
Gaves réunis	5504	*France*		*100*	0.32	*100*	17453	1925 - 2006
Luy	1367	*France*		*100*	0.10	*100*	1814	1966 - 2006
Nive	1153	*France*		*100*	0.12	*100*	3197	1968 - 2006
Coastal area	644	*France*		*100*	0.10	*100*	1825	1989 - 2006
	263040	=total of rivers discharging in ZONE IV			17.19		247 250	
Statistical Information provided by Germany:								
Ems	15552						7690	1941-2006
		Germany	13152	85.00	3.75	85		
		Netherlands	2400	15.00	0.6	15		
Weser	46306	*Germany*	-	-	9.0	-	31541	1941-2003
Elbe	148268		148268	100	25.11	-	74500	1926-2003
		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	-	2391	1974-2006

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Statistical Information provided by Ireland:								
Boyne	2695	Ireland	-	-	NI	-	3280	1940-2006
Liffey	1256	Ireland	-	-	NI	-	1459	1900-2006
								1956-2006
Avoca	652	Ireland	-	0	NI	-	1562.112	1986-2006
Slaney	1762	Ireland	-	-	NI	-	3208.032	1990-2006
	6365	**=Total of main Irish rivers discharging to the Irish Sea**						
Barrow	3067	Ireland	-	-	NI	-	3784.32	1996-2006
Nore	2530	Ireland	-	-	NI	-	3602.016	1972-2006
Suir	3610	Ireland	-	-	NI	-	5889.024	1972-2006
								1953-2006
Blackwater	3324	Ireland	-	-	NI	-	7521.984	1955-2006
Lee	1253	Ireland	-	-	NI	-	3435.264	1957-2006
Bandon	608	Ireland	-	-	NI	-	1858	1975-2006
Deel	486	Ireland	-	-	NI	-	624.672	1982-2006
Maigue	1052	Ireland	-	-	NI	-	1513.728	1990-2006
Shannon Old Chan.	11700	Ireland	-	-	NI	-	4499.712	1990-2006
Shannon Tailrace		Ireland					13307.33	1947-2006
Fergus	1042	Ireland	-	-	NI	-	1 598	1956-2006
	28672	=Total of main Irish rivers discharging to the Celtic Sea						
								1973-06 excl.
Corrib	3138	Ireland	-	-	NI	-	9011.52	86-90, 92-93
Moy	2086	Ireland	-	-	NI	-	5405.184	1974-2006
Erne	4372	**Ireland/UK**	2572/1800	60/40	NI	-	7 333	1951-2006
	9596	**=Total of main Irish rivers dischrging to the Atlantic**						
Statistical Information provided by The Netherlands (with assistance from Germany and Belgium)								
Rhine	185000				2) 55.6		4) 198720	1901-1995
		Switzerland	1) 28000	15	3.0	6		
		France	24000	13	3.7	7		
		Luxembourg	2500	1	0.3	1		
		Germany	105900	57	32.5	65		
		Netherlands	21000	11	10.9	21		
		Belgium	700	0				
		Austria	2500	1				
		Liechtenstein	300	0				
		Italy	100	0				
Meuse	33500				3) 7.15		5) 28080	1911-1995
		France	8500	25	0.50			
		Luxembourg	100	0	0.05			
		Belgium	13150	39	2.00			
		Germany	4300	13	1.00			
		Netherlands	7400	22	3.60			
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						7690	1941-2006
		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	61350	1961-1990
Drammenselva (2)	17034	Norway		100.00	0.2	100	28850	1961-1990
Numedalslågen (3)	5577	Norway		100.00	0.04	100	10200	1961-1990
Skienselva (4)	10772	Norway		100.00	0.11	100	23535	1961-1990
Otra (5)	3738	Norway		100.00	0.03	100	12870	1961-1990
	79039	**=Total of Norwegian rivers discharging to the Skagerrak**						
Orreelva (6)	105	Norway		100.00	0.01	100	335	1961-1990
Suldalslågen (7)	1457	Norway		100.00	0.003	100	7420	1961-1990
	1562	**=Total of Norwegian rivers discharging to the North Sea**						
Orkla (8)	3053	Norway		100.00	0.02	100	5710	1961-1990
Vefsna (9)	4122	Norway		100.00	0.01	100	15655	1961-1990
	7175	**=Total of Norwegian rivers discharging to the Norwegian Sea**						
Altaelva (10)	7373	Norway		100.00	0.005	100	7495	1961-1990
	95149	**Total catchment for main rivers discharging to all four regions**						
	126706	**Total catchment for tributary rivers discharging to all four regions**						
	221855	**Total catchment for monitored rivers**						
Statistical Information provided by Portugal:								
Tejo	80149	Portugal	24380	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

