E-PRTR Informal Review Report 2011

covering the 2009 E-PRTR dataset

ETC/ACM Technical Paper 2011/06

October 2011

ETC/ACC: *Manfred Clara, Simone Haider, Katarina Mareckova, Nicole Mandl, Stephan Poupa, Katrin Seuss, Georg Windhofer*

ETC/SCP: *Ioannis Bakas, Christian Fischer and Morten Ryberg*

European Topic Centre
on Air and Climate Mitigation

European Topic Centre
on Sustainable Consumption and Production

Front page picture

power plant "Simmering" © U.Kutschera

Acknowledgements

This report was prepared by

1. *The European Environment Agency's European Topic Centre Air and Climate Change ETC/ACM. The lead author was Katarina Mareckova. Other authors were, Simone Haider, Nicole Mandl, Stephan Poupa and Katrin Seuss (air) and Manfred Clara and Georg Windhofer (water), all from Umweltbundesamt Austria. Robert Wankmueller and Irene Zieritz provided the maps, Ute Kutschera from Umweltbundesamt supported the ETC/ACC by editing the report.*
2. *The European Environment Agency's European Topic Centre for Sustainable Consumption and Production (ETC/SCP). The lead author was Ioannis Bakas. Other others were Christian Fischer and Morten Ryberg (all Copenhagen Resource Institute run by the Danish Ministry of the Environment).*

The EEA project managers were Bob Boyce and Eva Goossens.

Disclaimer

European Topic Centre on Air and Climate Change Mitigation
PO Box 303
3720 AH Bilthoven
The Netherlands
Phone +31 30 2748562
Fax +31 30 2744433
Email etcacm@pbl.nl
Website http://acm.eionet.europa.eu/

Executive Summary

The European Pollutant Release and Transfer Register (E-PRTR) has been established by Regulation 166/266/EC from 18 January 2006[1]. The register contains key environmental data from more than 28,000 industrial facilities in 65 economic activities in 27 European Union Member States and Iceland, Liechtenstein, Norway and Switzerland from 2007 onwards. Serbia reported for the first time in 2011 by submitting data for 2009. The register contains data on 91 pollutants released to air, water and soil and pollutants transferred in water. In addition, both domestic and transboundary waste transfers are included.

This is the report of the third informal E-PRTR data review that was carried out in 2011 and covers the reporting year 2009. It has to be pointed out that the third E-PRTR review does not constitute a formal review as required by Article 17 of the E-PRTR Regulation. While some of the data review checks performed may be useful as an input for the formal review process, this informal review has not been specifically developed to serve this purpose. The main objective of the informal review organised by the European Environment Agency is to assist countries in the improvement of the E-PRTR data quality by providing feedback on potential data quality issues and inconsistencies with other reportings.

The main objective of this report is to provide a summary on the 2011 review process and on the review findings. Detailed results of automated stage 1 test were provided to countries on 27 June 2011 in form of country specific Excel tables and country specific Word files. All review results can be downloaded from CIRCA by authorized users[2] under the following link:
http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset&vm=detailed&sb=Title
The more detailed results of the stage 2 review were provided to the EEA and all countries in form of Excel files and have been uploaded under the above link.

The informal review was carried out on the dataset which was published on the E-PRTR website on 2 May 2011 and which included the official submissions and resubmissions of countries due by 31 March 2011.

Stage 1 review results

The stage 1 review aimed at providing detailed feedback to countries concerning potential quality issues in order to assist the countries with future data quality improvement of the E-PRTR dataset. The review was carried out on the 2009 dataset due for submission by 31 March 2011. The comparison data from 2008 is the dataset that was resubmitted by countries by the same date.

[1] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_033/l_03320060204en00010017.pdf

[2] E-PRTR Regulatory Committee members and E-PRTR data reporters

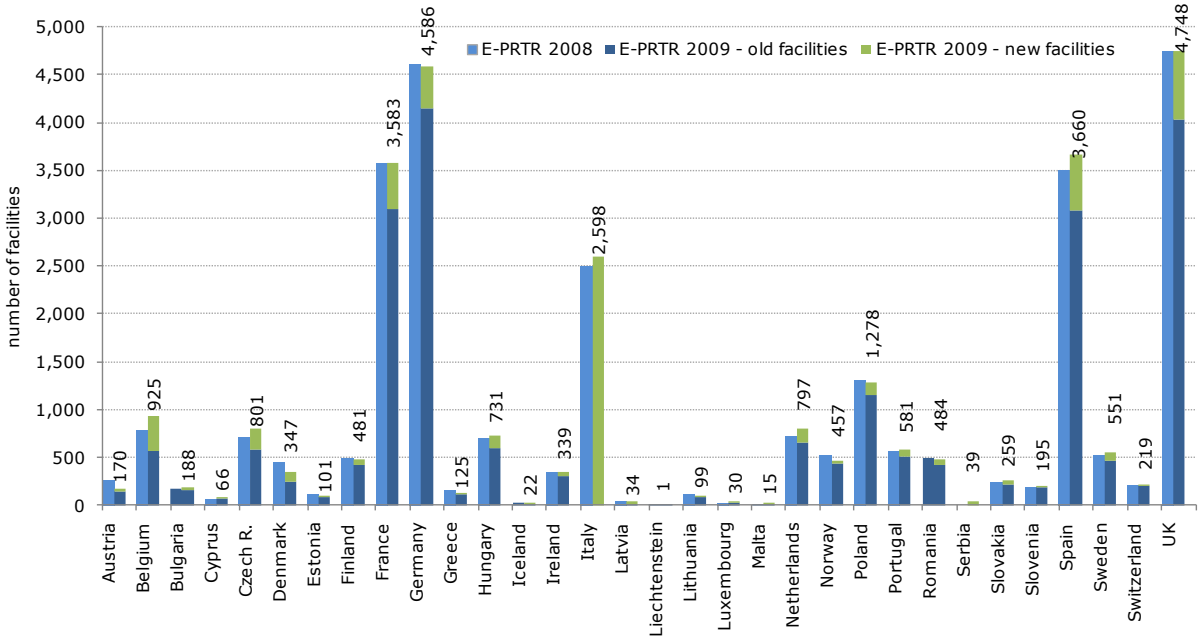
Number of facilities

The total number of facilities reported under E-PRTR 2009[3] amounted to 28,510 (EU-27, Iceland, Liechtenstein, Norway, Switzerland, Serbia) and 28,471 excluding Serbia. This represents an increase of about 1 % in the total number of facilities compared to 28,170 facilities that were reported for 2008 (excluding Serbia). The overall increase in the number of facilities is, however, due to more facilities reporting waste transfers in 2009. On the other hand, the number of facilities reporting releases to air, water and pollutant transfers in water decreased from 2008 to 2009.

Number of release/transfer reports

The total number of releases and transfer reports in E-PRTR 2009 for the media air, water, soil and transfer in water amounted to 40,198 reports (40,129 reports excluding Serbia) compared to 42,454 reports in E-PRTR 2008 (excluding Serbia). The reasons for this might be release/transfer reports that fell below the thresholds as a result of the economic crisis or incomplete reporting for the year 2009. The decrease of about 5 % correlates well with the lower number of facilities.

Number of facilities reported by countries under E-PRTR 2008 and 2009



Note: *Numbers above bars indicate the total of E-PRTR facilities in 2009*

E-PRTR activities

Countries reported information on facilities altogether for 44 out of the 45 E-PRTR main activities. In 2009 like in 2008 no facilities reported under activity 3.(d) “Installations for the production of asbestos and the manufacture of asbestos-based products”. For all the sub-activities (defined for seven activities) facilities were reported (voluntary level of detail for reporting). All (32) but eight countries provided

[3] E-PRTR 2009 refers to the E-PRTR 2009 data as reported in 2011, E-PRTR 2008 refers to the E-PRTR 2008 data as reported in 2011

information on more than 20 activities. France, Germany, Spain and the United Kingdom submitted data for 40 or more activities (Appendix III).

Pollutants

All countries except for Liechtenstein submitted release reports to air. Serbia only submitted data for release reports to air for SO_x, NO_x and PM_{10}. Fifty-six pollutants (54 in 2010) were reported as **releases to air** for 2009. In general, countries reported between three and 46 pollutants[4] as releases to air. Most countries (31) reported releases of SO_2; 30 countries of CO_2, CH_4, and NO_x; 29 countries of PM_{10}; 28 countries of NH_3, CO, and NMVOC and 27 countries releases of Hg and Zn. On the other hand, six pollutants (1,2,3,4,5,6-hexachlorocyclohexane (HCH), asbestos, fluorides (as total F), phenol (as total C), total nitrogen, total organic carbon (TOC)) were reported by only one country each.

