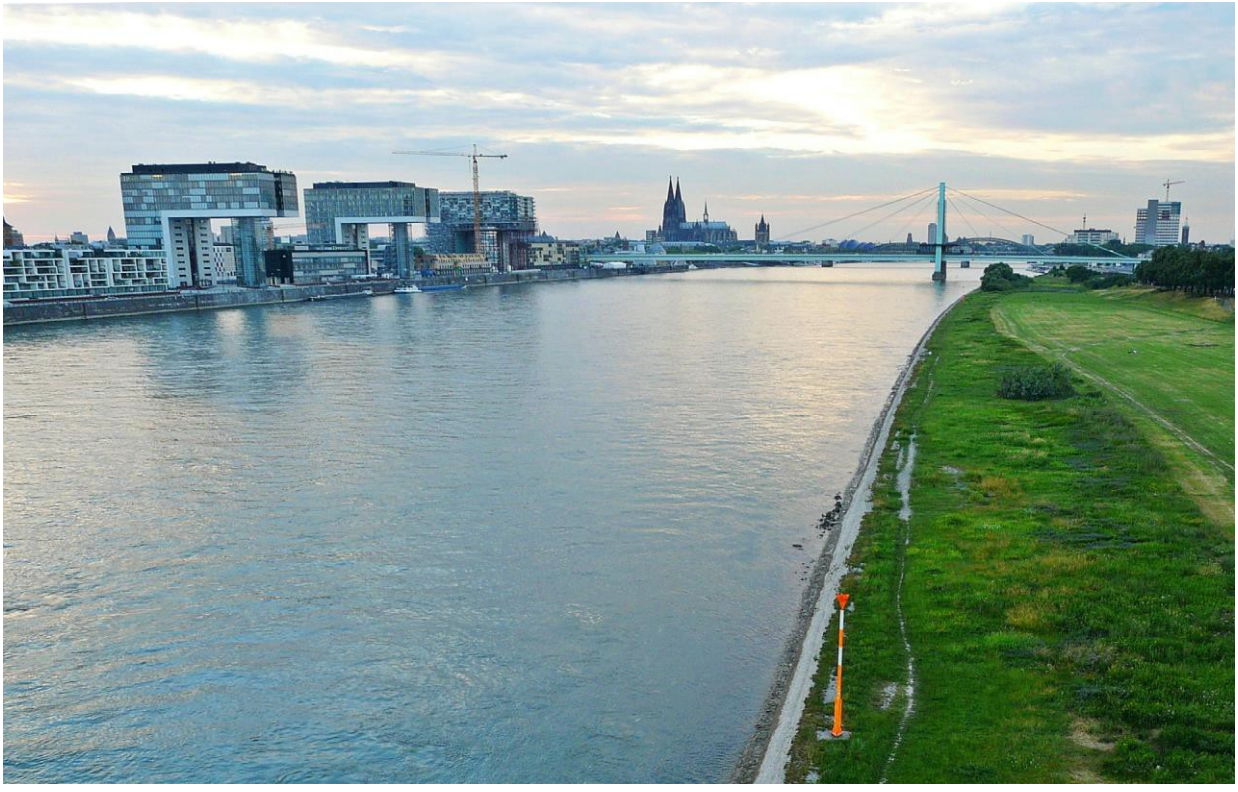
OSPAR COMMISSION

Comprehensive Study and assessment of Riverine Inputs and Direct Discharges (RID) – 2019 data report

OSPAR Contracting Parties' RID 2019 Data Report



2021

Monitoring and Assessment Series

OSPAR Contracting Parties' RID 2019 Data Report

24 February 2021

OSPAR Commission
for the Protection of the Marine Environment
of the North-East Atlantic

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OSPAR COMMISSION

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. The Contracting Parties are Belgium, Denmark, the European Union, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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. Les Parties contractantes sont l'Allemagne, la Belgique, le Danemark, l’Espagne, 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, la Suisse et l’Union européenne.

Contents

Contents **3**

Executive summary **4**

Récapitulatif **4**

Glossary **6**

Introduction **8**

Submission of RID data for 2019 ..... **10**

Status of historical data submission (1990-2018) **11**

Dealing with incomplete datasets **12**

Preliminary results for reporting year 2019 ..... **13**

Data corrections performed by the RID Data Centre in 2020 ..... **39**

Annex I. Annual Overview Tables for the reporting year 2019 (AA Tables) **40**

AA Table 1a. 2019 41

AA Table 1b. 2019 42

AA Table 2. 2019 43

AA Table 3. 2019 44

AA Table 4a. 2019 45

AA Table 4b. 2019 46

Annex IV Statistical information on river catchment areas **47**

National 2019 RID data reports (excel and word files)
https://odims.ospar.org/en/submissions/ospar_rid_data_reports_2019_01_001

Executive summary

This report presents the results of monitoring undertaken by OSPAR Contracting Parties for the Riverine Inputs and Direct Discharges Programme (RID) during 2019. 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 an overall reduction in flow normalized riverine loads of nutrients and metals, although there are large variations from year to year. Direct discharges of nutrients and metals are also declining in many areas, with some exceptions. For 2019, increase in direct discharges was reported in some areas, but these have no effect on the general trends, since the reported direct discharges are smaller than the riverine inputs in almost all the cases. Only direct discharges from unmonitored areas, including areas downstream of sampling points and discharges directly to the sea are included. The direct discharges upstream of the sampling points are included in the riverine inputs.

The report also gives an overview of the different efforts carried out by both CPs and the RID Data Centre to improve the data quality of the programme. Despite these efforts, the long-term data series still have some gaps and inconsistencies, which is unfortunate. Hence, the Report also gives recommendations on how to handle incomplete or missing datasets. The CPs are asked to scrutinize the historical RID data series, and correct them whenever needed, to improve the data quality in the RID database and, hence, improve the forthcoming in 2023 OSPAR Quality Status Report.

Récapitulatif

Ce rapport présente les résultats de la surveillance entreprise par les Parties contractantes OSPAR dans le cadre du programme sur les apports fluviaux et les rejets directs (RID) au cours de l'année 2019. L'objectif du programme RID est d'évaluer, aussi précisément que possible, tous les apports fluviaux et les rejets directs de polluants sélectionnés dans les eaux de la Convention sur une base annuelle, et de contribuer à la mise en œuvre du Programme conjoint d'évaluation et de surveillance (JAMP). La zone de la Convention OSPAR est divisée en cinq régions principales : les eaux arctiques, la mer du Nord au sens large, les mers celtes, le golfe de Gascogne et la cote ibérique, et l'Atlantique au large.

Les déterminants faisant l'objet d'une surveillance obligatoire sont 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 sur une base volontaire. Les sources de rejets directs peuvent inclure les stations d'épuration des eaux usées, l'industrie et l'aquaculture ;

certaines Parties contractantes déclarent également les écoulements urbains. Toutes les Parties contractantes ne déclarent pas leurs rejets directs.

Depuis le lancement du programme en 1990, de nombreuses Parties contractantes font état d'une réduction globale des charges fluviales de nutriments et de métaux normalisées en fonction du débit, bien qu'il y ait de grandes variations d'une année à l'autre. Les rejets directs de nutriments et de métaux sont également en baisse dans de nombreuses régions, à quelques exceptions près. Pour 2019, une augmentation des rejets directs a été signalée dans certaines zones, mais elle n'a aucun effet sur les tendances générales, car les rejets directs notifiés sont inférieurs aux apports fluviaux dans presque tous les cas. Seuls les rejets directs provenant de zones non surveillées, y compris les zones en aval des points d'échantillonnage et les rejets directement dans la mer, sont inclus. Les rejets directs en amont des points d'échantillonnage sont inclus dans les apports fluviaux.

Le rapport donne également un aperçu des différents efforts déployés par les Parties contractantes et le Centre de données du RID pour améliorer la qualité des données du programme. Malgré ces efforts, les séries de données à long terme présentent encore quelques lacunes et incohérences, ce qui est regrettable. Par conséquent, le rapport donne également des recommandations sur la façon de traiter les séries de données incomplètes ou manquantes. Il est demandé aux Parties contractantes d'examiner les séries de données historiques du RID, et de les corriger si nécessaire, afin d'améliorer la qualité des données dans la base de données du RID et, par conséquent, d'améliorer le prochain Bilan de santé d'OSPAR en 2023 (QSR2023).

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

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).

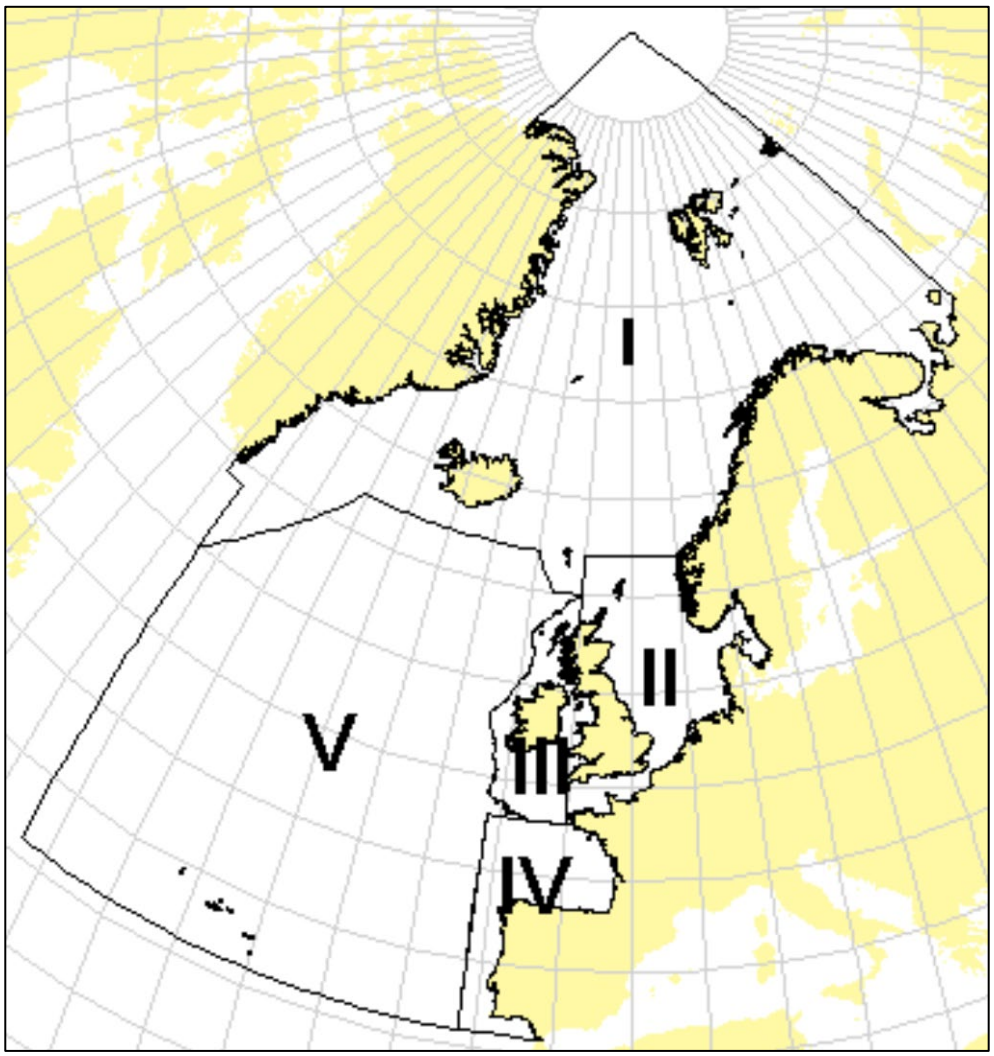

Figure 1. OSPAR Maritime Area and Regions. I: Arctic Waters, II: Greater North Sea, III: Celtic Seas, IV: Bay of Biscay and V: Wider Atlantic.

[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 2019

Table 2 provides an overview of the status of 2019 RID data submitted by Contracting Parties by 22 February 2021. All Contracting Parties except Denmark had a deadline of 1 November 2020 for submitting data and text reports. Denmark had a deadline of 1 December 2020.

Table 2. Overview of submitted 2019 RID information by Contracting Parties (green colour: submitted)

Contracting Party	RID 2019 written report submitted	RID 2019 Data submitted	1990-2019 Charts submitted	RID 2019 Data validated	Comments
Belgium					
Denmark					Delay reported (issue with laboratory analyses).
France					Data are being validated.
Germany					German data are not included because only complete data sets can be reported and at the present time all input data are available except for the river Elbe
Iceland					
Ireland					Data are being validated
Netherlands					
Norway					
Portugal					Data partly submitted (Table 7)
Spain					Delay reported (due to COVID)
Sweden					
UK					

Green = data submitted; Light Green – data submitted but incomplete or undergoes further quality check; White = no data submitted; Grey = no data will be submitted by this Contracting Party from this source).

Table 3. Overview of information for 2019 on inputs to the OSPAR Maritime Area reported by Contracting Parties

Contracting Party	Sewage effluents	Industrial effluents	Aquaculture discharges	Other direct discharges	Monitored rivers	Un-monitored rivers	Total rivers
Belgium							
Denmark							
France							
Germany							
Iceland							
Ireland							
Netherlands							
Norway							
Portugal							
Spain							
Sweden							
UK							

(Green = data submitted; Light Green – data submitted but incomplete or undergoes further quality check; White = no data submitted; Grey = no data will be submitted by this Contracting Party from this source).

Overview tables 1-4 (AA-tables) for 2019 are given in Annex I.

Status of historical data submission (1990-2018)

In 2018, 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 data from 1990 to 2018 is provided in Table 4 (per 22 February 2021).

Table 4. Overview of status of the historical data in the RID database (1990-2018).

Contracting Party	Status for data 1990-2018	Validation pending	Other remaining tasks
Belgium	All data up to and including 2018 validated and confirmed.		Data resubmission is expected for years 2011-2017 due to the trans-boundary issues with the Netherlands[2].
Denmark	All data up to and including 2017 validated and confirmed.		It is expected that further corrections and re-reporting will be needed (most probably for years 2007-2014) for TN and probably TP, due to laboratory measurement challenges. TN and TP data are being corrected.
France	All the data tables for years 2010-12 and 2016 were re-reported and imported in the database in 2020. Tables 6c for years 2011-2018 were re-reported, imported and validated in 2020. All data up to and including 2018 validated and confirmed.		Borders for some OSPAR areas in France are to be changed in 2021, so most probably data re-reporting will be needed.
Germany	All data up to and including 2018 validated and confirmed.		No further action needed
Iceland	Data from 1990-2015 received, but not all of them in RID format. Riverine loads for 2008-2016 were re-reported in February 2019 but not in RID format.		Historical data needs to be transferred to the correct format; NIBIO and Iceland are in contact.
Ireland	Tables 6a and 6c for 1997-2001 were resubmitted and imported in the database in January 2020. These data were validated.		Ireland will re-report historical runoff data after the RID principles will be updated with recommendations on flow rate calculations.
Netherlands	All data up to and including 2018 are in the database, but with some errors.		Netherland is to re-report historical data from 1990-2010, and possibly from 2010 to 2018. See also the issue of the transboundary Canal Gent-Terneuzen to Wester Scheldt, mentioned for Belgium.
Norway	All data up to and including 2018 validated and confirmed.		Data re-reported in 2018 incorporated the changes between the borders of the Barents Sea and the Norwegian Sea. No further action needed.
Portugal	The status of historical data submission is under revision.		PT representative and NIBIO are working to start the data submission and re-submit historical data.
Spain	In January 2020, Tables 5 and 6 and discharge data (Tables 9) were re-submitted for 2011-2016. Data were imported in the database and validated. All data up to and including 2018 validated and confirmed.		No further action needed
Sweden	Historical data from 1990 until 2017 were re-reported and imported in the database in April 2020.	1990-2017	Sweden is to validate historical data in 2021.