1) Catchment areas rounded off to the nearest hundred km2
2) Population Rhine catchment per country requires further analysis
3) Population Meuse catchment: rough estimates
4) Estimated discharge at outlet: 2.300 m3/s * 24 h/d * 3600 s/h
5) Estimated discharge at outlet: 325 m3/s * 24 h/d * 3600 s/h

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Statistical Information provided by Spain:								
Oyarzun	74	Spain	74	100	0.055	100	166	
Urumea	266	Spain	266	100	0.176	100	633	
Oria	860	Spain	860	100	0.020	100	740	
Cadagua		Spain						
Asua		Spain						
Galindo		Spain						
Ibaizabal		Spain						
Urola	342	Spain	342	100	0.082	100	447	
Deva	531	Spain	531	100	0.146	100	694	
Artibay	106	Spain	106	100	0.016	100	NI	
Lea	81	Spain	81	100	0.010	100	NI	
Oca	132	Spain	132	100	0.022	100	NI	
Butron	175	Spain	175	100	0.024	100	NI	
Barbadun	135	Spain	135	100	0.020	100	NI	
Nervión	1764	Spain	1764	100	0.997	100	1 105	
Pas	620	Spain	606	97				
Eo	818	Spain	715	87				
Saja	955	Spain	955	100	0.104	100	1 166	
Nalón	4866	Spain	4866	100	0.539	100	6 977	
Miera	291	Spain	291	100	0.016	100	352	
Sella	1246	Spain	1246	100	0.035	100	832	
Masma	291	Spain	291	100	0.014	100	404	1970-2005
Oro	189	Spain	189	100	0.007	100	389	1970-2005
Landro	270	Spain	270	100	0.017	100	629	1975-2005
Sor	202	Spain	202	100	0.007	100	528	1996-2005
Mera	127	Spain	127	100	0.007	100	435	1970-2005
Forcadas	68	Spain	68	100	0.000	100	183	1970-2005
Grande de Jubia	182	Spain	182	100	0.004	100	318	1970-2005
Belelle	60	Spain	60	100	0.003	100	1 484	1970-2005
Eume	470	Spain	470	100	0.013	100	1 696	1970-2005
Mandeo	457	Spain	457	100	0.039	100	771	1970-2005
Mero	345	Spain	345	100	0.042	100	456	1984-2005
Allones	516	Spain	516	100	0.049	100	988	1970-2005
Grande	283	Spain	283	100	0.002	100	647	1970-2005
Castro	140	Spain	140	100	0.004	100	167	1970-2005
Jallas	504	Spain	504	100	0.022	100	739	1970-2005
Tambre	1530	Spain	1530	100	0.059	100	3828	1994-2005
Furelos		Spain						
Deza		Spain						
Traba	122	Spain	122	100	0.004	100	316	1970-2005
Ulla	2803	Spain	2803	100	0.104	100	1337	1971-2005
	156	Spain	156	100				
Umia	440	Spain	440	100	0.052	100	846	1970-2005
Lerez	450	Spain	450	100	0.085	100	1249	1970-1999
Verdugo	334	Spain	334	100	0.021	100	484	1970-2005
Miño	17247	Spain	16347	94.8	0.881		25716	1975-95
		Portugal	900	5.2				
Duero	97670	Spain	78960	80.8	3.093			
		Portugal	18710	19.2				
Tajo	80190	Spain	55810	69.6	6.459			
		Portugal	24380	30.4				
Guadiana	67122	Spain	55597	82.8	1.800		8556	1.912 - 1.995
		Portugal	11525	17.2				
Piedras	550	Spain	550	100	0.034	100	61	
Odiel	2417	Spain	2417	100	0.211	100	1 200	1967-1995
Guadaira		Spain						
Tinto	1727	Spain	1727	100	0.090	100	178	1966-1995
Guadalquivir	63241	Spain	63241	100	4.966	100	3423	1942-88
Guadiamar								
Guadalete	3360	Spain	3360	100	0.555	100	413	
TOTAL	**356726**	**Spain**	**301093**	**84.4**	**20.907**	**NI**	**70553**	
		Portugal	**55515**	**15.6**	**NI**			
		TOTAL	**356608**	**100**				