All countries except for Liechtenstein and Serbia submitted **release reports to water**. Releases of 74 pollutants (72 in 2010) were reported for E-PRTR 2009 compared to 72 pollutants for E-PRTR 2008. Total nitrogen, total phosphorus, total organic carbon and heavy metals were reported most frequently as releases to water. However releases of 1,1,1-trichloroethane, aldrin, NH_3, chlordane, heptachlor, mirex and SO_x were reported by only one country each. Three of these pollutants were not expected to be released to water (1,1,1-trichloroethane, NH_3, SO_x).

Sixty-five (61 in 2010) out of the 71 pollutants with a threshold for water in Annex II of the E-PRTR Regulation were reported as **transfers in water** for E-PRTR 2009 compared to 61 pollutants for E-PRTR 2008. In total, 23 countries reported transfers in water. Total number of pollutants reported ranged from 65 for Italy to one for Lithuania. Most countries reported transfers in water for total nitrogen and total organic carbon, total phosphorus, phenols and heavy metals.

Out of the 61 pollutants with a threshold for **soil** in Annex II of the E-PRTR Regulation only 24 (21 in 2010) were reported under E-PRTR 2009 compared to 21 pollutants under E-PRTR 2008.

There are different reasons for the limited number of release/transfer reports for some pollutants: the E-PRTR threshold is too high; no estimation methodology exists for this specific pollutant; country data is incomplete (does not include all relevant E-PRTR facilities).

Waste

All countries except for Serbia reported transfers of waste.In total, 16,638 facilities reported domestic transfers of hazardous waste, 9,489 facilities reported transfers of non-hazardous waste and 1,274 facilities reported transboundary transfers of hazardous waste. The total quantity of waste reported under E-PRTR 2009 by all countries was about 422 million tonnes. Hazardous waste within country amounted to about 36 million tonnes per year (8.5 % of total) and hazardous waste outside country to about 4.6 million tonnes per year (1.1 % of total). The quantity of non-hazardous waste transfers accounted for about 382 million tonnes per year (90 % of total).

Confidentiality

Seven countries (Belgium, Bulgaria, Germany, Luxembourg, Romania, Sweden, and United Kingdom) one less than previous year reported confidential data elements for 2009. Forty-three facilities reported confidential data related to the facility report, whereas 136 facilities claimed confidentiality on data related to waste transfer reports. The most common reason for keeping information confidential was

[4] Except Liechtenstein which did not report any releases to air.

Article (4)(2)(d) of Directive 2003/4/EC[5], which refers to the confidentiality of commercial or industrial information.

Accidental releases

Nineteen countries (out of 31, not including Liechtenstein) reported accidental releases for 2009 compared to 19 countries (out of 30, not including Liechtenstein) for 2008. In total, 592 accidental releases of different pollutants for releases to air (310), water (281) and soil (1) were reported under E-PRTR in 2009 compared to 565 accidental release reports under E-PRTR in 2008.

Top polluters

The top five polluters for releases to air, water and transfer in water and the top 10 polluters for waste transfers are presented in this report. For some pollutants and media, facilities with a very high share in total E-PRTR releases/transfers have been identified in the 2009 data set. Such anomalies might indicate potential inaccuracies in reporting and should be checked by countries.

Stage 2 review findings

The purpose of the stage 2 review was to put the data reported under E-PRTR into context with data reported under different reporting processes of air, waste and water and to highlight differences between these data reported.

For air the compared data sets are CLRTAP, UNFCCC and EU ETS. The stage 2 review for waste was done with Eurostat's Transboundary shipment of waste database and a correlation to the NACE codes classification system. The assessment for water was carried out with Urban Wastewater data, State of Environment Emission data and a special evaluation of the reported data of activity 7.(b). intensive aquaculture.

Air

Comparison of E-PRTR 2009 with EU ETS 2009

The number of facilities included in the EU ETS is about five times higher than the number of facilities reported under E-PRTR but countries total CO_2 emissions under both reporting obligations are comparable. For most of the countries the share of E-PRTR CO_2 emissions in the ETS CO_2 emissions ranges between 80 % and 99 %. Eight countries, however, reported more emissions under E-PRTR than under the EU ETS. One of the potential reasons for this is that countries have included emissions from biomass combustion in E-PRTR reporting. Two countries reported less than a 40 % share of E-PRTR emissions.

Comparison of E-PRTR with CLRTAP/UNFCCC national totals

The releases reported under E-PRTR covers only large point sources and should not exceed national total emissions reported under CLRTAP or UNFCCC, which include all anthropogenic emissions occurring in the geographical area of the country (large point sources, diffuse sources). If the total E-PRTR emissions exceed CLRTAP/UNFCCC national total emissions (with or without transport) this indicates inconsistent reporting of countries under the different reporting obligations.

[5] OJ L 41, 14.2.2003, p. 26

The figures showing the share of different activities in the E-PRTR total releases reflect the structure of the economies in the individual countries and thus cannot be identical for all countries. The comparison shows a number of common elements but the stage 2 tests also highlighted inconsistencies in reporting under the different obligations such as:

a. Nine countries reported higher releases under E-PRTR 2009 than their national totals reported under CLRTAP (NO_x – Serbia; SO_x – Serbia; Hg – Germany, the Netherlands; Ni – France; Zn - France; PAHs – Norway; PCDD/PCDF – France, the Netherlands, Poland). In a number of cases, the difference is bigger than 200 %.
b. Four countries reported higher emissions under E-PRTR 2009 than their national totals reported under UNFCCC (CO_2 – Iceland; N_2O – Belgium; PFCs – France, Poland).
c. Nine countries (Austria, Belgium, Hungary, Italy, Norway, Slovenia, Spain, Sweden and Switzerland), one more than in 2008, did not report emissions to air under CLRTAP 2009 for at least one pollutant while reporting such emissions under E-PRTR 2009.

Comparison of E-PRTR with CLRTAP/UNFCCC on the activity level

The comparison of sectoral data has limitations because of the differences between the reporting obligations under E-PRTR, CLRTAP, UNFCCC and the EU ETS. It has to be noted that a) not all E-PRTR pollutants are reported under CLRTAP/UNFCCC; b) a significant share of E-PRTR in CLRTAP/UNFCCC emissions has been observed only in the aggregated sectors A (energy, manufacturing industries and waste incineration) and C (agriculture) and only for some pollutants.

SO_2, NOx, PM_{10} and CO_2

These E-PRTR emissions occur mainly in the *Energy* sector followed by the *Production of metals* and *Mineral industry*. Countries reported the highest share of **NMVOC** emissions from the sector *Other activities*, *Energy* and *Chemical industry.* **NH_3** emissions were reported mainly from the *Livestock production and aquaculture* sector and in *Mineral industry* and *Chemical industry* with the exception of Austria that also reported a significant share of NH_3 emissions from *Energy* and Sweden from *Paper and wood production*.

PCDD/PCDF

Reporting of PCDD/PCFD under E-PRTR 2009 is extremely inconsistent between countries. In total, 211 release reports were submitted for 2009. Three countries have shares far in excess of 100 % of E-PRTR emissions compared the national total reported under CLRTAP. Most other countries have a share below 50 %.

Heavy metals

The reporting of heavy metals (HMs) under E-PRTR is relatively frequent compared to other pollutants. Between 19 and 27 countries reported at least one HM in E-PRTR 2009 which seems to be more complete than reporting of HMs under the CLRTAP. The magnitude of HM emissions in E-PRTR 2009 differs significantly among countries. E-PRTR data indicate that point sources in general produce between 16 % and 71 % of national total HM emissions. In some cases the share of E-PRTR HM emissions in national totals is more than 90 %. Germany (Hg, Cu), France (Ni) and Portugal (Cd) reported significantly higher emissions under E-PRTR than national totals under CLRTAP. This indicates potential incomplete reporting under CLRTAP or potential errors in E-PRTR data.

Waste

The Stage 2 review for waste only includes a comparison to Eurostat's Transboundary shipment of waste database and a correlation to the NACE codes classification system, in terms of comparisons to external sources. Stage 2 review includes a comparison of the 2009, 2008 and 2007 datasets as well as a number of checks regarding incineration plants and landfills.

Comparison to external sources

When attempting to compare the E-PRTR reporting to the Transboundary shipment of waste database for the years 2007, 2008 and 2009, there are twelve cases where the sum of hazardous waste transferred outside the country (E-PRTR) is higher than the amount reported under the transboundary shipment of waste regulation. This is not possible since the waste reported under E-PRTR is by definition less than the waste reported in the transboundary shipment database.

Incineration plants and landfills

199 incineration plants of non-hazardous waste reported under E-PRTR a waste transfer of more than 25,000 tonnes. These waste transfers could correspond to transfers of residual waste after incineration and could therefore indicate a missing CO_2 emissions reporting, as only 137 records of CO_2 emissions were reported to the register.