[2] During the 2019 Input Meeting the partners agreed on how to handle the Canal Gent-Terneuzen to Wester Scheldt. Canal Ghent-Terneuzen is monitored and reported both by Belgium and the Netherlands; the latter at a station located downstream of the Belgian station. Belgium will report the Belgian inputs only in Table 6a, and exclude them in Table 6c to avoid double counting of the inputs in the calculation of the total loads. Additional notes:

- The loads of the Scheldt are partial loads from Belgium to the North Sea, to be added to the loads from the Netherlands.
- The BE Country Outflow does not include the loads from the Meuse River (basin) that are also discharged to the North Sea, but monitored by the Netherlands at a downstream point.
- The Netherlands do not report loads and flows for 223: Canal Ghent-Terneuzen and 289: The Southern Delta Coast.

Contracting Party	Status for data 1990-2018	Validation pending	Other remaining tasks
UK	Data up to and including 2018 are validated and confirmed.		No further action needed.

Apart from the data gaps in Table 4, there are still several 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 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. CP: Contracting Party

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).	CP 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	CP 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)	CP is asked to contact NIBIO to discuss solutions.
	Unit error in some of the data	CP 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.	CP should report such changes in the word reports. CP 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 in 2019 is given.

Dealing with incomplete datasets

At INPUT 2020 the RID Data Centre suggested some solutions on how the Contracting Parties could reduce the challenge with **incomplete or missing datasets**. The RID Data Centre would like to remind the Contracting Parties of the suggested solutions discussed at the INPUT 2020:

- For Contracting Parties where monitoring of rivers is done in a rota system, unmonitored rivers should be estimated in the total inputs, so that the data of total inputs is consistent from year to year. This can, e.g., be done by using the most recent concentration data from former years combined with the present year's water discharge data to calculate loads. *Estimated/interpolated values should be marked accordingly in the comment section as* ***estimated/interpolated.***

- For Contracting Parties with inconsistent data on direct discharges, an extrapolation and interpolation system should be employed. *Estimated/interpolated values should be marked accordingly in the comment section as* ***estimated/interpolated****.*
- Contracting Parties that deliver heavy metal data in the dissolved phase should indicate it in the comments as indicated in the example below, and preferably re-submit their historical data accordingly.

Tables 5. and 6.

ID	scharge area		Cd [t/a]	Hg [t/a]	Cu [t/a]	Pb [t/a]	Zn [t/a]
243	Ijzer	lower					
		upper					
		mean	0.009	0.002	0.556	0.046	0.716
		comment	Cd d	Hg d	Cu d	Pb d	Zn d

ID	Discharge area		Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]
243	Ijzer	lower					
		upper					
		minimum	0.05	0.01	0.5	0.25	3.75
		maximum	0.05	0.01	8.3	0.25	7.5
		more than 70% > D.L.	N	N	Y	N	N
		n	47	47	47	47	47
		info	dissolved	dissolved	dissolved	dissolved	dissolved
		st.Dev.	0	0	1.6584	0	1.6781

Preliminary results for reporting year 2019

Graphs for riverine loads and direct discharges (1990-2019) are given in Figures 2-5, separately for each Contracting Party that could complete their data report for 2019 and have not reported ongoing investigation of possible errors in their data.

Based on the written reports by the Contracting Parties, the following conclusions can be given:

For **Belgium**, flow data have been revised and completed in 2020, and data gaps are filled with estimated values. The average and minimal flows have dropped significant during the last 3 years, whilst drought periods show increase. Compared with the coastal region, loads from the Scheldt basin, and in particular the Scheldt river, are considerably higher. This river covers the largest part of the Belgian territory draining to the North Sea. Looking at the nitrogen and phosphorous trends, a decrease of loads is detected compared to the previous years, although less prominent for phosphorus as for nitrogen.

Iceland stated that there is nothing special to report for year 2019.

In **Ireland** the flow was above or close to the long-term average in nearly all rivers in 2019. Normalised loads of total phosphorus (TP) have shown significant reductions excluding the Bandon River. Normalised loads of Molybdate Reactive Phosphate (MRP) also show significant reductions in all rivers (excluding the Corrib, Erne and Moy). For normalised total nitrogen (TN) loads, all rivers showed a negative trend apart from the Slaney, Shannon, Erne and Barrow Rivers. Overall loads have been showing a statistical decrease over time. These reductions however have been slowing down in recent years and in some cases the significant reduction has been weakened.

According to the trend analyses for the total loads of nutrients from rivers Rhone and Meuse (the **Netherlands**) to the North Sea, between 1990 and 2019 the loads dropped from 330 (TN) and 21 (TP) kilotons to 232 and 6 kilotons, respectively.

Total loads to **Norwegian** maritime areas are compatible with those from previous years. Notable changes are an "artificial" increase in SPM discharges from industry (due to more complete data reporting this year) and apparently high mercury concentrations in some rivers, the reason is unknown.

Sweden reported quite high water flow resulting in higher transport of most substances. The dominating point sources in the Swedish OSPAR area are the wastewater treatment plant Ryaverket, which serves a large area around Göteborg and the area is the pulp and paper industry, Södra Cell Värö. Ten additional industrial point sources in the OSPAR area have started reporting some environmental discharges to water and have been included in the reporting.

The **United Kingdom** reported a mixed picture of riverine flow across the UK regions. Overall there has been a slight increase compared with 2018 (6%). In several areas, flows have decreased (Channel and North Sea South), but the flows are slightly higher than the long-term average. As for the direct discharges, several UK regions have decided to reduce monitoring for industrial and sewage sampling areas because results have been low, or "less than detection limit" for several years, so it is difficult to provide a robust comparison between one year and another. The averaged overall load is slightly higher than in 2018 due to increased rainfall, particularly on the western areas of the UK.

There were no changes in the methodology in any of the countries reporting before February 22, 2021.

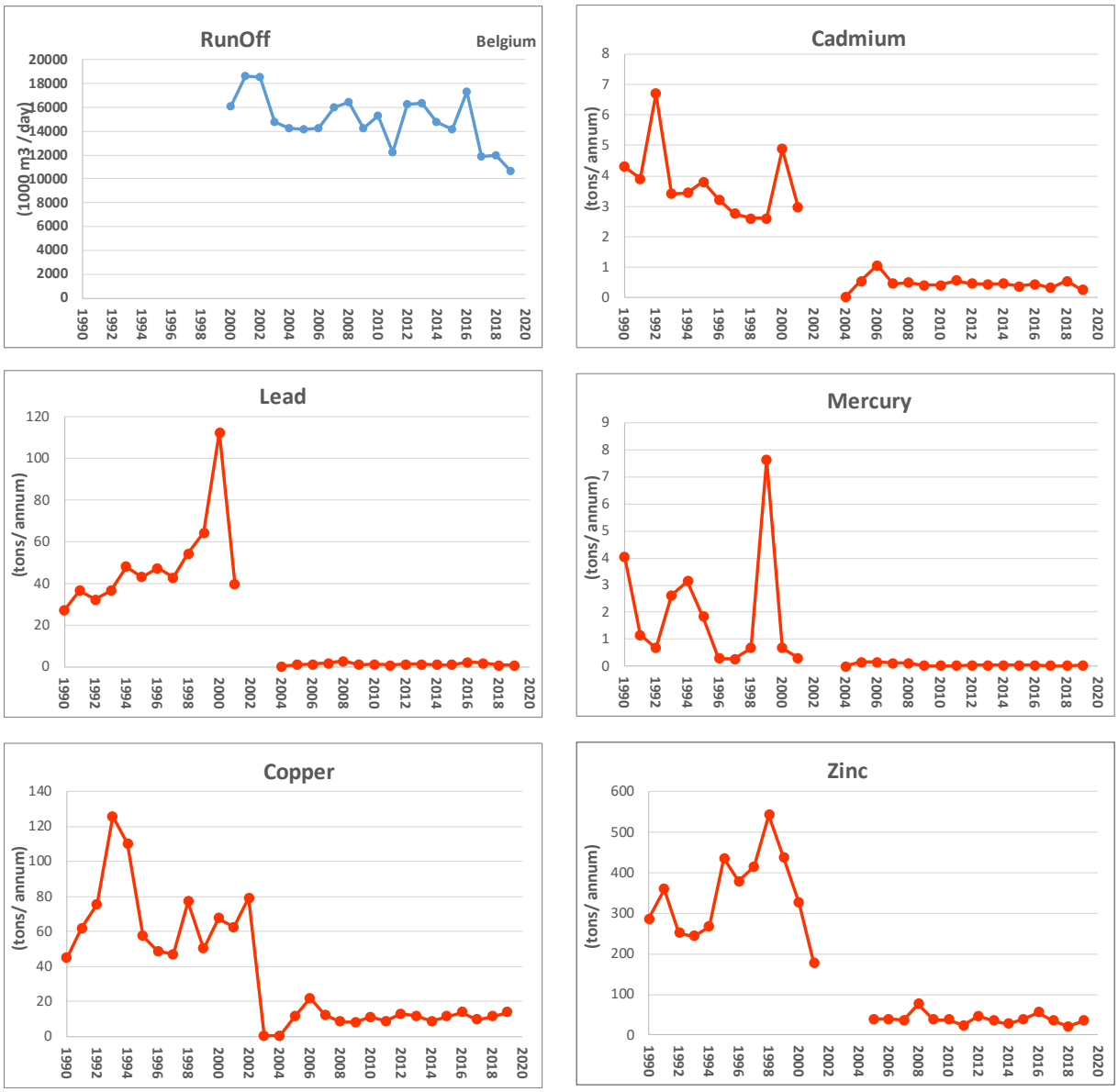

Figure 2a. Riverine inputs (tons per annum) of five metals*, PCBs and g-HCH (kg per annum) from **Belgium** to maritime areas, and total runoff (10^6 m^3 per day)

*Note that since 2004 Belgium has only reported the dissolved phase of metals.

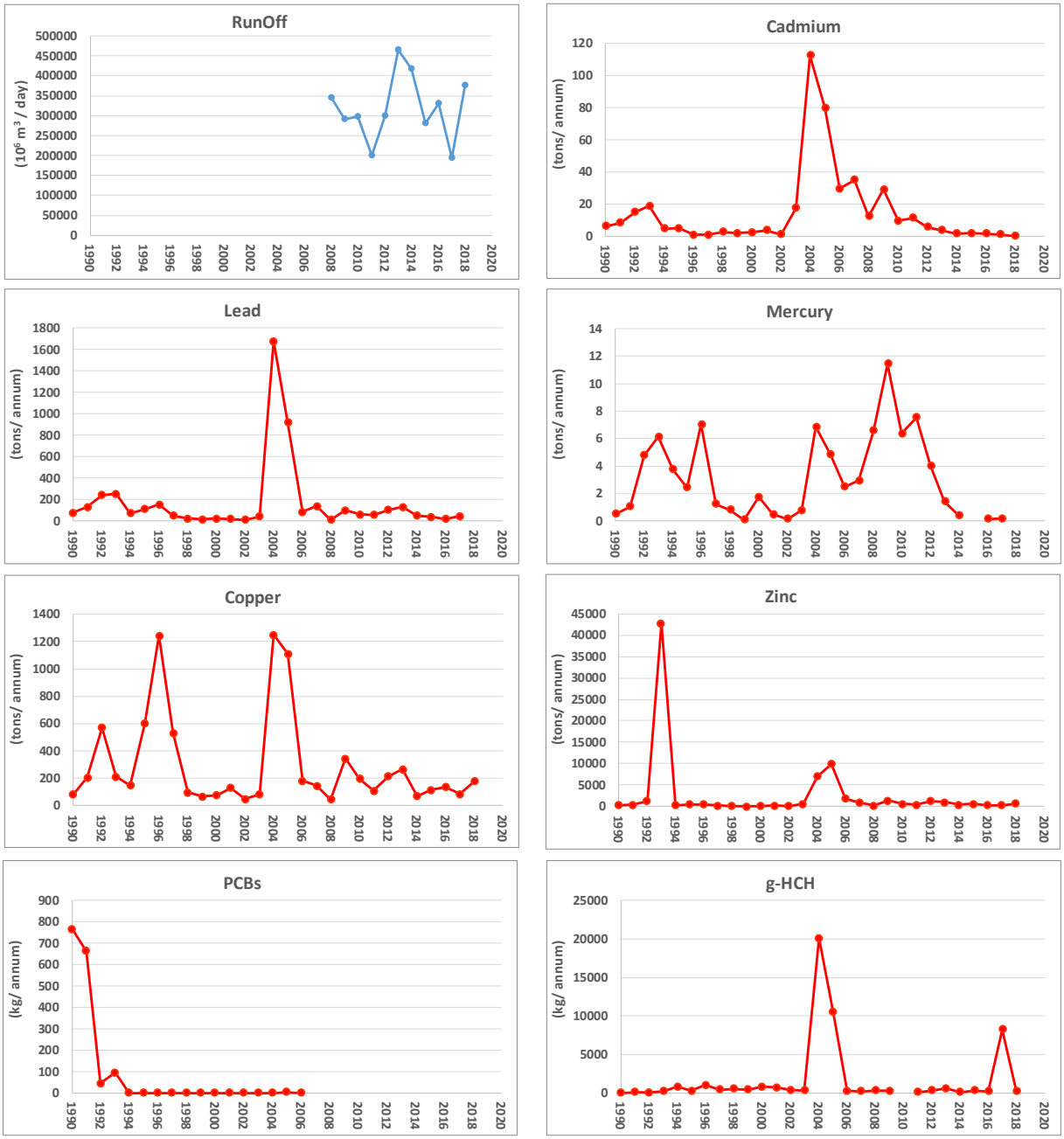

Figure 2b. Riverine inputs (tons per annum) of five metals*, PCBs and g-HCH (kg per annum) from **France** to maritime areas, and total runoff (10^6 m^3 per day)

*Note that since 2008 France has only reported the dissolved phase of metals.