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Statistical Information provided by Sweden:					2005			
Vege å (95)	498	Sweden	498	100	0.0430	100	440	1961-1990
Rönne å (96)	1890	Sweden	1890	100	0.0903	100	2030	1961-1990
Stensån (97)	284	Sweden	284	100	0.0065	100	350	1961-1990
Lagan (98)	6444	Sweden	6444	100	0.1181	100	7410	1961-1990
Genevadsån (99)	225	Sweden	225	100	0.0046	100	350	1961-1990
Fylleån (100)	359	Sweden	359	100	0.0092	100	650	1961-1990
Nissan (101)	2682	Sweden	2682	100	0.0834	100	3690	1961-1990
Suseån (102)	441	Sweden	441	100	0.0074	100	640	1961-1990
Ätran (103)	3343	Sweden	3343	100	0.0657	100	5070	1961-1990
Himleån (104)	214	Sweden	214	100	0.0127	100	330	1961-1990
Viskan (105)	2201	Sweden	2201	100	0.1236	100	2760	1961-1990
Rolfsån (106)	723	Sweden	723	100	0.0281	100	1030	1961-1990
Kungsbackaån (107)	310	Sweden	310	100	0.0404	100	410	1961-1990
Göta älv (108)	50230	Sweden	42780.00	85.20	0.8776	ni	50530	1961-1990
		Norway	7450.00	14.80	ni	ni		
	69844	**=Total of Swedish rivers discharging to the Kattegat**						
Bäveån (109)	302	Sweden	302	100	0.0226	100	350	1961-1990
Örekilsälven (110)	1327	Sweden	1327	100	0.0138	100	2050	1961-1990
Strömsån (111)	253	Sweden	253	100	0.0056	100	390	1961-1990
Enningsdalsälven (112)	704	Sweden	704	100	0.0029	100	1360	1961-1990
	2586	**=Total of Swedish rivers discharging to the Skagerrak**						
Statistical Information provided by the United Kingdom:								
Ness (SC2b)	NI	-	-	-	NI	-	7 600	NI
Conon (SC2b)	NI	-	-	-	NI	-	NI	NI
Baeuly (SC2b)	NI	-	-	-	NI	-	NI	NI
Findhorn (SC2b)	NI	-	-	-	NI	-	NI	NI
Shin (SC2b)	NI	-	-	-	NI	-	NI	NI
Helmsdale (SC2b)	NI	-	-	-	NI	-	NI	NI
Naver (SC2b)	NI	-	-	-	NI	-	NI	NI
Thurso (SC2b)	NI	-	-	-	NI	-	NI	NI
Brora (SC2b)	NI	-	-	-	NI	-	NI	NI
Oykel (SC2b)	NI	-	-	-	NI	-	NI	NI
Nairn (SC2b)	NI	-	-	-	NI	-	NI	NI
Carron (Sutherland) (SC2	NI	-	-	-	NI	-	NI	NI
Wick (SC2b)	NI	-	-	-	NI	-	NI	NI
Halladale (SC2b)	NI	-	-	-	NI	-	NI	NI
Hope (SC2b)	NI	-	-	-	NI	-	NI	NI
Alness (SC2b)	NI	-	-	-	NI	-	NI	NI
Cassley (SC2b)	NI	-	-	-	NI	-	NI	NI
Fleet (SC2b)	NI	-	-	-	NI	-	NI	NI
Berriedale Water (Sc2b)	NI	-	-	-	NI	-	NI	NI
Borgie (SC2b)	NI	-	-	-	NI	-	NI	NI
Forss Water (SC2b)	NI	-	-	-	NI	-	NI	NI
Loch of Stenness (SC2b)	NI	-	-	-	NI	-	NI	NI
Glass (SC2b)	NI	-	-	-	NI	-	NI	NI
Strathy (Sc2b)	NI	-	-	-	NI	-	NI	NI
Mickle Burn (SC2b)	NI	-	-	-	NI	-	NI	NI
Dunbeath Water (SC2b)	NI	-	-	-	NI	-	NI	NI
Spey (SC3)	NI	-	-	-	NI	-	5 600	NI