It could be assumed that all waste incineration plants under activity code 5.(b) should report hazardous waste unless there is a hazardous waste disposal site at the site of the facility. In the 2009 reporting, all together nine facilities have not reported any transfer of hazardous waste.

There is an indication that leachate from some landfills has been reported as waste water transfer (reported as pollutant transfer in water) instead of waste transfer, while leachate is supposed to be reported under the waste transfers only. In 2009, 105 landfill facilities reported water pollutant transfers.

Comparison across reporting years

The total amount of domestically transferred hazardous waste was almost 36 million tonnes in 2009, a 2 % increase from 2008. 4.58 million tonnes of transboundary shipment of hazardous waste have been reported in 2009 compared with 3.07 million tonnes in 2008 and 2.40 million tonnes in 2007. The large increase in the amount of hazardous waste being transboundarily shipped between 2008 and 2009 is mainly due to a huge increase in the amount reported by the UK. In 2009, 382 million tonnes of non-hazardous waste transfers were reported by all countries compared with 390 and 379.2 million tonnes in 2008 and 2007 respectively. The absolute decrease of non-hazardous waste transfer from 2008 to 2009 means that the decrease in non-hazardous waste transfer by the likes of Sweden, Spain, UK and Bulgaria, outweigh the major increases in non-hazardous waste transfer in Germany, the Netherlands and Poland.

E-PRTR code 5.(a). reports the largest amount of domestically transferred hazardous waste (14.77 million tonnes out of a total of 35.76 million tonnes). E-PRTR code 8.(b) has the largest reporting of transboundary transferred hazardous waste (1.89 million tonnes out of a total of 4.58 million tonnes). The E-PRTR codes 1.(c), 5.(a). and code 5.(c) report the largest waste transfers of non-hazardous waste with respectively 52, 47, 51 and 79 million tonnes in 2009. Out of the forty-four E-PRTR activities included in this review, twenty-seven reported percentage larger than +/-50 % for domestic transfer of hazardous waste or transboundary transfer of hazardous waste or transfer of non-hazardous waste. Out

of the same 44 E-PRTR activities, only five reported a percentage change larger than +/-50 % for transfer of non-hazardous waste.

A large change in the distribution between disposal and recovery, when comparing 2008 and 2009 data might indicate a reporting error for one of the reporting years. In the review, 46 large changes in the distribution were found for non-hazardous waste transfers and 15 for hazardous waste.

Water

Comparison of E-PRTR data 2009 with the Urban Waste Water Treatment Directive (UWWTD) data on facility level

The analysis was done with the latest available UWWTD-data set (2007 or 2008) focused on an identification of Urban wastewater treatment plants which are potentially missing from the E-PRTR data set (based on the reported mandatory information under the UWWT Directive) and a comparison of the release data from both datasets. The dataset contains reports from all 27 EU Member States. No information is available from the UWWTD database on UWWTPs for Switzerland, Norway and Iceland.

The comparison of the E-PRTR data with the UWWTD data was perfomed into two blocks. In the first step a geographical evaluation of occurrence of UWWTP under E-PRTR with interlinking of E-PRTR facilities reporting under activity 5.(f) with UWWTPs and a check for E-PRTR 5.(f) facilities in cities with at least 500,000 inhabitants was carried out. In the second step the reported emissions of both data sets were compared.

The results of the interlinking of reported UWWTPs under UWWTD and E-PRTR show that 100 % were reached from Luxembourg and Slovenia. Between 80 % and 100 % of UWWTPs reported under UWWTD are covered in E-PRTR in the countries Belgium, Czech Republic, Estonia, Finland, Germany, Netherlands and United Kingdom. Below 20% of UWWTPs are Latvia and Malta. For Bulgaria and Sweden this evaluation was not possible due to missing data for capacity in the UWWTD data set.

Fifty-nine cities in twenty-two countries with more than 500,000 inhabitants are identified. For fifty cities E-PRTR facilities reporting for main activity 5.(f) could be linked, whereas for nine big cities, no UWWTPs have been found in the E-PRTR data set. 24 UWWTPs are potentially missing in the E-PRTR data set compared to the UWWTD data. 132 UWWTPs could be interconnected in both E-PRTR and UWWTD datasets.

Comparison of the reporting of discharges for the identified corresponding UWWTPs

The UWWTD database might include information on discharges for COD, total N and total P as those data can be reported on a voluntary basis. For those Member States, which provided this information under the UWWTD and for those facilities/plants, which could be linked across both reporting schemes a comparison of the discharges is performed with the releases to water reported under E-PRTR.

According to the UWWTD database, eleven countries reported discharges for COD, total nitrogen or total phosphorus. In the UWWTD database TOC is not included, therefore the TOC was calculated from the COD. For some countries the data under UWWTD had high variation (e.g. Czech Republic) or were probably reported in other untis than required (e.g. Romania).

Identification of pollutants that might be missing for reported E-PRTR facilities

The analysis was done for E-PRTR main activity 5.(f) and focusing on the pollutants TOC, total nitrogen and total phosphorus.

The available emission data e.g. for phosphorus showed that for UWWTPs with a design capacity between 100,000 and 200,000 pe 95 plants out of 214 are below the E-PRTR reporting threshold. Therefor receiving useful results of E-PRTR data evaluation and avoid most "false" negatives, a pragmatic approach is applied based on the evaluation of the available data and a threshold of the treatment capacity with 200,000 pe. Facilities under activity 5.(f) above this threshold were flagged if no emissions of TOC, total nitrogen and total phosphorus were reported. For 5.(f) facilities with a treatment capacity below 200,000 pe an individual assessment is needed, if emission reports of TOC, total nitrogen or total phosphorus are missing.

The results show potentially missing reports for TOC e.g. Cyprus 100 % (1 report), Lithuania 71 % (5 reports) and Spain 32 % (37 reports), for total nitrogen e.g. Cyprus 100 % (1 report), Spain 20 % (23 reports) and Romania 19 % (4 reports) and for total phosphorus e.g. Lithuania 29 % (2 reports), Germany 23 % (51 reports) and Czech Republic 17 % (5 reports).

Comparison of E-PRTR total emission load with emissions reported under State of Environment (SoE) emissions reporting

The assessment comparing the E-PRTR and the SoE datasets was done for TOC, total nitrogen and total phosphorus on country level with available SoE data for 2008 and/or 2009. The evaluation was focused on urban wastewater emissions, industrial discharges and total discharges. For the comparsion the respective SoE data were available from 8 countries.

For total nitrogen potentially inconsistances were identified for Belgium, Latvia and Romania, for total phosphorus for Belgium, Finland, France, Iceland, Latvia and Romania and for TOC for Bulgaria, Lithauania, Latvia, Romania and Slovenia.

Specific review of activity 7(b) – intensive aquaculture

Aquaculture in some countries is an important economic sector. The production figures shows that in Norway in 2009 more than 960,000 tonnes were produced followed by Spain with almost 250,000 tonnes and France and United Kingdom with almost 200,000 tonnes.

In E-PRTR emissions report under the activity 7(b) – intensive aquaculture and Nace 03.21 are available from Norway, Spain, United Kingdom, Cyprus, Malta and Iceland.

The pollutants with reported releases to water within activity 7.(b) are TOC, total nitrogen, total phosphorus, copper and zinc.

A cross pollutant assessment of released emissions related to TOC was carried out for the period 2007-2009 with all available pairs of values on facility level for the countries Malta, Norway and United Kingdom. For TOC/Total nitrogen and TOC/Total phosphorus the ratios are comparable for the three countries. The results for TOC/copper and TOC/zinc show partly big differences.

With the available production data from FAO or EUROSTAT and E-PRTR discharges production specific emissions were calculated. The results for copper show big differences between Norway and United Kingdom. The production specific emissions for Malta calculated with maximum four facilities show for the other considered substances much higher values compared to Norway and United Kingdom.

Content

A Introduction

A.1 Background and objectives

A.1.1 Regulation

According to Regulation (EC) No 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register[6] (E-PRTR) operators that undertake one or more activities specified in Annex I of the Regulation above the capacity threshold have to report their releases to air, water, land, off-site transfers of waste and of pollutants in waste water if these releases and transfers exceed the thresholds specified in Annex II of the Regulation. Member States are obliged to submit this data to the European Commission. E-PRTR is an annual reporting obligation, 2009 was the third reporting year. As requested by Article 14 of Regulation the European Commission drew up a Guidance Document[7], which supports the implementation of the E-PRTR by addressing among other things the coding of activities, reporting procedures and the data to be reported. The full dataset is published on the E-PRTR website http://prtr.ec.europa.eu/.

The E-PRTR implements at EU level the UNECE PRTR Protocol[8], which was signed by the European Community and 23 Member States in May 2003 in Kiev and which is a Protocol to the Aarhus Convention[9]. The E-PRTR succeeds the European Pollutant Emission Register (EPER[10]), under which data were reported for the years 2001[11] and 2004.