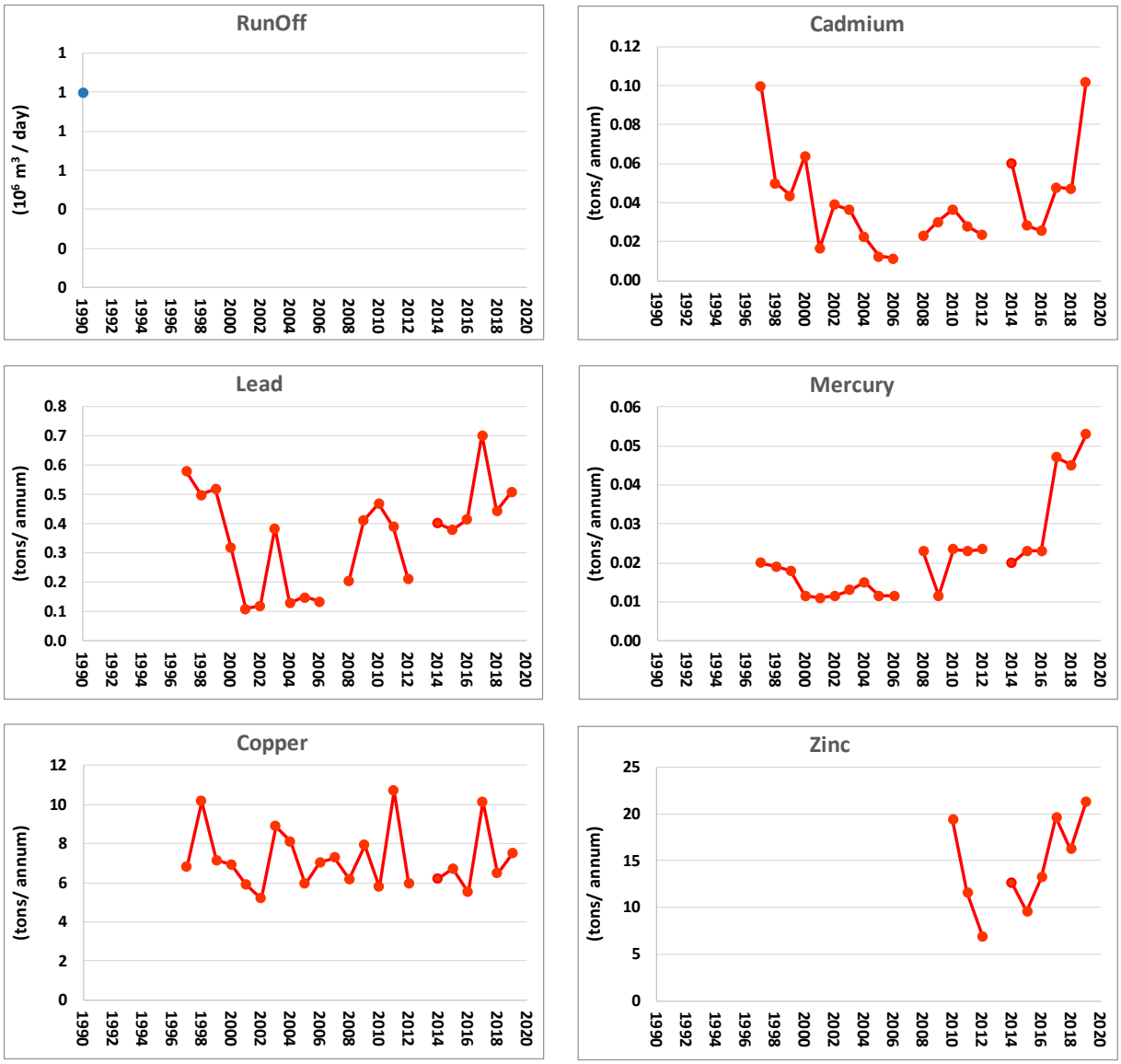

Figure 2c. Riverine inputs (tons per annum) of five metals* from **Iceland** to maritime areas, and total runoff (10^6 m^3 per day). NIBIO is discussing the runoff calculation methods with Iceland.

*Note that since 1990 Iceland has only reported the dissolved phase of metals.

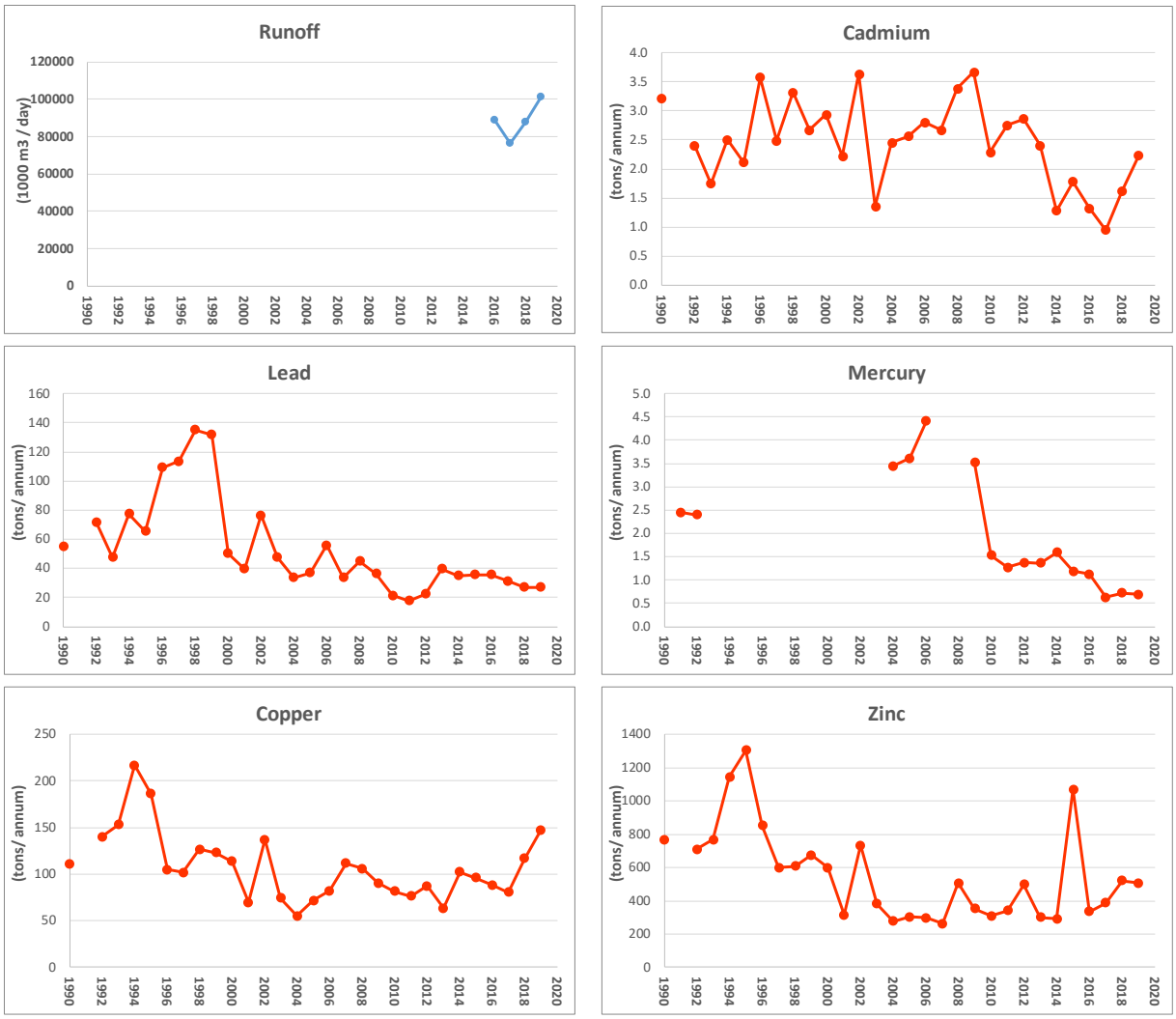

Figure 2d. Riverine inputs (tons per annum) of five metals from **Ireland** to maritime areas, and total runoff (10^6 m^3 per day). NIBIO is discussing the runoff calculation methods with Ireland.

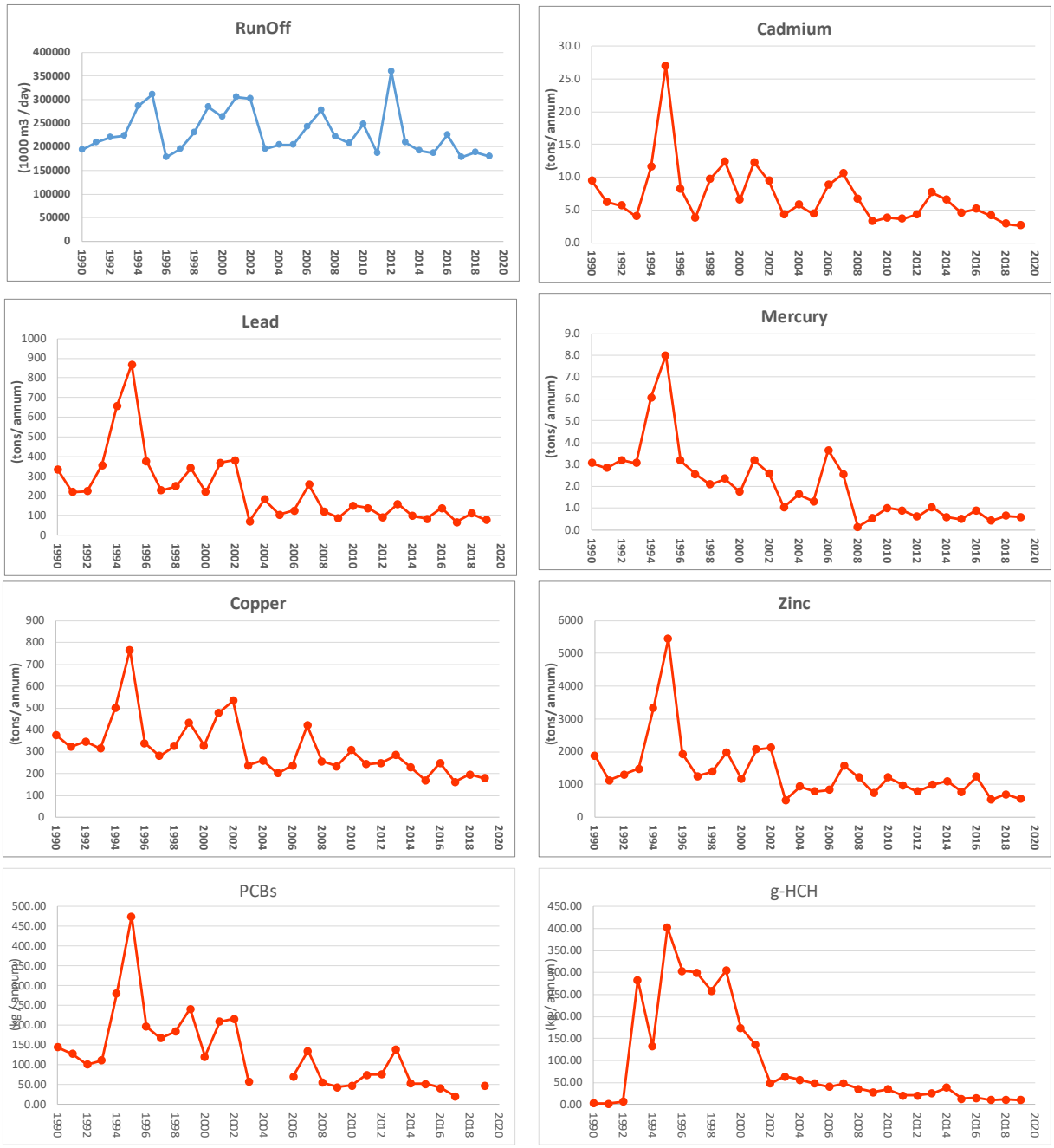

Figure 2e. Riverine inputs (tons per annum) of five metals, PCBs and g-HCH (kg per annum) from the **Netherlands** to maritime areas, and total runoff (10^6 m^3 per day)

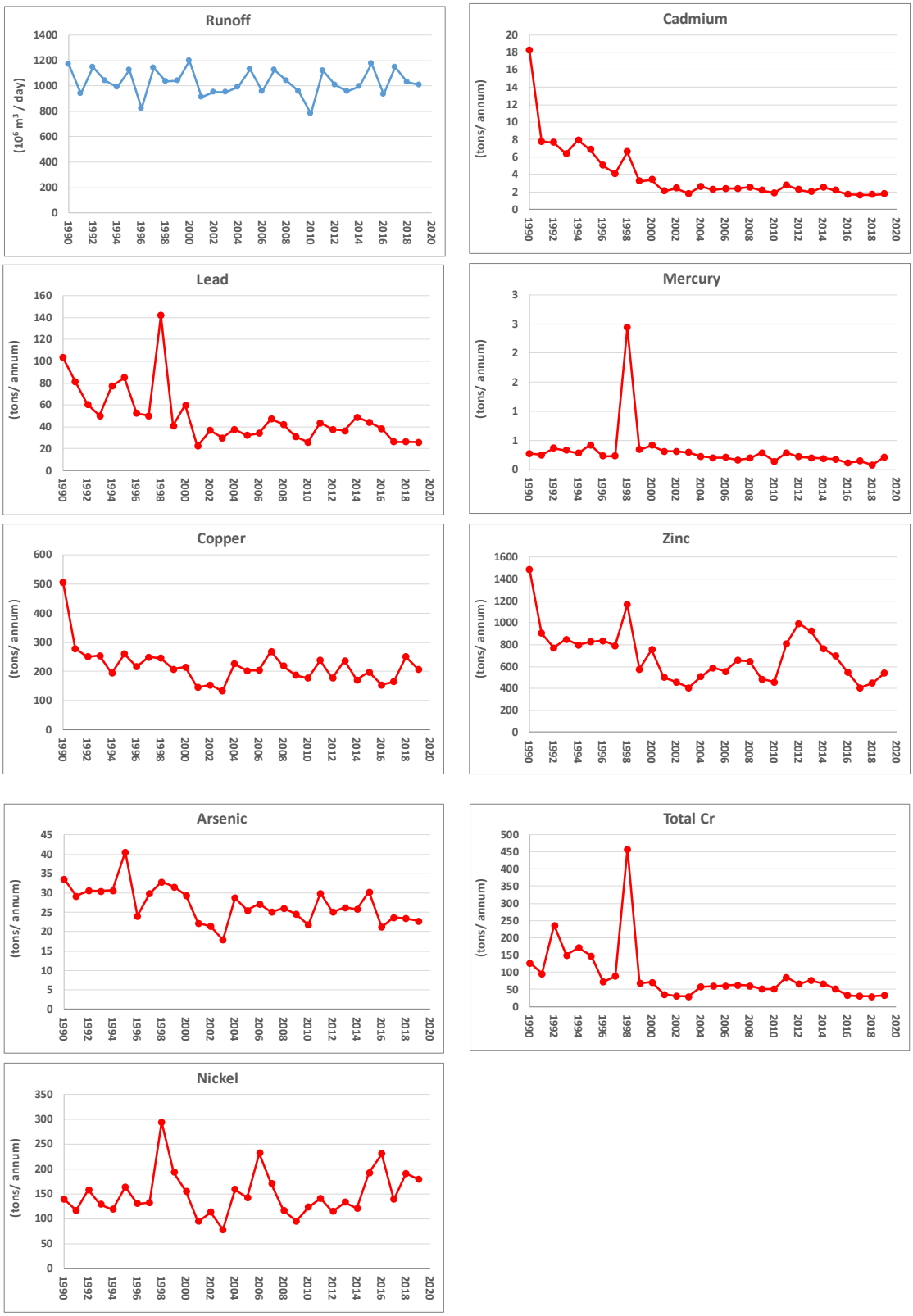

Figure 2f. Riverine inputs (tons per annum) of eight metals from **Norway** to maritime areas, and total runoff (10^6 m^3 per day)