UK cont.

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Dee (Grampian) (SC3)	NI	-	-	-	NI	-	NI	NI
Don (SC3)	NI	-	-	-	NI	-	NI	NI
Deveron (SC3)	NI	-	-	-	NI	-	NI	NI
Ythan (SC3)	NI	-	-	-	NI	-	NI	NI
Ugie (SC3)	NI	-	-	-	NI	-	NI	NI
Bervie Water (SC3)	NI	-	-	-	NI	-	NI	NI
Lossie (SC3)	NI	-	-	-	NI	-	NI	NI
Tay (SC4)	NI	-	-	-	NI	-	14 000	NI
Earn (SC4)	NI	-	-	-	NI	-	NI	NI
North Esk (Tayside) (SC4	NI	-	-	-	NI	-	NI	NI
South Esk (Tayside) (SC4	NI	-	-	-	NI	-	NI	NI
Eden SC4)	NI	-	-	-	NI	-	NI	NI
Lunan Water (SC4)	NI	-	-	-	NI	-	NI	NI
Dighty Water (SC4)	NI	-	-	-	NI	-	NI	NI
Tweed (SC5)	NI	-	-	-	NI	-	NI	NI
Forth (SC5)	NI	-	-	-	NI	-	4 300	NI
Whiteadder Water (SC5)	NI	-	-	-	NI	-	NI	NI
Leven (Fife) (SC5)	NI	-	-	-	NI	-	NI	NI
Almond (SC5)	NI	-	-	-	NI	-	NI	NI
Esk (Lothian) (SC5)	NI	-	-	-	NI	-	NI	NI
Tyne (SC5)	NI	-	-	-	NI	-	3 900	NI
Allan Water (SC5)	NI	-	-	-	NI	-	NI	NI
Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Carron (Falkirk) (SC5)	NI	-	-	-	NI	-	NI	NI
Avon (SC5)	NI	-	-	-	NI	-	NI	NI
Eye Water (SC5)	NI	-	-	-	NI	-	NI	NI
Water of Leith (SC5)	NI	-	-	-	NI	-	NI	NI
Tweed (E1)	NI	-	-	-	NI	-	NI	NI
Coquet (E1)	NI	-	-	-	NI	-	NI	NI
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
Tot.N.Sea (N) catch.	50000						89300	1960 to 1990
Aire (E8)	NI	-	-	-	NI	-	NI	NI
Derwent (E8)	NI	-	-	-	NI	-	NI	NI
Don (E8)	NI	-	-	-	NI	-	NI	NI
Ouse (E8)	NI	-	-	-	NI	-	NI	NI
Wharfe (E8)	NI	-	-	-	NI	-	NI	NI
Ancholme (E8)	NI	-	-	-	NI	-	NI	NI
Trent (E8)	NI	-	-	-	NI	-	7800	NI
Idle (E8)	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

UK Cont.

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 (S) catch.	62000						32300	1960 to 1990
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
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	1960-1990
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

UK Cont.