A.1.2 Data review

Article 17 of the E-PRTR Regulation stipulates that the Commission shall review the data provided by Member States. However, the 2011 review of E-PRTR data from 2009 is not such a formal review as required by Article 17. While some of the data review checks performed may be useful as an input for the formal review in accordance with Article 17 this informal review has not been specifically developed to serve this purpose. The main objective of the informal review organized by the European Environment Agency is to assist countries in the improvement of the E-PRTR data quality by providing feedback on potential data quality issues and inconsistencies with other reporting's.

EEA has commissioned two of its European topic centres (ETC/ACM[12], ETC/SCP[13]) with checking the E-PRTR data. The review was split up into stage 1 and stage 2. The stage 1 review was carried out by ETC/ACM for all media. For stage 2, ETC/ACM carried out the review of releases to air and water whereas ETC/SCP reviewed transfers of waste.

---

[6] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_033/l_03320060204en00010017.pdf

[7] http://prtr.ec.europa.eu/pgDownloadGuidance.aspx

[8] UNECE Pollutant Release and Transfer Register (PRTR) Protocol http://www.unece.org/env/pp/prtr.htm

[9] UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, Aarhus 1998, http://live.unece.org/env/pp/welcome.html

[10] OJ L 192, 28.7.2000, p. 36

[11] Data could, alternatively, be reported for 2000 or 2002 under EPER instead of for 2001.

[12] European Topic Centre on Air and Climate Change (ETC/ACC), http://acm.eionet.europa.eu/

[13] European Topic Centre on Sustainable Consumption and Production (ETC/SCP), http://scp.eionet.europa.eu/

As indicated above, the main objective of the 2011 review performed by ETC/ACM and ETC/SCP has been to improve E-PRTR data quality by providing feedback to the countries on their data submitted under E-PRTR. The E-PRTR data has been reviewed in two stages:

The **stage 1 review** aimed at providing detailed feedback to countries concerning the quality of the E-PRTR data reported. The checks cover an evaluation of the number of facilities and release reports, quantities of releases and transfers reported, confidentiality claims, accidental releases, etc.

The purpose of the **stage 2 review** was to put the data reported under E-PRTR into context with data reported under other official or voluntary reporting and to highlight differences between data reported under different reporting obligations. The review covered the releases of pollutants to air and water and waste transfers. The data used for the comparisons are the following:

- Stage 2 review covering the releases to air: data reported under CLRTAP, UNFCCC and EU ETS[14]
- Stage 2 review covering the releases to waste: data on transboundary shipments of waste.
- Stage 2 review covering the releases to water: data reported under the UWWTP Directive reporting and the State of Environment (SoE) reporting.

It has to be pointed out that the stage 1 and 2 review can highlight potential inconsistencies and anomalies in reported data, but cannot check whether the data that have been submitted by the countries are correct or not. It is the responsibility of the country to check highlighted issues and improve submissions where needed.

The main objective of this report is to provide summary information on the review process and the review findings. Within the review process the following feedback was provided to the countries:

Excel sheets with pre-defined country-specific queries[15]

Country-specific feedback reports covering the stage 1 and stage 2 review[16]

All the results can be downloaded from the Eionet CIRCA website by using the Eionet username.

A.1.3 Dataset

The informal review was carried out on the dataset which was published on the E-PRTR website on 2 May 2011 (v3.1) and which included the official submissions and resubmissions of countries due by 31 March 2011.

A.1.4 Countries covered

The 2011 informal E-PRTR data review involved in total 32 countries compared to 31 countries in the 2010 review. Serbia reported for the first time to E-PRTR in 2011, delivering data for 2009 only and then only for releases of NOx and SOx. Therefore, when comparing 2009 with 2008 data Serbia has been excluded from the comparisons.

E-PRTR 2009 includes now data from 32 countries; the EU-27 (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania,

[14] CLRTAP and UNFCCC inventories used for comparisons are the ones reported to EEA via CDR. EU ETS data are downloaded from the Community Independent Transaction Log (CITL). http://ec.europa.eu/environment/ets/

[15] Published on 16 and 17 May 2011 on the Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title&cookie=1

[16] Published on 27 June on Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country_specific&vm=detailed&sb=Title

Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom) plus Norway, Iceland, Liechtenstein, Switzerland and Serbia.

A.1.5 Pollutants and waste included in E-PRTR reporting

The E-PRTR Regulation (No 166/2006/EC)[17] lists 91 pollutants in its Annex II; 59 of these concern releases to air, 71 releases to water and transfers in water and 61 releases to soil. For each of these pollutant threshold values are defined. If a facility exceeds these threshold values, the release/transfer must be reported. The pollutants are grouped as following:

- chlorinated organic substances
- greenhouse gases
- heavy metals
- inorganic substances
- other gases *(include CLRTAP Main pollutants)*
- other organic substances
- pesticides

For the full list of the E-PRTR pollutants including the respective thresholds see Appendix I of this report.

The reporting of carbon dioxide (CO_2) under E-PRTR requires the reporting of the total mass of CO_2 which indicates that CO_2 including releases from biomass have to be reported. In addition, countries have been given the possibility to report on a voluntary basis (not included in Annex II of the E-PRTR Regulation) releases of CO_2 excluding biomass.

Facilities are required to report on off-side transfers of waste under the E-PRTR Regulation, when the total transfers of hazardous waste exceed two tonnes or the total transfer of non-hazardous waste exceeds 2,000 tonnes.

A.1.6 Activities included in E-PRTR reporting

E-PRTR includes 65 activities listed in Annex I of the PRTR Regulation (Appendix 2). An operator of a facility that undertakes one or more activities specified in Annex I of the Regulation above the capacity thresholds shall report pollutant releases and transfers above the pollutant thresholds annually. All releases occurring in individual facilities are recorded under the main activity. Other activities appearing in the facility are provided as additional information. For a full list of E-PRTR activities and thresholds see 'APPENDIX II- List of E-PRTR ANNEX I Activities' of this document.

A.2 Constraints on the Review

Based on the large number of pollutants (91) and activities (65) under E-PRTR it is too time consuming to follow up all findings highlighted by the automated tests because all pollutants would have to be selected and analysed individually. The priority for air emissions has thus been given to the NECD pollutants (NOx, NMVOC, SOx, NH_3), CO_2 and PM_{10}. Second priority has been given to heavy metals and PCDD/PCDF. The priority for water releases has been given to heavy metals, total nitrogen, total phosphorus and total organic carbon.

[17] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_033/l_03320060204en00010017.pdf

B Results of Stage 1 Review

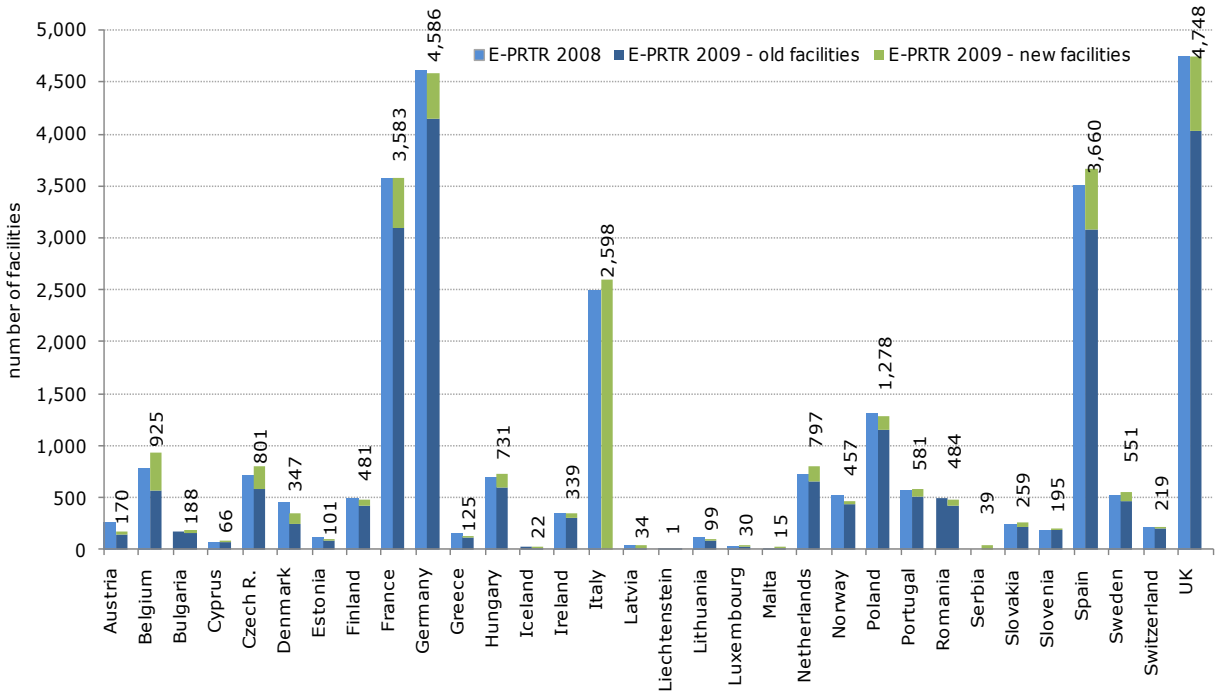
In this chapter selected findings of the stage 1 review are presented. Since there are 91 pollutants covered under E-PRTR not all findings from the stage 1 review at a pollutant level can be included in this report. Information on total E-PRTR releases/transfers in (kg/year) per pollutant and media in individual countries and regions can be found in the Excel files that were provided to the countries[18].