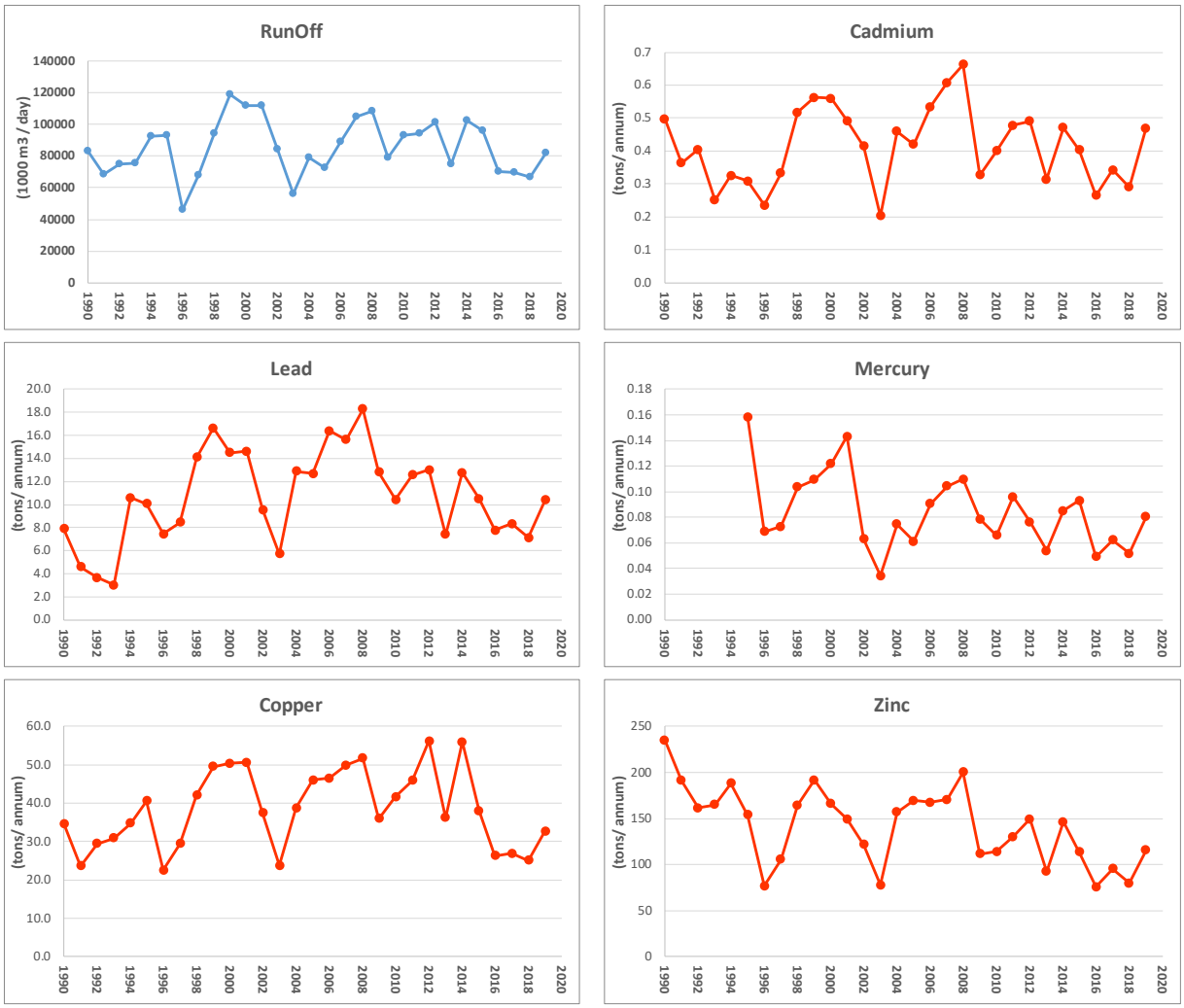

Figure 2g. Riverine inputs (tons per annum) of five metals* from **Sweden** to maritime areas, and total runoff (10^6 m^3 per day).

*Note that since 1990 Sweden has reported an acid-soluble phase of metals.

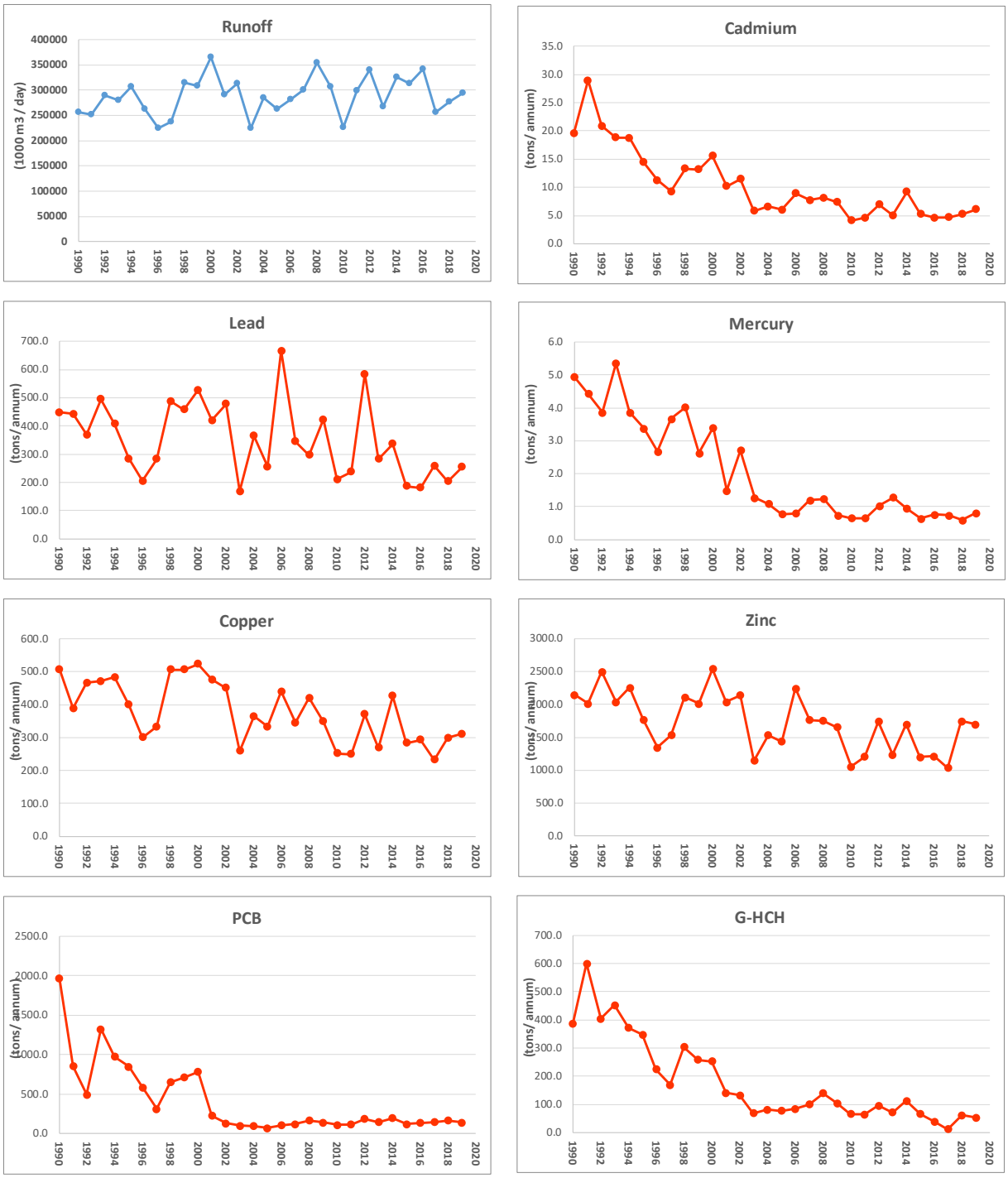

Figure 2h. Riverine inputs (tons per annum) of five metals, PCBs and g-HCH (kg per annum) from the **United Kingdom** to maritime areas, and total runoff (10^6 m^3 per day)

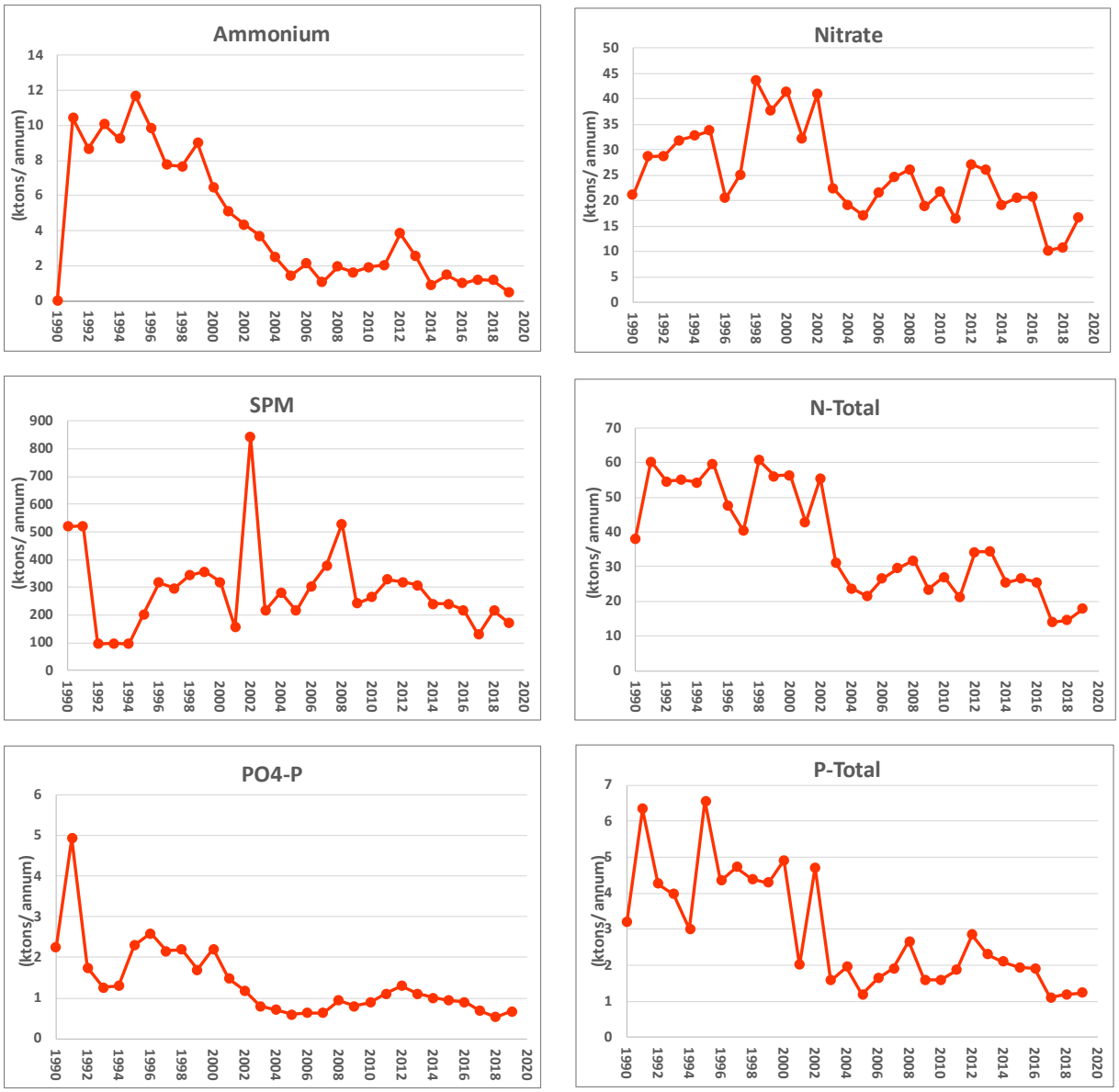

Figure 3a. Riverine inputs (ktons per annum) of nutrients and sediments from **Belgium** to maritime areas.