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	1960-1990
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
Eden (E30)	NI	-	-	-	NI	-	4320	NI
Nith (SC1)	NI	-	-	-	NI	-	NI	NI
Annan (SC1)	NI	-	-	-	NI	-	NI	NI
Dee (Solway) (SC1)	NI	-	-	-	NI	-	NI	NI
Esk (Solway) (SC1)	NI	-	-	-	NI	-	NI	NI
Cree (SC1)	NI	-	-	-	NI	-	NI	NI
Bladnoch (SC1)	NI	-	-	-	NI	-	NI	NI
Water of Luce (SC1)	NI	-	-	-	NI	-	NI	NI
Urr Water (SC1)	NI	-	-	-	NI	-	NI	NI
Lochar Water (SC1)	NI	-	-	-	NI	-	NI	NI
Newry (NI2)	NI				NI	-	NI	NI
Quoile (NI2)	NI				NI	-	NI	NI
Lagan (NI2)	NI				NI	-	NI	NI
Tot.Irish Sea catch.	35000						48400	1960-1990
Clyde (SC2)	NI	-	-	-	NI	-	4 000	NI
Awe (SC2)	NI	-	-	-	NI	-	NI	NI
Leven (Loch Lomond (SC	NI	-	-	-	NI	-	NI	NI
Ayr (SC2)	NI	-	-	-	NI	-	NI	NI
Irvine (SC2)	NI	-	-	-	NI	-	NI	NI
Kelvin (SC2)	NI	-	-	-	NI	-	NI	NI
Stinchar (SC2)	NI	-	-	-	NI	-	NI	NI
Doon (SC2)	NI	-	-	-	NI	-	NI	NI
Water of Girvan (SC2)	NI	-	-	-	NI	-	NI	NI
White Cart Water (SC2)	NI	-	-	-	NI	-	NI	NI
Garnock (SC2)	NI	-	-	-	NI	-	NI	NI

UK cont.

Etive (SC2)	NI	-	-	-	NI	-	NI	NI
Eachaig (SC2)	NI	-	-	-	NI	-	NI	NI
Black Cart Water (SC2)	NI	-	-	-	NI	-	NI	NI
Gryfe (SC2)	NI	-	-	-	NI	-	NI	NI
Add (SC2)	NI	-	-	-	NI	-	NI	NI
Lochy (SC2a)	NI	-	-	-	NI	-	5 400	NI
Ewe (SC2a)	NI	-	-	-	NI	-	NI	NI
Shiel (SC2a)	NI	-	-	-	NI	-	NI	NI
Leven (Lochaber) (SC2a)	NI	-	-	-	NI	-	NI	NI
Morar (SC2a)	NI	-	-	-	NI	-	NI	NI
Inver (SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (Wester Ross (SC	NI	-	-	-	NI	-	NI	NI
Gruinard (SC2a)	NI	-	-	-	NI	-	NI	NI
Broom (SC2a)	NI	-	-	-	NI	-	NI	NI
Kirkaig (SC2a)	NI	-	-	-	NI	-	NI	NI
Ling (SC2a)	NI	-	-	-	NI	-	NI	NI
Laxford (SC2a)	NI	-	-	-	NI	-	NI	NI
Abhainn Ghriomarstaidh	NI	-	-	-	NI	-	NI	NI
Aline (SC2a)	NI	-	-	-	NI	-	NI	NI
Loch Linnhe (SC2a)	NI	-	-	-	NI	-	NI	NI
Bush (NI1)	NI				NI		NI	NI
Bann (NI1)	NI				NI		7900	NI
Roe (NI1)	NI				NI		NI	NI
Faughan (NI1)	NI				NI		NI	NI
Burn Dennet NI1	NI				NI		NI	NI
Mourne (NI1)	NI				NI		NI	NI
Finn (NI1)	NI				NI		NI	NI
Tot.Atlantic catchm.	42000						49700	1960-1990

***) LTA = Long-term average**

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OSPAR's vision is of a clean, healthy and biologically diverse North-East Atlantic used sustainably

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