B.1 Number of facilities/releases

A facility refers to one or more installations on the same site that are operated by the same natural or legal person. A pollutant release/transfer report is defined as a release or transfer reported for a specific pollutant by a specific facility in a specific year. For example, facility 'A' reports in 2009 releases to air for CO_2, SO_2, NO_x and Cd. This means that it reports four pollutants, which equals four release reports for facility 'A' in 2009.

B.1.1 Number of facilities

Figure B.1 Number of facilities reported by countries under E-PRTR 2008 and 2009



Note: Numbers above bars indicate the total of E-PRTR facilities in 2009.

[18] Published on 16 and 17 May 2011 on the Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title&cookie=1

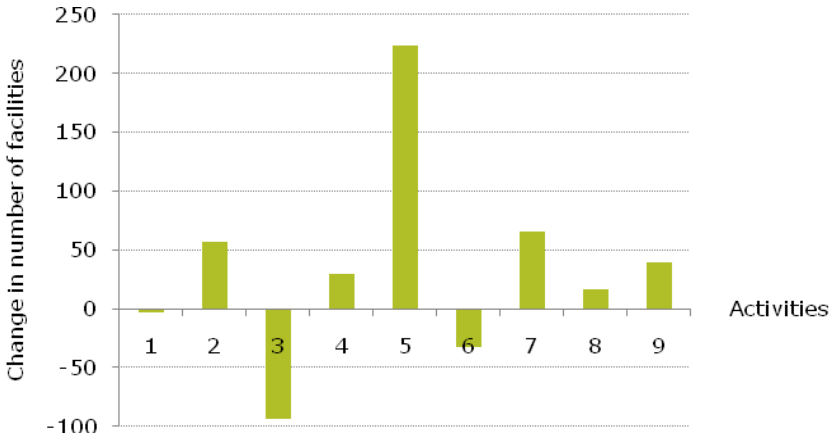
A comparison of the number of facilities between years can serve as an indicator of completeness of reported data. Figure B.1 shows the number of facilities reported by country for E-PRTR 2009 in comparison to E-PRTR 2008. The graph also illustrates the number of new facilities and the number of facilities that reported in previous years.

The total number of facilities reported under E-PRTR 2009 amounted to 28,510 (EU-27, Iceland, Liechtenstein, Norway, Switzerland and Serbia). The total number of facilities in 2009 without Serbia was 28,471 compared to 28,170 facilities reported for 2008. This represents a slight increase in the number of facilities of about 1 %.

The situation in individual countries differs; 14 countries reported fewer facilities in 2009 than in 2008, two countries reported the same number and 15 countries reported more facilities in 2009 than in 2008 (excluding Serbia). Overall, about 22 % of the facilities in E-PRTR 2008 did not report under E-PRTR 2009. Besides Italy, where all facilities reported in 2008 disappeared in 2009 (2,491 facilities) indicating a problem with the reporting of the previous year ID, the highest number of facilities disappeared in the United Kingdom with 727 facilities.

About 23 % of the facilities reporting in 2009 were reported as new compared to E-PRTR 2008.

Figure B.2 Change in number of facilities per activity group between E-PRTR 2008 and 2009 (without Serbia)



Activities:

1 – Energy
2 – Production and processing of metals
3 – Mineral industry
4 – Chemical industry
5 – Waste and wastewater management
6 – Paper and wood production and processing
7 – Intensive livestock production and aquaculture
8 – Animal and vegetable products from the food and beverage sector
9 – Other activities

Note: Serbia reported in total 39 facilities in main actiovies 1, 2, 3, 4 and 8

Fehler! Verweisquelle konnte nicht gefunden werden. illustrates total changes in the number of facilities at the activity level (Serbia not included). The observed changes in any main sector did not exceed ±4.5 %.

- The number of facilities decreased in three main activity groups: *1. Energy sector* by three facilities (-0.2 %), *3. Mineral industry* -94 facilities (-4 %) *and 6. Paper and wood production and processing* -33 facilities (-4 %)
- On the other hand, in six main activity groups the number of facilities increased: *2. Production and processing of metals, 4. Chemical industry, 5. Waste and wastewater management, 7. Intensive livestock production and aquaculture, 8. Animal and vegetable products from the food and beverage* sector and *9. Other activities*. The increase in the number of facilities was most significant for sector *5. Waste and wastewater management* with an addition of over 224 facilities (+3 %) in 2009 compared to 2008.

Countries reported information on facilities altogether for 44 E-PRTR activities. All but 10 countries provided information under more than 20 main activities, out of which France, Germany, Spain and the United Kingdom submitted data for 40 or more activities (Appendix III) [19]. On the other side, Lichtenstein reported only under one main activity and Cyprus, Iceland and Malta less than 10 main activities.

Most frequently reported *activities are 1(c), 2(e), 3(c), 3(e , 4(a), 5(a), and 5(d)* with 28 to 30 countries reporting each. On the other hand, a maximum of four countries submitted data for *activity 1(b), 1(e), 1(f*) and 6(c).

An interesting finding concerning the number of facilities is that eight countries reported in total 135 facilities for E-PRTR 2009 without any release/transfer report attached to them compared to 161 facilities for E-PRTR 2008 (Table B.1). The reasons for this can be either that the facility actually did not report any releases/transfers or that the facility has releases below the threshold. Only in the first case should countries check those facilities because they may not have to report under E-PRTR. Table B.1 illustrates the number of facilities without any release/transfer report attached to them by E-PRTR country.

Table B.1 Number of facilities without any release/transfer reports per country

Country	No. of facilities without release/transfer report 2008	No. of facilities without release/transfer report 2009
Belgium	1	-
Hungary	1	-
Iceland	4	5
Netherlands	1	1
Norway	131	102
Poland	6	2
Slovenia	10	17

[19] Information on the number of facilities per country as reported in 2008 and 2009 is provided in a separate Excel file and can be downloaded at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset&vm=detailed&sb=Title