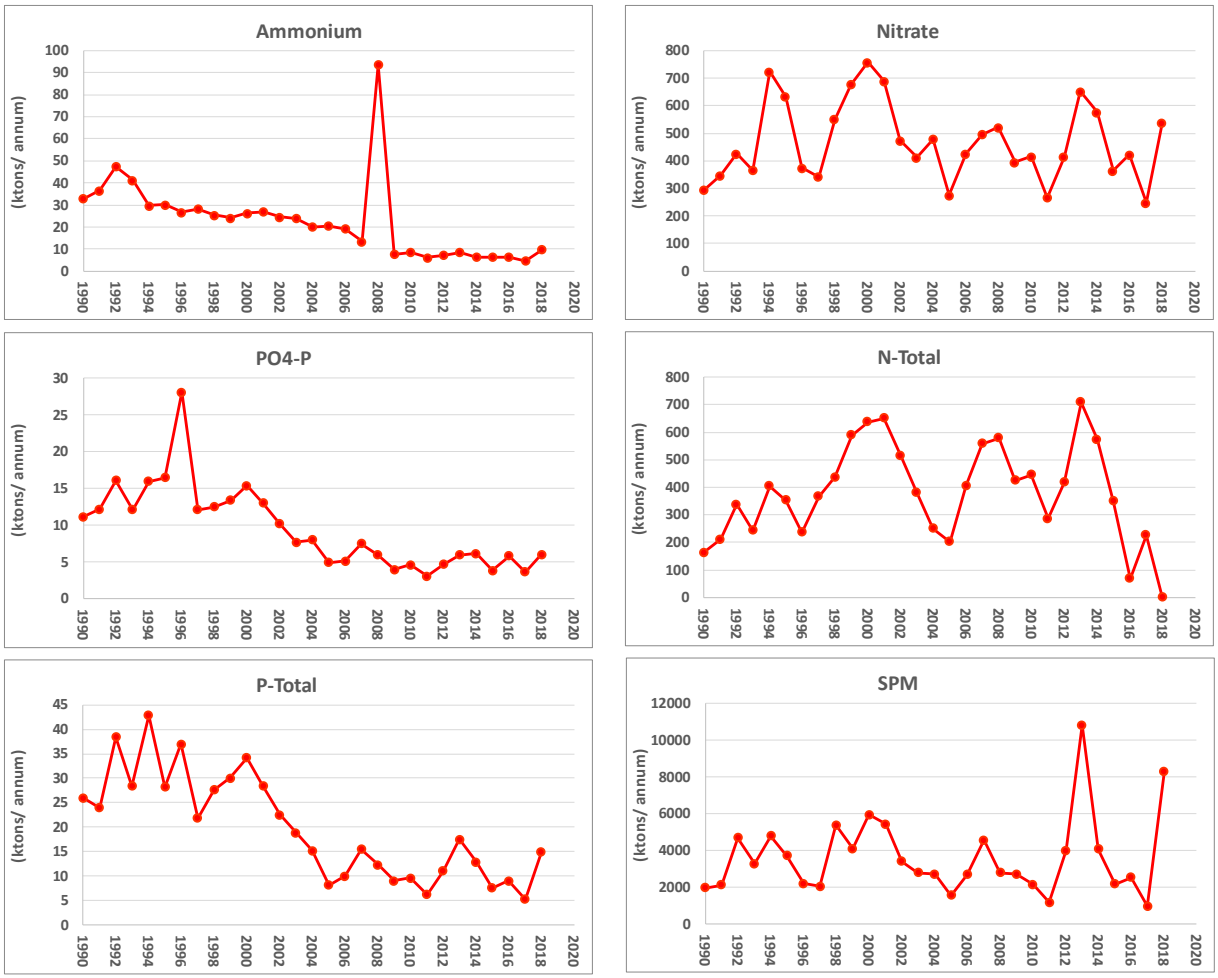

Figure 3b. Riverine inputs (ktons per annum) of nutrients and sediments from **France** to maritime areas.

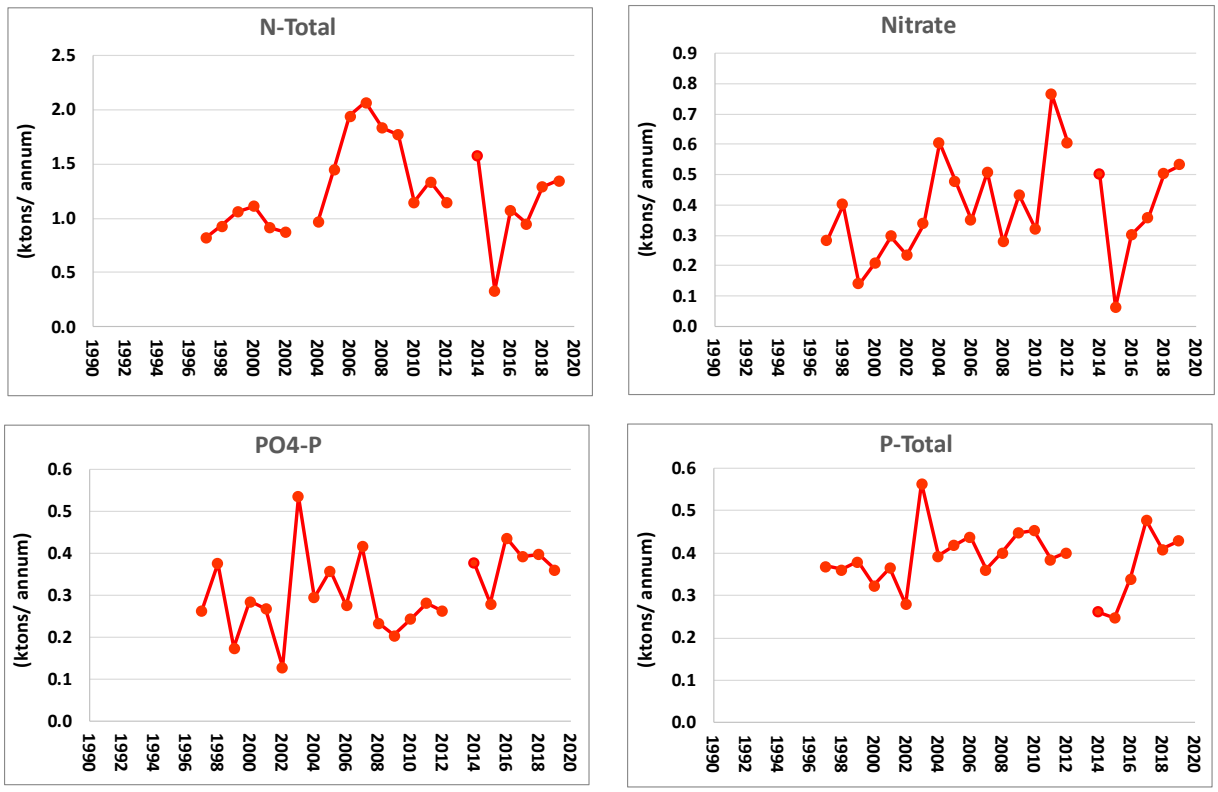

Figure 3c. Riverine inputs (ktons per annum) of nutrients from **Iceland** to maritime areas.

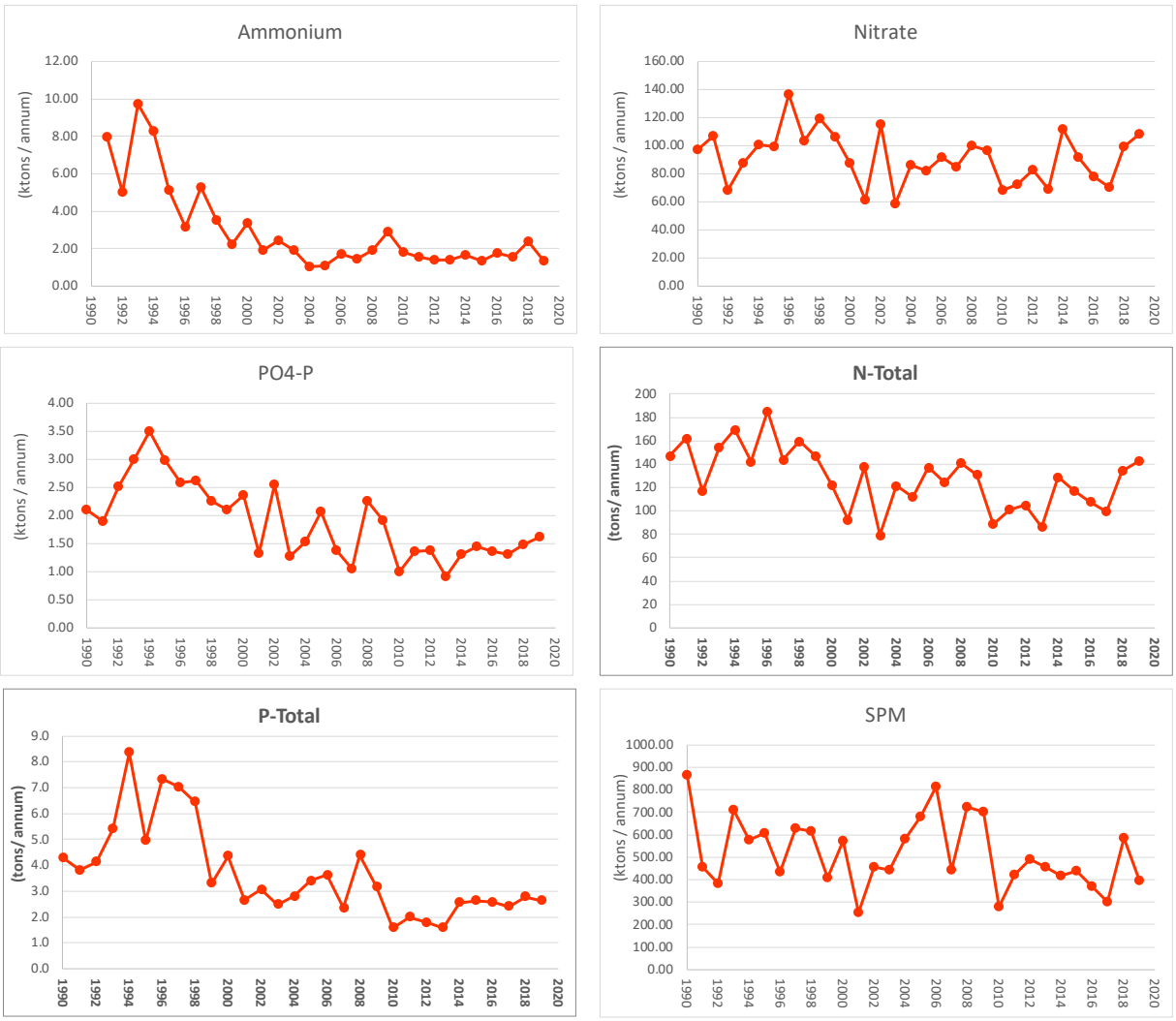

Figure 3d. Riverine inputs (ktons per annum) of nutrients and sediments from **Ireland** to maritime areas.

Figure 3e. Riverine inputs (ktons per annum) of nutrients, sediments, mineral oil, EOX and PAK6 from the **Netherlands** to maritime areas. (The figure will be included when the Netherlands has delivered their data and written report).

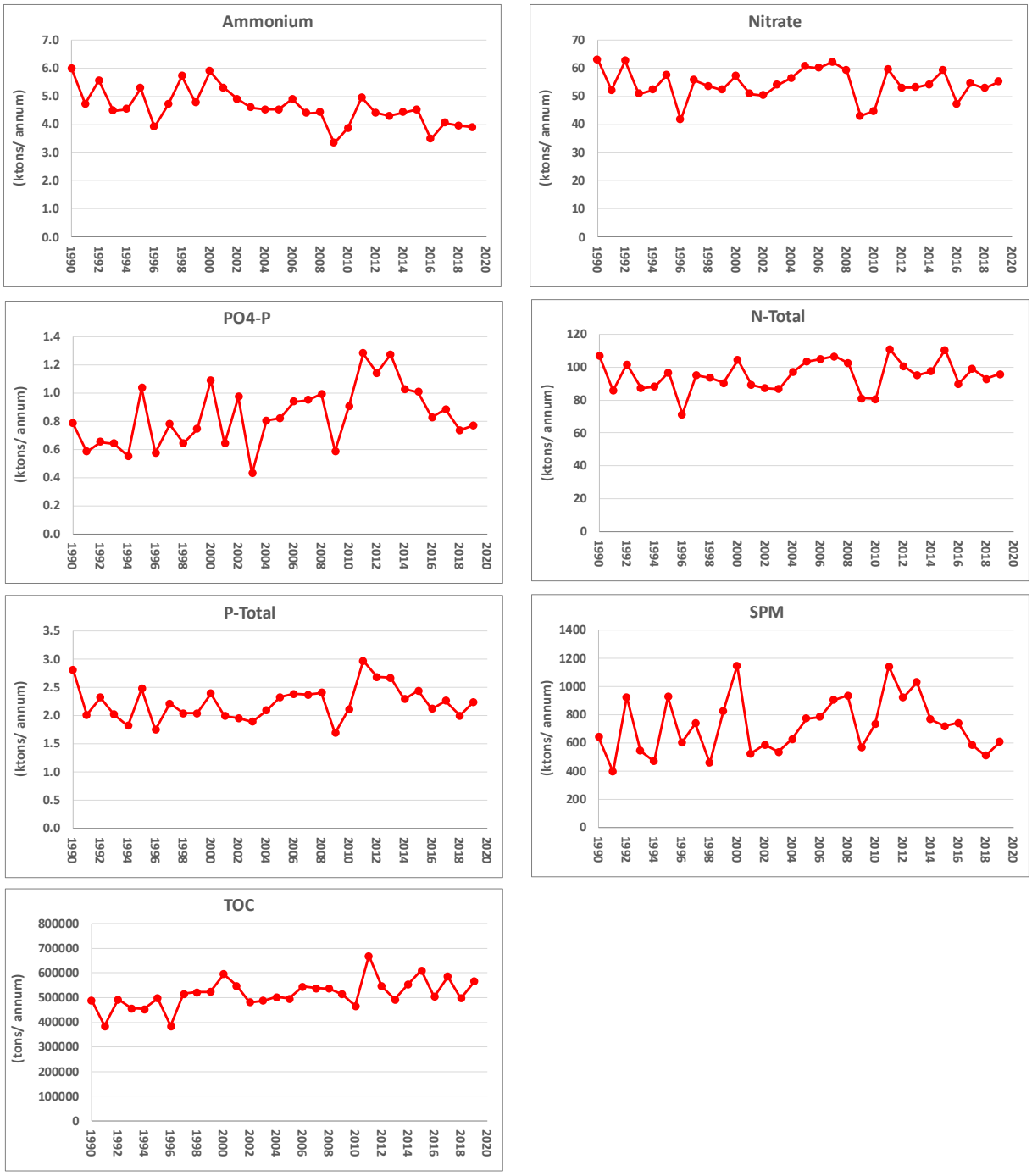

Figure 3f. Riverine inputs of nutrients, sediments (ktons per annum) and TOC (tons per annum) from **Norway** to maritime areas.

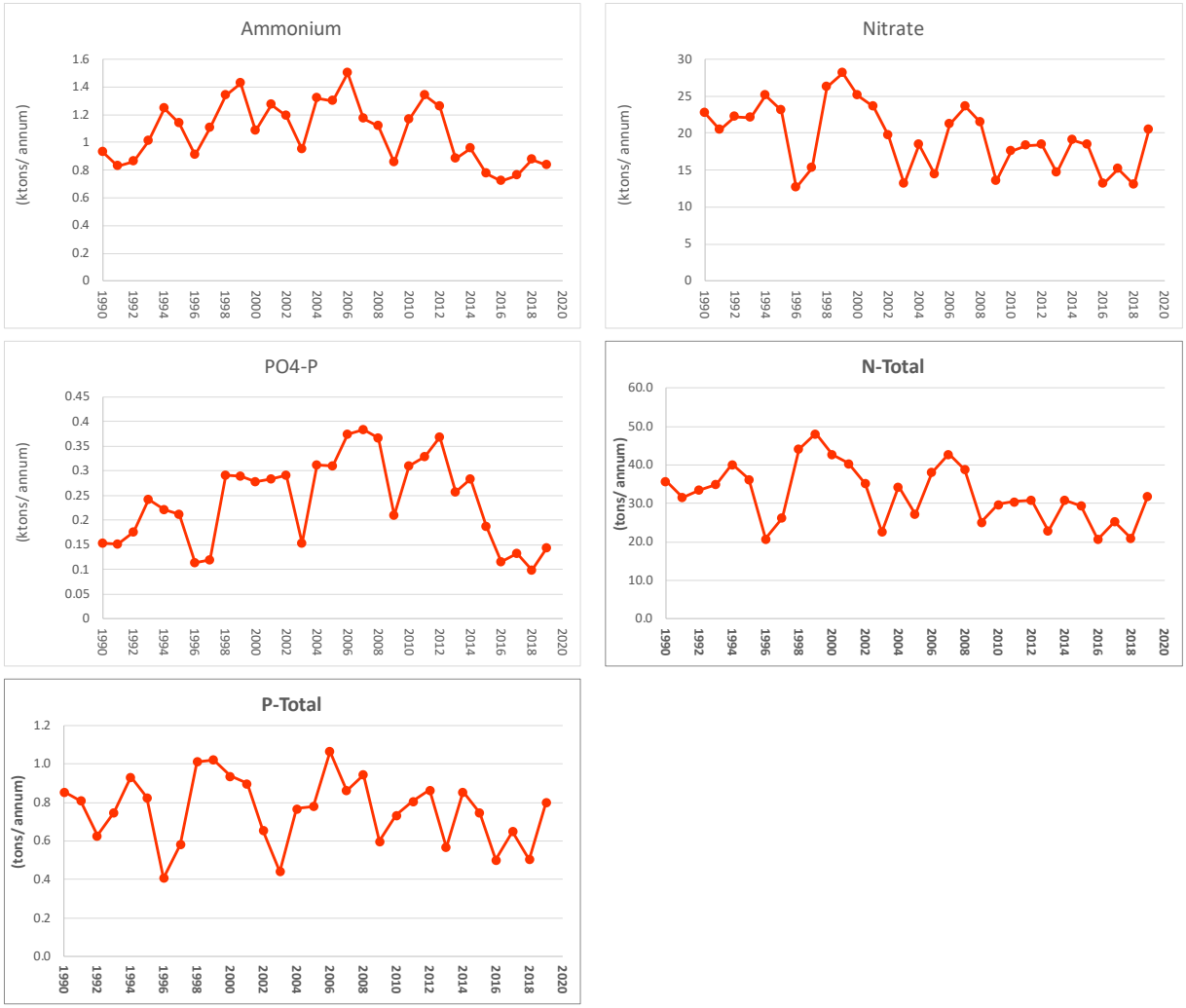

Figure 3g. Riverine inputs (ktons per annum) of nutrients and sediments from **Sweden** to maritime areas.

Figure 3h. Riverine inputs (ktons per annum) of nutrients and sediments from the **United Kingdom** to maritime areas.

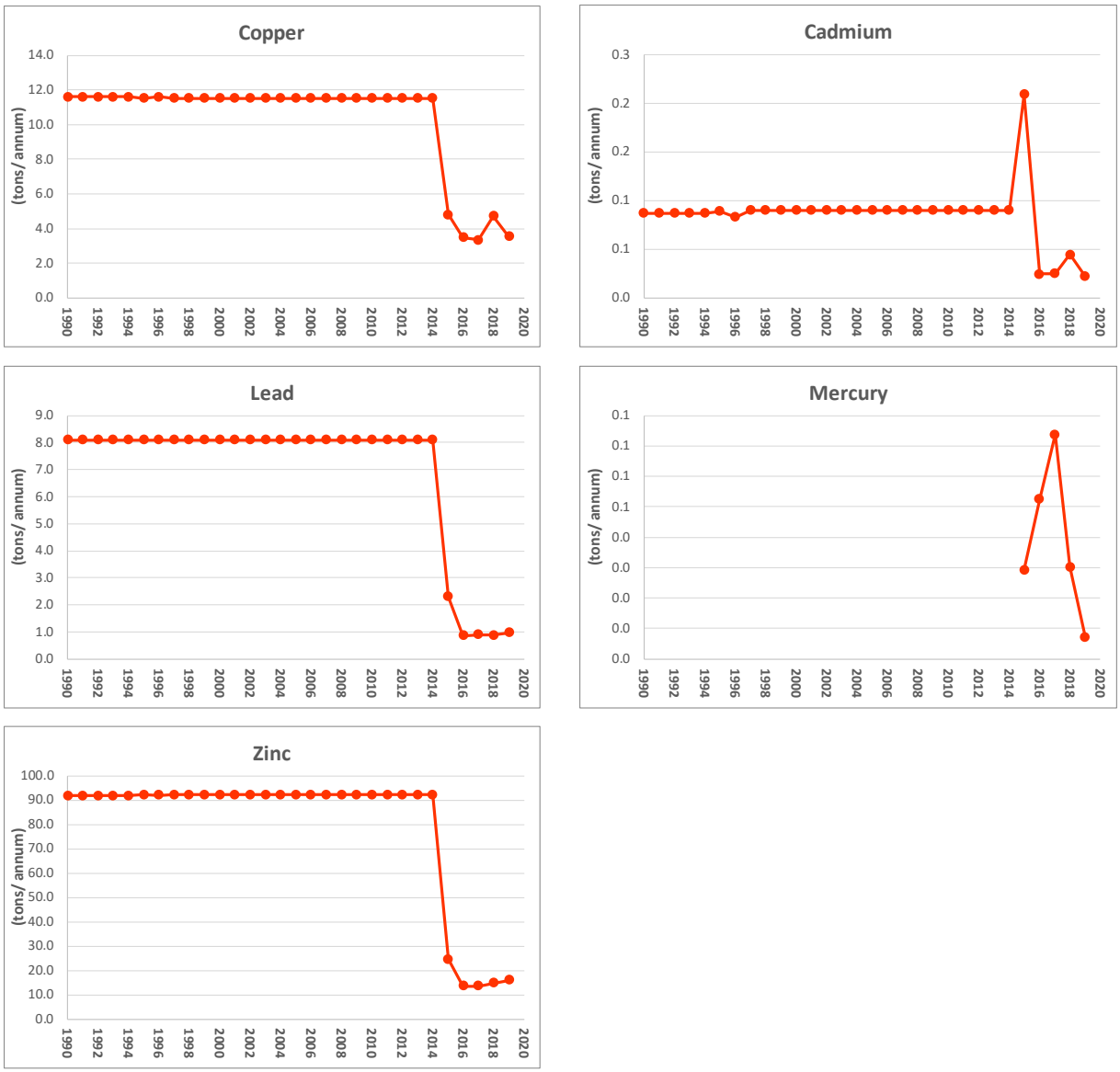

Figure 4a. Direct discharges (tons per annum) of five metals from **Ireland** to maritime areas.

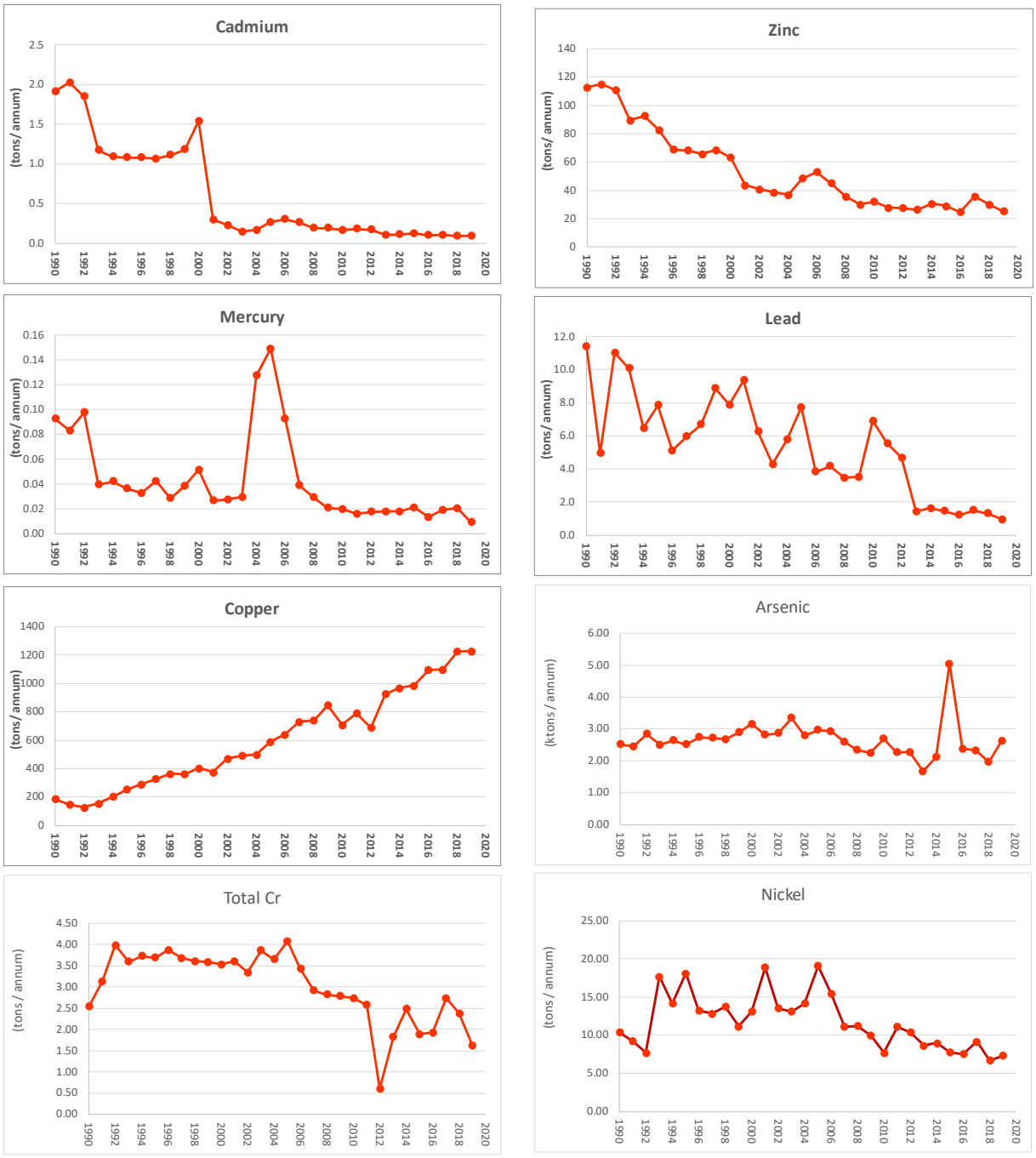

Figure 4b. Direct discharges (tons per annum) of eight metals from **Norway** to maritime areas.

Figure 4c. Direct discharges (tons per annum) of five metals from **Sweden** to maritime areas.

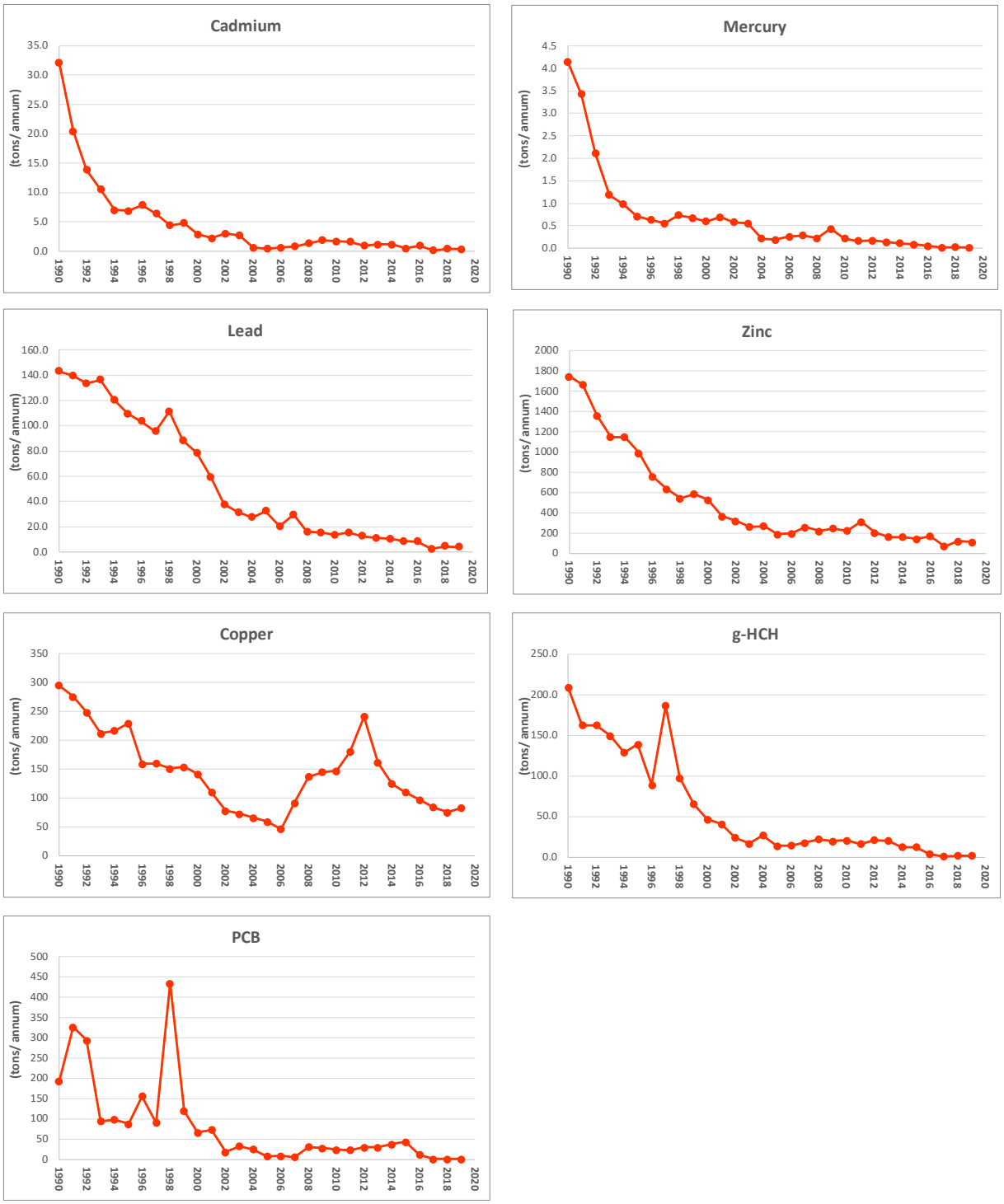

Figure 4d. Direct discharges (tons per annum) of five metals, PCBs and g-HCH (kg per annum) from the **United Kingdom** to maritime areas.