Switzerland	7	8
Total	**161**	**135**

B.1.2 Number of facilities reporting waste transfers

Figure B.3 Number of facilities reporting waste under E-PRTR 2009

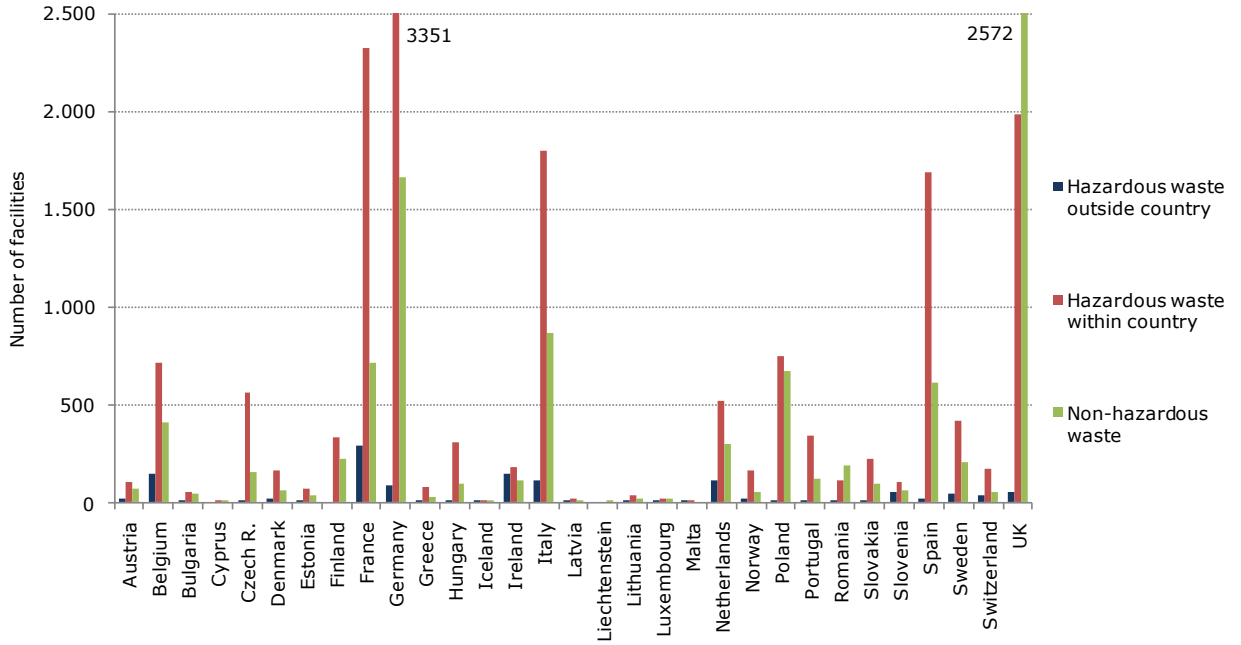
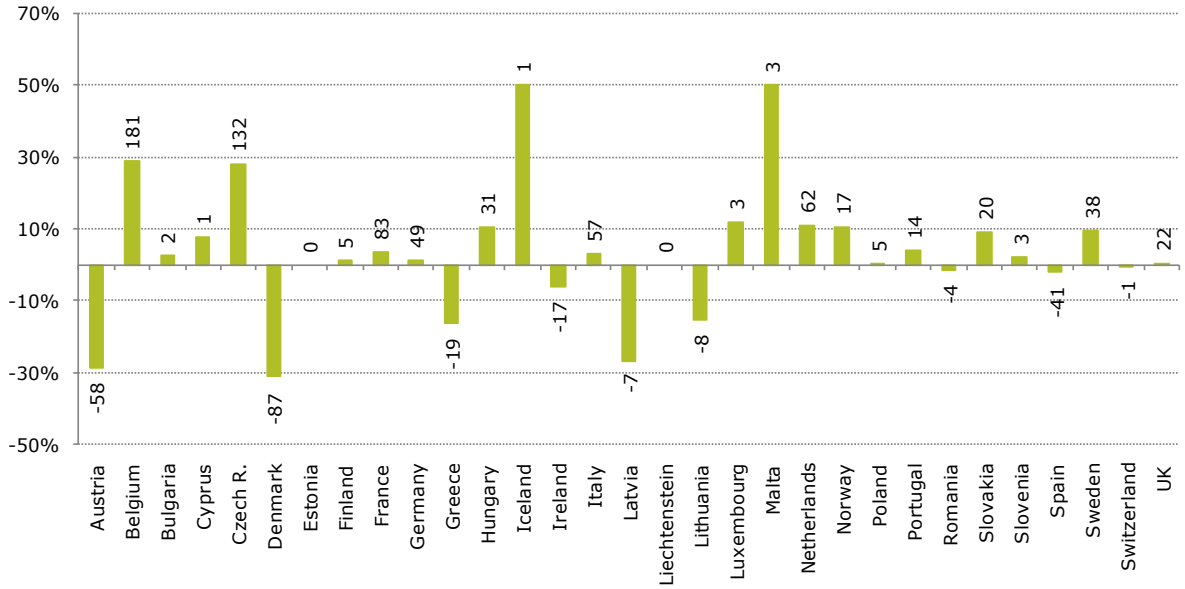


Figure B.3 presents the number of facilities reporting by waste type per country under E-PRTR 2009. The waste types are non-hazardous waste, hazardous waste within country and hazardous waste outside country. In total, 16,638 facilities reported transfers of hazardous waste within country, 9,489 facilities reported transfers of non-hazardous waste and 1,274 facilities reported transfers of hazardous waste outside country. Compared to the number of facilities reporting the different types of waste in E-PRTR 2008 this represents an increase of 3 % (+505 facilities) and 5 % (+64 facilities) for facilities reporting hazardous waste within country and hazardous waste outside country, respectively. In E-PRTR 2009 the number of facilities reporting non-hazardous waste decreased by about 2 % (159 facilities).

The number of facilities reporting waste has changed considerably for some countries between E-PRTR 2008 and E-PRTR 2009 (Figure B.4). For example, in Belgium and the Czech Republic the number of facilities reporting waste increased by 181 and 132 facilities respectively (about 30 % each), while in Austria and Denmark the number of facilities decreased by 58 and 87 facilities respectively (about -30 % each). In most countries the changes are in the range of +/- 20 %.

Figure B.4 Percentage change by country in the number of facilities reporting waste between 2008 and 2009



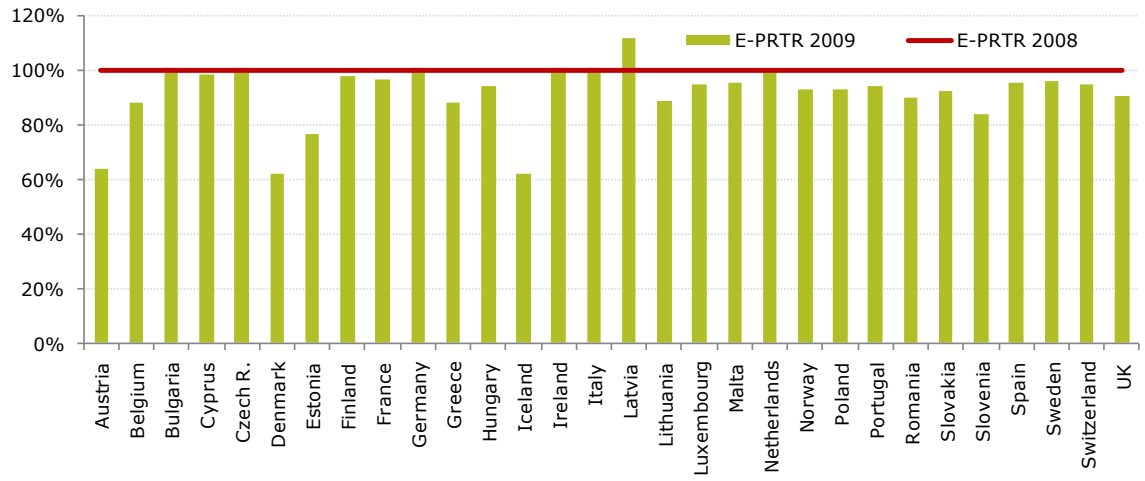
Note: *The bars indicate the relative change in the number of facilities whereas the numbers attached to the bars indicate the absolute change in number of facilities reporting waste between 2008 and 2009.*

B.1.3 Number of release/transfer reports

The total number of releases/transfers reported under E-PRTR 2009 for the media air, water, transfer in water and soil amounted to 40,198 for all countries and 40,129 reports (excluding Serbia) compared to 42,454 reports under E-PRTR 2008. This is a decrease of about 5 %. This decrease correlates with the decrease in the number of facilities reporting releases/transfers for the media air, water and soil of about 3 %. In addition, the average number of release/transfer reports per facility for these media decreased from 2.45 reports per facility in 2008 to 2.41 in 2009. The reasons for this could be releases/transfers that fell below the thresholds, for example because of the economic crisis, incomplete reporting for the year 2009 or incorect reporting for the year 2008.

Figure B.5 illustrates the total number of release/transfer reports for air, water, transfer in water and soil under E-PRTR 2009 compared to E-PRTR 2008. Some countries, e.g. Bulgaria, the Czech Republic, Germany, Ireland, Italy and Latvia, reported more release/transfer reports than under E-PRTR 2008 while several other countries reported fewer release/transfer reports under E-PRTR 2009, e.g. Austria, Denmark, Estonia and Iceland.

Figure B.5 Total number of release/transfer reports under E-PRTR 2009 compared to E-PRTR 2008 (air, water, transfer in water, soil)



Note: *Liechtenstein is not included since it did not report release/transfer reports to air, water and soil. Serbia is not included as it only submitted data for 2009.*

B.1.3.1 Number of release reports to air

Figure B.6 presents the number of release reports to air per country for E-PRTR 2008 and E-PRTR 2009. The total number of release reports to air for all countries under E-PRTR 2009 amounted to 22,477 for all countries and 22,408 reports excluding Serbia compared to 23,438 under E-PRTR 2008 indicating a decrease in release reports to air of about 4 %. The 4 % decrease in the number of release reports to air correlates with a fall in the number of facilities reporting releases to air of about 3 %. In addition, the average number of release reports to air per facility fell from 1.95 in 2008 to 1.91 in 2009. The reasons for this could be either releases falling below the thresholds, for example because of the economic crisis, or incomplete reporting for the year 2009.

All countries except for Finland, Germany and Latvia submitted fewer release reports to air for 2009 (see Figure B.6). The decrease in the number of release reports to air was most significant in Austria where the number of release reports to air in 2009 fell by 49 % of the number in 2008.

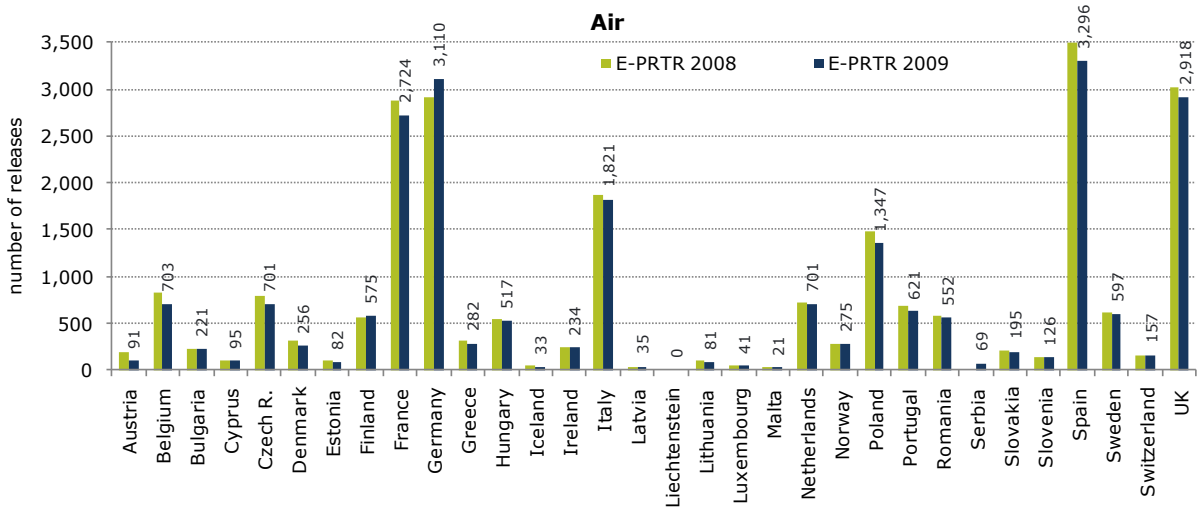
A detailed table of the number of release reports to air per country and pollutant is included in **APPENDIX IV** – E-PRTR 2009 Number of releases to air per pollutant and country of this report.

Individual countries provided release reports to air for 3 to 46 pollutants with the exception of Liechtenstein, which did not report any releases to air. Thirty-one countries reported releases of SO_x; 30 countries of CO_2, CH_4 and NO_x; 29 countries of PM10; 28 countries of NH_3, CO and NMVOC and 27 countries releases of Hg and Zn. Release reports for other heavy metals (Cd and Cr) were also reported by more than 20 countries.

However, 10 pollutants (Aldrin, Chlordane, Chlordecone, DDT, Dieldrin, Endrin, Heptachlor, Lindane, Mirex, and Toxaphene) out of the 60 with a threshold in Annex II of the E-PRTR Regulation were not reported by any E-PRTR facility. Four pollutants (Fluorides, Phenols, Total nitrogen and Total organic carbon (TOC)) were reported by Norway as releases to air even though these pollutants are not normally

considered air pollutants. This is likely to be an anomaly in the reported data and should be checked by Norway. HCH was reported by only one country, Italy.

Figure B.6 Number of release reports to air under E-PRTR 2008 and E-PRTR 2009



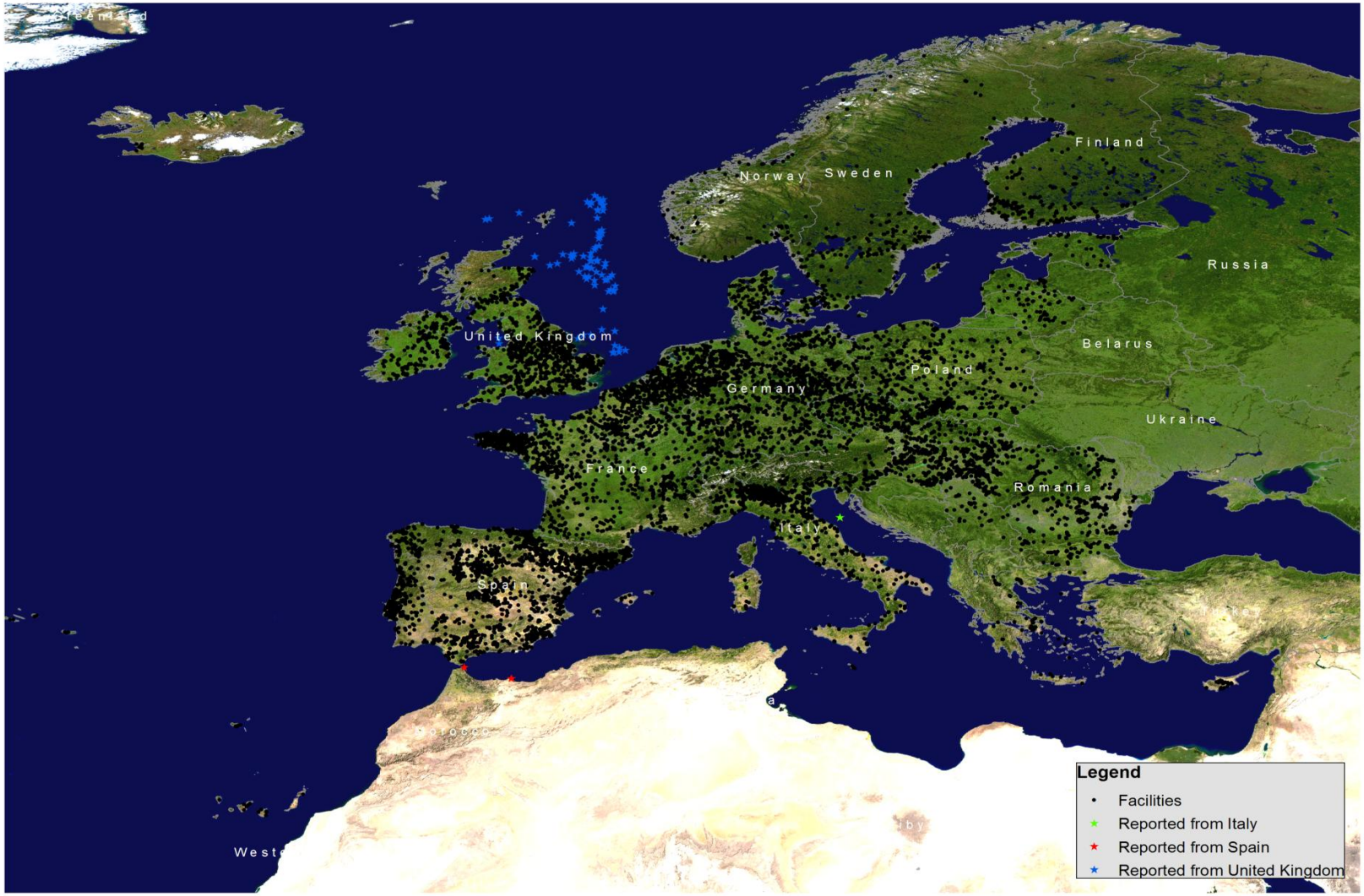
Note: *Liechtenstein did not report any release report to air. Serbia reported data for 2009 only.*

There might be different reasons for the limited number of release reports for some pollutants: the E-PRTR threshold is too high; no estimation methodology exists for this pollutant; or country data is incomplete (does not include all relevant E-PRTR facilities or not all relevant releases for all E-PRTR facilities).

Detailed maps showing the distribution of the facilities reported per country, medium, activity or pollutant can be found at the E-PRTR website[20]. The map in Figure B.7 illustrates the density of E-PRTR facilities (small black dots) with releases to air in individual countries. The map also indicates sources allocated outside country borders (bigger colourful dots). Most of the E-PRTR sources placed outside country borders seem to have correct coordinates (e.g. fish/shellfish farms or drilling platforms) but some facilities might have incorrect coordinates, however ETC/ACM does not have enough information to check these. Italy, Spain and United Kingdom might consider checking facilities that are located outside their borders.