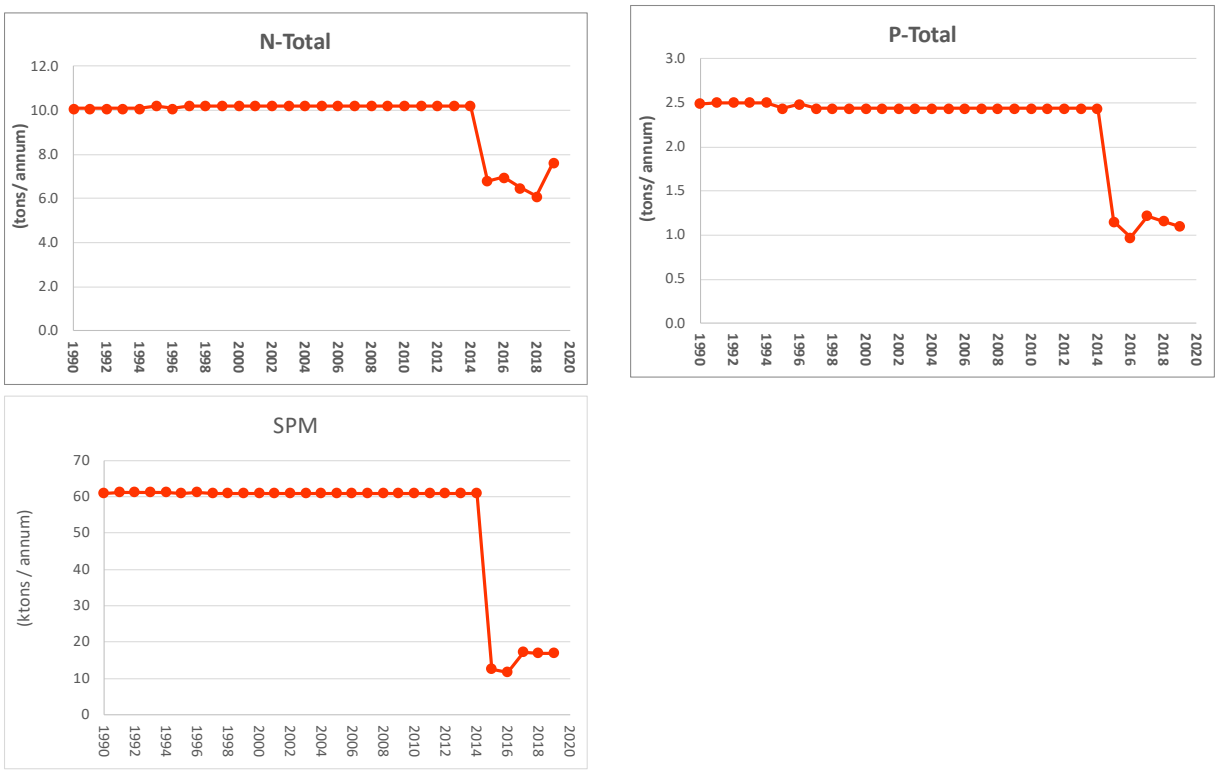

Figure 5a. Direct discharges (ktons per annum) of nutrients and sediments from **Ireland** to maritime areas

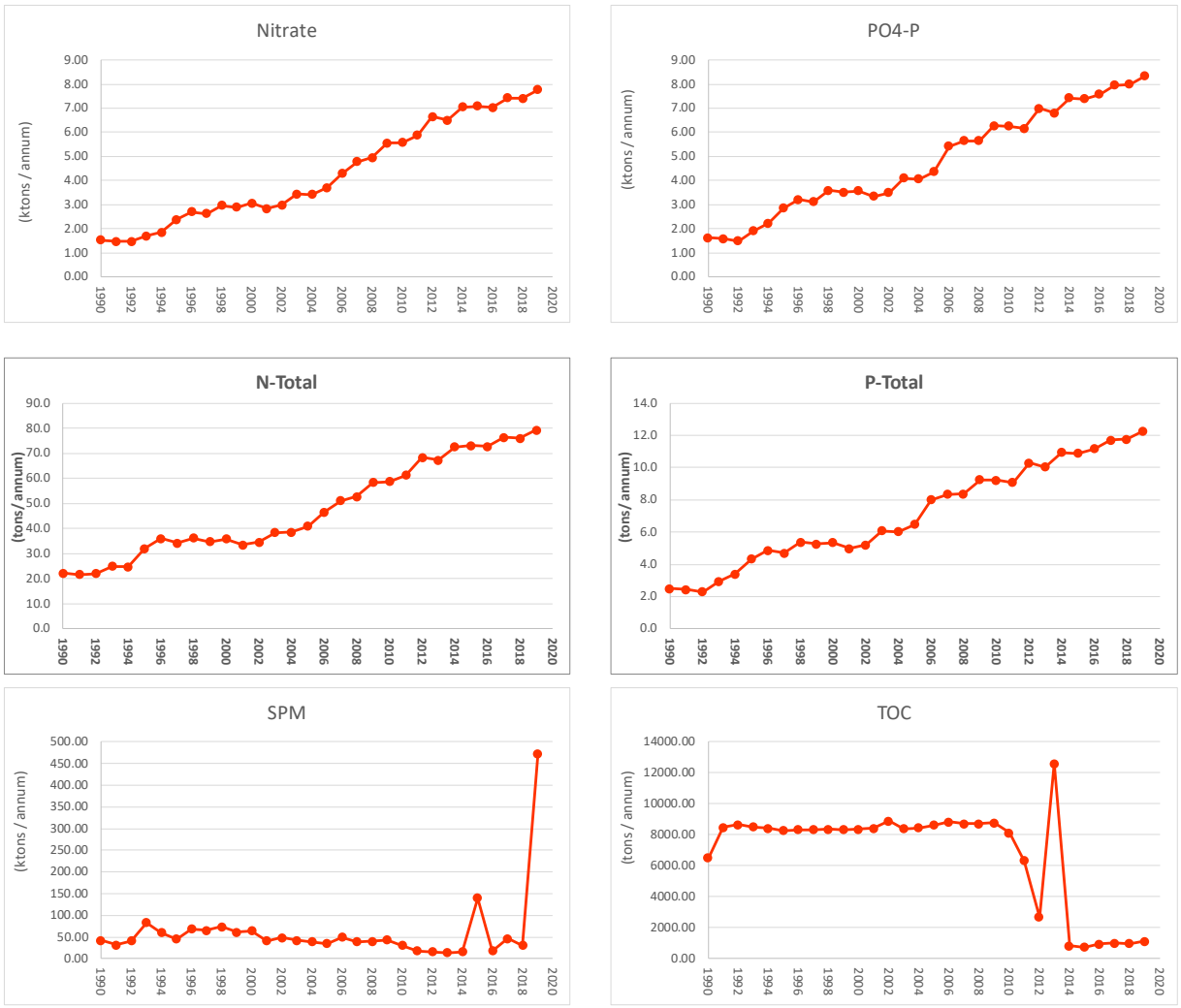

Figure 5b. Direct discharges (ktons per annum) of nutrients and sediments and TOC (tons per annum) from **Norway** to maritime areas.

Figure 5c. Direct discharges (ktons per annum) of nutrients and sediments from **Sweden** to maritime areas.

Figure 5d. Direct discharges (ktons per annum) of nutrients and sediments from **United Kingdom** to maritime areas.

Data corrections performed by the RID Data Centre in 2020

The corrections made in 2020 were mainly based on the analyses of the graphs of main constituents from 1990-2018 and are summarised in the table below. The corrected Excel Tables (outputs from the database) were sent to Contracting Parties for verification.

Corrections performed in RID database in 2020 in addition to what is mentioned in Table 4.

Contracting Party	Year(s)	Table(s)	Corrections made
Germany	2009, 2017	6a, 6b, 6c	Values for River Ems were corrected. For Elbe Estuary and Eider zero values were found instead of missing data; the zeros have now been deleted.
	2018	5b, 5c	P-Total values corrected.
Sweden	1990, 1992-2000	5e	Zero values were found instead of missing data, the zeros have now been deleted.
UK	2015	5a, 5e	The two tables were re-submitted.
	2018	5e	Missed values for cadmium for discharge area Sc4 were included.

Annex I. Annual Overview Tables for the reporting year 2019 (AA Tables)

AA Table 1a Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2019

AA Table 1b Determinands Reported by Contracting Parties in 2019

AA Table 2 Direct Discharges to the Maritime Area of the OSPAR Convention in 2019 by Country

AA Table 3 Riverine Inputs to the Maritime Area of the OSPAR Convention in 2019 by Country

AA Table 4a Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2019 by Country

AA Table 4b Sum of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 2019 by Sea Area

AA Table 1a. 2019

Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2019

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	NI	NI	NI		NI	NI
- Kattegat (DK)	NI	NI	NI	NI		NI	NI
- North Sea (DK)	NI	NI	NI	NI		NI	NI
France							
- Channel	NI	NI	NI	NI		+	+
- Atlantic	NI	NI	NI	NI		+	+
Germany							
- North Sea (GER)	NI	NI	NI	NI		NI	NI
Iceland							
- Atlantic	NI	NI	NI	NI		+	NI
Ireland							
- Irish Sea	+	+	+	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	NI	NI		NI	NI
Sweden							
- Kattegat (SWE)	+	+	NI	NI		+	+
- Skagerrak (SWE)	+	+	NI	NI		+	+
UK							
- North Sea (North)	+	+	+	NI		NI	NI
- North Sea (South)	+	+	NI	NI		NI	NI
- Channel	+	+	NI	NI		NI	NI
- Irish Sea	+	+	NI	NI		NI	NI
- Celtic Sea	+	+	NI	NI		NI	NI
- Atlantic	+	+	+	NI		NI	NI

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

Note, that UK delivers the total riverine inputs, not divided between monitored and unmonitored.

AA Table 1b. 2019

Determinands reported by Contracting Parties in 2019

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	NI	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	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+	R+	R+	R+	R+	R+	NI	R+	R+	R+	+	R+	R+	
Germany														
- 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	
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)	+(3)	+(3)	+(3)	NI	NI	+(4)	+(3)	+(4)	+(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	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	
Sweden														
- direct inputs	+	+	+	+	+	NI	NI	+	NI	NI	+	+	NI	
- riverine inputs	+(3)	+(3)	+(3)	+(3)	+(3)	NI	NI	+(3)	+(3)	+(3)	+(3)	+(3)	+(3)	
UK														
- direct inputs	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	R+	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	

+ : 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. 2019

Direct Discharges to the Maritime Area of the OSPAR Convention in 2019 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	NI	NI	NI
		upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	North Sea (DK)	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
	Skagerrak (DK)	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
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	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
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	1.03	NI	NI	NI	NI	NI	0.63	0.07	1.52
		upper	0.00	0.00	0.25	0.06	1.03	NI	NI	NI	NI	NI	0.63	0.07	1.52
	Celtic Sea	lower	0.01	0.01	0.98	0.30	4.93	NI	NI	NI	NI	NI	2.62	0.32	4.03
		upper	0.01	0.01	0.98	0.30	4.93	NI	NI	NI	NI	NI	2.62	0.32	4.03
	Irish Sea	lower	0.01	0.00	2.31	0.62	9.89	NI	NI	NI	NI	NI	4.39	0.71	11.39
		upper	0.01	0.00	2.31	0.62	9.89	NI	NI	NI	NI	NI	4.39	0.71	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 (NO)	lower	0.0	0.0	301.8	0.0	0.4	NI	NI	13.7	1.8	2.0	17.2	2.9	245.0
		upper	0.0	0.0	301.8	0.0	0.4	NI	NI	13.7	1.8	2.0	17.2	2.9	245.0
	North Sea (NO)	lower	0.0	0.0	390.6	0.5	6.0	NI	NI	19.3	2.4	2.7	24.4	4.0	13.9
		upper	0.0	0.0	390.6	0.5	6.0	NI	NI	19.3	2.4	2.7	24.4	4.0	13.9
	Norwegian Sea (NO	lower	0.0	0.0	526.6	0.1	3.6	NI	NI	24.7	3.2	3.5	31.1	5.2	209.6
		upper	0.0	0.0	526.6	0.1	3.6	NI	NI	24.7	3.2	3.5	31.1	5.2	209.6
	Skagerrak (NO)	lower	0.0	0.0	10.1	0.3	15.2	NI	NI	4.8	0.3	0.1	6.4	0.2	3.5
		upper	0.0	0.0	10.1	0.3	15.2	NI	NI	4.8	0.3	0.1	6.4	0.2	3.5
Portugal	Bay of Biscay and	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	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
Sweden	Kattegat (SWE)	lower	0.02	0.01	2.07	0.24	4.52	NI	NI	0.82	NI	NI	1.49	0.06	NI
		upper	0.02	0.01	2.07	0.24	4.52	NI	NI	0.82	NI	NI	1.49	0.06	NI
	Skagerrak (SWE)	lower	0.00	0.00	0.19	0.00	0.84	NI	NI	0.13	NI	NI	0.28	0.01	NI
		upper	0.00	0.00	0.19	0.00	0.84	NI	NI	0.13	NI	NI	0.28	0.01	NI
UK	Atlantic	lower	0.01	0.01	40.00	0.47	36.89	0.78	NI	3.29	2.25	1.10	15.21	2.53	14.07
		upper	0.07	0.01	40.13	1.01	36.97	1.33	NI	3.29	2.27	1.10	15.23	2.53	14.09
	Celtic Sea	lower	0.00	0.00	0.52	0.04	4.34	NI	0.00	0.45	0.73	0.16	NI	0.16	2.10
		upper	0.01	0.00	0.54	0.18	4.34	NI	0.11	0.50	0.73	0.17	NI	0.17	2.34
	Channel	lower	0.00	NI	0.24	0.00	0.19	NI	NI	0.57	NI	0.15	0.98	0.15	5.53
		upper	0.00	NI	0.25	0.00	0.19	NI	NI	0.60	NI	0.16	0.98	0.16	5.62
	Irish Sea	lower	0.00	0.00	0.39	0.25	8.13	0.00	0.00	0.83	0.38	0.21	1.11	0.02	3.93
		upper	0.39	0.01	1.98	2.29	8.15	0.00	0.30	0.89	0.38	0.21	1.13	0.03	4.31
	North Sea (North)	lower	0.08	0.01	40.25	1.66	59.87	0.62	0.00	12.84	3.63	1.21	19.36	3.44	34.95
		upper	0.10	0.01	40.30	1.71	60.22	0.83	0.07	12.84	3.72	1.21	19.36	3.44	34.99
	North Sea (South)	lower	0.00	0.00	0.31	0.30	1.41	NI	NI	1.07	0.00	NI	NI	NI	13.12
		upper	0.03	0.00	0.49	0.31	2.87	NI	NI	1.14	0.00	NI	NI	NI	13.42

NI: No information
NA: Not applicable

AA Table 3. 2019

Riverine Inputs to the Maritime Area of the OSPAR Convention in 2019 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	0.24	0.03	12.21	0.83	29.21	NA	NA	0.39	13.90	0.49	14.8	1.00	166.7
		upper	0.24	0.03	12.21	0.83	29.21	NA	NA	0.39	13.90	0.49	14.8	1.00	166.7
Denmark	Kattegat (DK)	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
	North Sea (DK)	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
	Skagerrak (DK)	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
France	Atlantic	lower	0.29	4.46	270.84	4.83	79.69	0.00	NI	1.79	162.40	4.19	0.0	2.73	841.6
		upper	0.37	4.64	270.90	5.75	82.13	0.11	NI	1.80	162.41	4.20	0.0	2.73	843.8
	Channel	lower	0.35	0.00	28.04	5.25	113.44	0.00	NI	1.90	152.14	3.57	0.0	4.29	1080.9
		upper	0.47	0.08	28.18	5.50	115.95	0.02	NI	1.90	152.14	3.57	0.0	4.29	1082.0
Germany	North Sea (GER)	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
Iceland	Atlantic	lower	0.10	0.05	7.49	0.51	21.3	NI	NI	255.0	531.0	362.0	1349.0	430.0	NI
		upper	0.10	0.05	7.49	0.51	21.3	NI	NI	255.0	531.0	362.0	1349.0	430.0	NI
Ireland	Atlantic	lower	0.73	0.02	59.66	4.54	151.72	NI	NI	0.17	12.39	0.28	28.29	0.64	134.58
		upper	0.94	0.43	66.48	7.21	152.90	NI	NI	0.48	12.49	0.38	28.60	0.67	188.14
	Celtic Sea	lower	0.83	0.12	61.38	14.37	244.31	NI	NI	0.69	71.12	1.02	82.02	1.65	145.07
		upper	1.02	0.67	63.39	16.62	253.37	NI	NI	0.93	74.09	1.19	83.75	1.65	221.99
	Irish Sea	lower	0.45	0.01	21.48	5.37	102.99	NI	NI	0.18	23.02	0.16	27.39	0.30	39.30
		upper	0.48	0.15	22.50	6.12	107.40	NI	NI	0.23	23.17	0.19	35.15	0.32	60.74
Netherlands	North Sea (NL)	lower	2.64	0.59	178.47	78.19	560.62	10.61	45.51	6.50	153.27	3.38	213.82	5.43	1560.9
		upper	2.64	0.59	178.47	78.19	560.62	10.74	54.53	6.54	153.35	3.39	214.98	5.43	1600.4
Norway	Barents Sea (NO)	lower	0.18	0.01	67.83	1.71	66.07	NI	NI	0.67	4.64	0.10	10.14	0.32	85.55
		upper	0.18	0.01	67.83	1.71	66.07	NI	NI	0.67	4.64	0.10	10.14	0.32	85.55
	North Sea (NO)	lower	0.31	0.03	21.85	6.58	80.88	NI	NI	1.08	15.37	0.13	25.51	0.44	66.17
		upper	0.31	0.03	21.85	6.58	80.88	NI	NI	1.08	15.37	0.13	25.51	0.44	66.17
	Norwegian Sea (N	lower	0.26	0.04	46.68	2.98	101.72	NI	NI	1.09	12.52	0.19	23.85	0.56	138.52
		upper	0.26	0.04	46.68	2.98	101.72	NI	NI	1.09	12.52	0.19	23.85	0.56	138.52
	Skagerrak (NO)	lower	1.04	0.13	71.43	14.57	289.77	NI	NI	1.04	22.57	0.35	36.32	0.91	316.26
		upper	1.04	0.13	71.43	14.57	289.77	NI	NI	1.04	22.57	0.35	36.32	0.91	316.26
Portugal	Bay of Biscay and	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	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
Sweden	Kattegat (SWE)	lower	0.40	0.06	28.10	9.00	100.00	NI	NI	0.73	18.80	0.12	28.59	0.69	196.02
		upper	0.40	0.06	28.10	9.00	100.00	NI	NI	0.73	18.80	0.12	28.59	0.69	196.02
	Skagerrak (SWE)	lower	0.08	0.02	4.64	1.37	15.80	NI	NI	0.11	1.60	0.02	3.35	0.11	26.42
		upper	0.08	0.02	4.64	1.37	15.80	NI	NI	0.11	1.60	0.02	3.35	0.11	26.42
UK	Atlantic	lower	0.17	0.07	27.60	9.18	68.28	NI	NI	0.66	10.59	0.55	14.63	1.19	100.17
		upper	0.52	0.14	28.09	11.32	70.32	NI	NI	0.87	11.28	0.58	14.81	1.20	107.87
	Celtic Sea	lower	1.25	0.03	46.04	31.50	550.48	0.00	0.00	1.09	61.36	1.57	171.53	1.57	625.16
		upper	2.48	0.16	46.84	50.25	554.52	8.54	24.08	1.30	61.37	1.58	171.53	1.58	634.54
	Channel	lower	0.33	0.01	24.77	9.77	140.53	0.01	0.00	0.28	23.00	0.55	23.04	0.55	68.09
		upper	0.34	0.06	24.77	9.91	140.61	17.22	46.71	0.34	23.00	0.55	23.04	0.55	70.96
	Irish Sea	lower	1.84	0.22	147.15	113.04	547.75	0.00	0.06	1.74	38.55	1.42	58.07	1.65	543.25
		upper	2.30	0.35	147.96	118.90	548.82	40.47	104.91	1.88	38.67	1.47	58.07	1.69	554.80
	North Sea (North)	lower	0.71	0.14	27.92	33.17	187.98	0.00	0.00	0.69	26.66	0.43	35.84	0.88	168.30
		upper	0.84	0.27	27.95	36.34	190.17	20.53	45.42	0.89	27.40	0.49	35.85	0.89	178.35
	North Sea (South)	lower	0.71	0.04	36.84	42.85	196.93	0.24	0.00	1.52	73.55	2.22	58.71	2.22	139.24
		upper	0.72	0.11	36.87	42.96	197.32	20.59	68.43	1.55	73.55	2.22	58.71	2.22	141.51

NI: No information
NA: Not applicable

AA Table 4a. 2019

Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime area of the OSPAR Convention in 2019 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	0.24	0.03	12.21	0.83	29.21	NA	NA	0.39	13.90	0.49	14.77	1.00	166.66
		upper	0.24	0.03	12.21	0.83	29.21	NA	NA	0.39	13.90	0.49	14.77	1.00	166.66
Denmark	Kattegat (DK)	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
	North Sea (DK)	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
	Skagerrak (DK)	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
France	Atlantic	lower	0.29	4.46	270.8	4.83	79.689	0.0	NI	1.79	162.4	4.19	0.00	2.73	841.6
		upper	0.37	4.64	270.9	5.75	82.133	0.1	NI	1.80	162.4	4.20	0.00	2.73	843.8
	Channel	lower	0.35	0.00	28.0	5.25	113.443	0.0	NI	1.90	152.1	3.57	0.00	4.29	1080.9
		upper	0.47	0.08	28.2	5.50	115.947	0.0	NI	1.90	152.1	3.57	0.00	4.29	1082.0
Germany	North Sea (GER)	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
Iceland	Atlantic	lower	0.1	0.1	7.5	0.5	21.3	NI	NI	255.0	531.0	362.0	1349.0	430.0	NI
		upper	0.1	0.1	7.5	0.5	21.3	NI	NI	255.0	531.0	362.0	1349.0	430.0	NI
Ireland	Atlantic	lower	0.7	0.0	59.9	4.6	152.7	NI	NI	0.2	12.4	0.3	28.9	0.7	136.1
		upper	0.9	0.4	66.7	7.3	153.9	NI	NI	0.5	12.5	0.4	29.2	0.7	189.7
	Celtic Sea	lower	0.8	0.1	62.4	14.7	249.2	NI	NI	0.7	71.1	1.0	84.6	2.0	149.1
		upper	1.0	0.7	64.4	16.9	258.3	NI	NI	0.9	74.1	1.2	86.4	2.0	226.0
	Irish Sea	lower	0.5	0.0	23.8	6.0	112.9	NI	NI	0.2	23.0	0.2	31.8	1.0	50.7
		upper	0.5	0.1	24.8	6.7	117.3	NI	NI	0.2	23.2	0.2	39.5	1.0	72.1
Netherlands	North Sea (NL)	lower	2.6	0.6	178.5	78.2	560.6	10.6	45.5	6.5	153.3	3.4	213.8	5.4	1560.9
		upper	2.6	0.6	178.5	78.2	560.6	10.7	54.5	6.5	153.3	3.4	215.0	5.4	1600.4
Norway	Barents Sea (NO)	lower	0.2	0.0	369.6	1.7	66.5	NI	NI	14.4	6.4	2.1	27.4	3.2	330.6
		upper	0.2	0.0	369.6	1.7	66.5	NI	NI	14.4	6.4	2.1	27.4	3.2	330.6
	North Sea (NO)	lower	0.4	0.0	412.5	7.1	86.9	NI	NI	20.4	17.8	2.9	49.9	4.5	80.1
		upper	0.4	0.0	412.5	7.1	86.9	NI	NI	20.4	17.8	2.9	49.9	4.5	80.1
	Norwegian Sea (N	lower	0.3	0.0	573.2	3.0	105.3	NI	NI	25.8	15.7	3.7	55.0	5.7	348.1
		upper	0.3	0.0	573.2	3.0	105.3	NI	NI	25.8	15.7	3.7	55.0	5.7	348.1
	Skagerrak (NO)	lower	1.1	0.1	81.5	14.9	305.0	NI	NI	5.9	22.9	0.5	42.7	1.1	319.8
		upper	1.1	0.1	81.5	14.9	305.0	NI	NI	5.9	22.9	0.5	42.7	1.1	319.8
Portugal	Bay of Biscay and	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	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
Sweden	Kattegat (SWE)	lower	0.4	0.1	30.2	9.2	104.5	NI	NI	1.5	18.8	0.1	30.1	0.7	196.0
		upper	0.4	0.1	30.2	9.2	104.5	NI	NI	1.5	18.8	0.1	30.1	0.7	196.0
	Skagerrak (SWE)	lower	0.1	0.0	4.8	1.4	16.6	NI	NI	0.2	1.6	0.0	3.6	0.1	26.4
		upper	0.1	0.0	4.8	1.4	16.6	NI	NI	0.2	1.6	0.0	3.6	0.1	26.4
UK	Atlantic	lower	0.2	0.1	67.6	9.6	105.2	0.8	NI	3.9	12.8	1.6	29.8	3.7	114.2
		upper	0.6	0.2	68.2	12.3	107.3	1.3	NI	4.2	13.5	1.7	30.0	3.7	122.0
	Celtic Sea	lower	1.3	0.0	46.6	31.5	554.8	0.0	0.0	1.5	62.1	1.7	171.5	1.7	627.3
		upper	2.5	0.2	47.4	50.4	558.9	8.5	24.2	1.8	62.1	1.7	171.5	1.7	636.9
	Channel	lower	0.3	0.0	25.0	9.8	140.7	0.0	0.0	0.8	23.0	0.7	24.0	0.7	73.6
		upper	0.3	0.1	25.0	9.9	140.8	17.2	46.7	0.9	23.0	0.7	24.0	0.7	76.6
	Irish Sea	lower	1.8	0.2	147.5	113.3	555.9	0.0	0.1	2.6	38.9	1.6	59.2	1.7	547.2
		upper	2.7	0.4	149.9	121.2	557.0	40.5	105.2	2.8	39.1	1.7	59.2	1.7	559.1
	North Sea (North	lower	0.8	0.1	68.2	34.8	247.9	0.6	0.0	13.5	30.3	1.6	55.2	4.3	203.2
		upper	0.9	0.3	68.2	38.0	250.4	21.4	45.5	13.7	31.1	1.7	55.2	4.3	213.3
	North Sea (South	lower	0.7	0.0	37.1	43.1	198.3	0.2	0.0	2.6	73.5	2.2	58.7	2.2	152.4
		upper	0.7	0.1	37.4	43.3	200.2	20.6	68.4	2.7	73.6	2.2	58.7	2.2	154.9

NI: No information
NA: Not applicable

AA Table 4b. 2019

Sum of Direct and Riverine Inputs to the Maritime area of the OSPAR Convention in 2019 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	0.18	0.01	369.63	1.72	66.47	NI	NI	14.38	6.44	2.08	27.37	3.21	330.59
	upper	0.18	0.01	369.63	1.72	66.47	NI	NI	14.38	6.44	2.08	27.37	3.21	330.59
Atlantic Ocean	lower	0.46	0.19	101.25	12.09	233.97	0.78	NI	4.22	21.07	1.89	51.07	4.31	183.23
	upper	1.09	0.57	107.41	17.29	237.29	1.33	NI	4.68	22.41	2.03	51.65	4.35	239.84
Bay of Biscay and Iberian Coast	lower	0.29	4.46	270.84	4.83	79.69	0.00	NI	1.79	162.40	4.19	0.00	2.73	841.55
	upper	0.37	4.64	270.90	5.75	82.13	0.11	NI	1.80	162.41	4.20	0.00	2.73	843.78
Celtic Sea	lower	1.98	0.15	104.41	49.26	795.71	0.00	0.00	3.14	128.30	2.75	256.55	3.96	1030.28
	upper	3.40	0.79	109.33	70.33	800.42	8.54	24.19	3.57	128.32	2.80	256.60	3.98	1084.00
Channel	lower	0.68	0.01	53.05	15.02	254.16	0.01	0.00	2.75	175.13	4.27	24.02	4.99	1154.55
	upper	0.81	0.14	53.20	15.41	256.75	17.23	46.71	2.84	175.14	4.29	24.03	5.01	1158.58
Irish Sea	lower	2.27	0.25	171.03	118.39	722.24	0.00	0.06	2.86	63.20	1.77	94.80	2.72	626.54
	upper	3.12	0.50	174.02	126.83	723.45	40.47	105.2	3.09	63.51	1.83	94.98	2.76	644.45
Kattegat	lower	0.41	0.07	30.17	9.24	104.52	NI	NI	1.55	18.80	0.12	30.08	0.75	196.02
	upper	0.41	0.07	30.17	9.24	104.52	NI	NI	1.55	18.80	0.12	30.08	0.75	196.02
North Sea (main body)	lower	4.75	0.84	708.47	164.12	1122.92	11.48	45.51	43.39	288.82	10.60	392.37	17.44	2163.20
	upper	4.93	1.04	708.75	167.47	1127.31	52.69	168.4	43.72	289.74	10.67	393.54	17.45	2215.39
Norwegian Sea	lower	0.27	0.04	573.25	3.05	105.31	NI	NI	25.81	15.72	3.71	54.98	5.74	348.10
	upper	0.27	0.04	573.25	3.05	105.31	NI	NI	25.81	15.72	3.71	54.98	5.74	348.10
Skagerrak	lower	1.15	0.15	86.31	16.25	321.62	NI	NI	6.10	24.49	0.48	46.37	1.20	346.22
	upper	1.15	0.15	86.31	16.25	321.62	NI	NI	6.10	24.49	0.48	46.37	1.20	346.22

NI: No information
NA: Not applicable

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 [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [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		
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								
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

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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Our vision is a clean, healthy and biologically diverse North-East Atlantic Ocean, which is productive, used sustainably and resilient to climate change and ocean acidification.

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