[20] http://prtr.ec.europa.eu/MapSearch.aspx

Figure B.7 Facilities with releases to air in E-PRTR 2009; inside country (small black dots) and outside country (see legend)



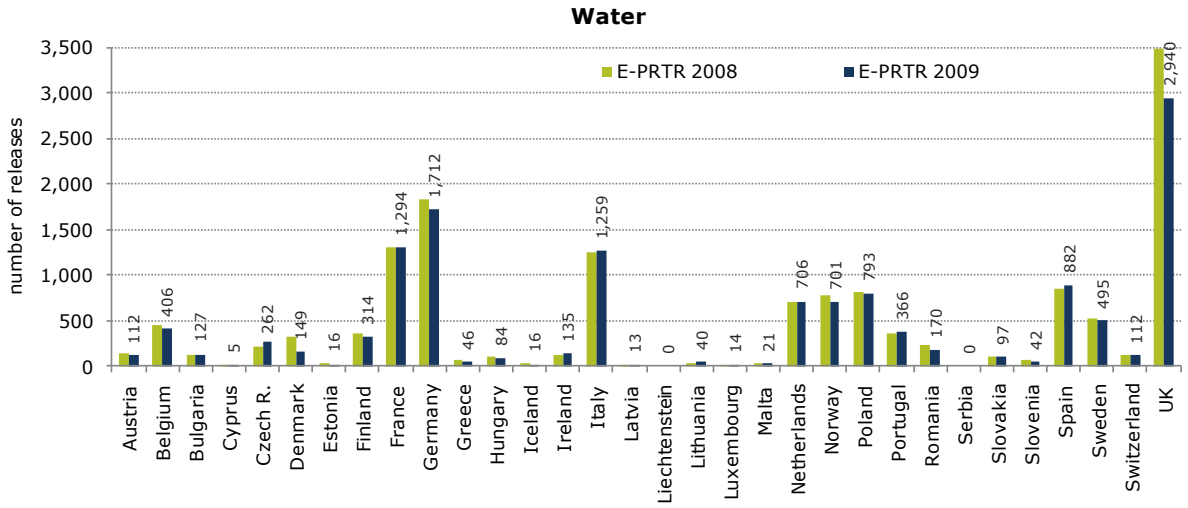
Note: The emissions from oversee regions of France are not presented on the map

B.1.3.2 Number of release reports to water

Figure B.8 compares the number of release reports to water per country for E-PRTR 2008 and E-PRTR 2009. The total number of release reports to water for all countries under E-PRTR 2009 amounted to 13,329[21] compared to 14,397 under E-PRTR 2008 indicating a decrease in release reports of about 7 %. The countries with the most significant decreases were Denmark, Estonia and Iceland (>48 %) whereas the countries with the most significant rise in the relative number of release reports to water were Cyprus and the Czech Republic (≥ 25 %).

The decrease in the number of release reports to water correlates with a decrease in the number of facilities reporting releases to water of about 5 %. In addition, the average number of release reports to water per facility decreased from 4.6 to 4.4 reports. The reasons for this could be either release reports falling below the thresholds, for example because of the economic crisis, or incomplete reporting for the year 2009.

Figure B.8 Number of release reports to water under E-PRTR 2008 and E-PRTR 2009



Note: *Liechtenstein and Serbia did not report any release report to water.*

A detailed table of the number of release reports to water per country and pollutant is included in **APPENDIX V** of this report. All countries except for Liechtenstein and Serbia submitted release reports to water. Three pollutants (ammonia (NH_3), sulphur oxides (SO_x) and 1,1,1-trichloroethane) were reported by Norway that have no threshold for water and are usually not expected to be reported as releases to water. This might be a potential anomaly in data and should be checked by Norway.

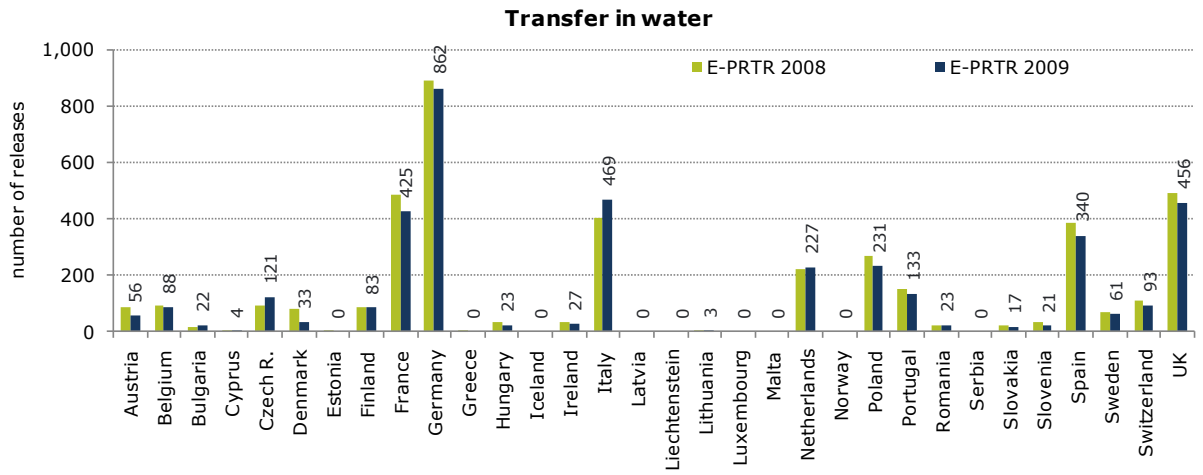
The pollutants reported most frequently as releases to water were total phosphorus (30 countries); total nitrogen and total organic carbon (29 countries each) alongside with the heavy metals Cu (29 countries); Ni, Zn (28 countries) and Pb (27 countries).

[21] Serbia did not report any release reports to water for 2009.

B.1.3.3 Number of pollutant transfer reports in water

The total number of pollutant transfer reports for all countries (except Serbia[22]) under E-PRTR 2009 amounted to 3,818 compared to 4,060 under E-PRTR 2008 showing a decrease of about 6 %. Six countries reported a higher number of pollutant transfer reports under E-PRTR 2009, whereas 18 countries reported fewer pollutant transfer reports compared to 2008 (Figure B.9). Eight countries (Estonia, Greece, Iceland, Latvia, Liechtenstein, Luxembourg, Malta and Norway) did not report any pollutant transfer reports in water for 2009 and Finland reported the same number of facilities for both years. This is in line with the 2008 reporting with the exception of Estonia and Greece, which did report pollutant transfer reports in water for 2008. Excluding Estonia and Greece (-100 %), the most significant decrease in the number of pollutant transfer reports was Denmark with a drop of 58 % compared to the number of reports under E-PRTR 2008.

Figure B.9 Number of transfer reports in water under E-PRTR 2008 and E-PRTR 2009



Note: *Estonia, Greece, Iceland, Latvia, Liechtenstein, Luxembourg, Malta, Norway and Serbia did not report any transfer report in water for 2009.*

Table B.2 Pollutants reported by only one country

Pollutant	Country
Chlordane	Italy
Chlordecone	France
Chlorfenvinphos	United kingdom
Heptachlor	Italy
Toxaphene	Czech Republic

A detailed table of the number of transfer reports in water per country and pollutant is included in **APPENDIX VI** of this report. Out of the 71 pollutants with a threshold for water in Annex II of the E-PRTR Regulation seven were not reported by any E-PRTR facility. No pollutant without a threshold for water was reported as a transfer in water. More than 20 countries reported transfers in water on total phosphorus, total organic carbon and zinc and compounds and 19 countries reported total nitrogen and phenols. Five pollutants were reported by only one country (Table B.2). The reasons for this might be

[22] Serbia did not report any pollutant transfers in water for 2009 and did note report at all in 2008.

one or more of the following: the E-PRTR thresholds are too high; there are no estimation methods for these pollutants; incomplete reporting by the country; and the fact that the processes releasing these pollutants do not widely occur in these specific countries.

B.1.3.4 Number of release reports to soil

Only nine countries (out of 32) reported releases to soil for 2009 (Table B.3). The total number of release reports to soil under E-PRTR 2009 was 574[23] compared to 559 under E-PRTR 2008. Out of the 61 pollutants with a threshold for soil in Annex II of the E-PRTR Regulation only 21 were reported for 2009.

Table B.3 Number of facilities and release reports to soil under E-PRTR 2008 and 2009

Country	Number of facilities 2008	Number of release reports 2008	Number of facilities 2009	Number of release reports 2009
Bulgaria	4	4	0	0
Czech Republic	0	0	2	7
France	117	459	119	483
Germany	6	28	4	21
Ireland	0	0	1	2
Norway	2	2	5	5
Poland	1	1	1	1
Slovakia	2	15	2	10
Spain	1	6	1	4
United Kingdom	9	44	9	41
Total	**142**	**559**	**144**	**574**

It is not possible to draw any conclusions on the completeness of reporting across countries since only nine countries report releases to soil in 2009 and eight in 2008,. In some countries releases to land as described in the E-PRTR Guidance document are namely not allowed under national legislation. The Czech Republic and Ireland, which did not report any releases to soil for 2008, reported releases to soil for 2009 whereas Bulgaria did in 2008report releases to soil for 2008 but did not report any releases to soil in 2009.

B.2 Quantity of waste transfers

The waste types that are reported under E-PRTR are hazardous waste within country, hazardous waste outside country (transboundary movement of hazardous waste) and non-hazardous waste. The waste treatment types are disposal and recovery.

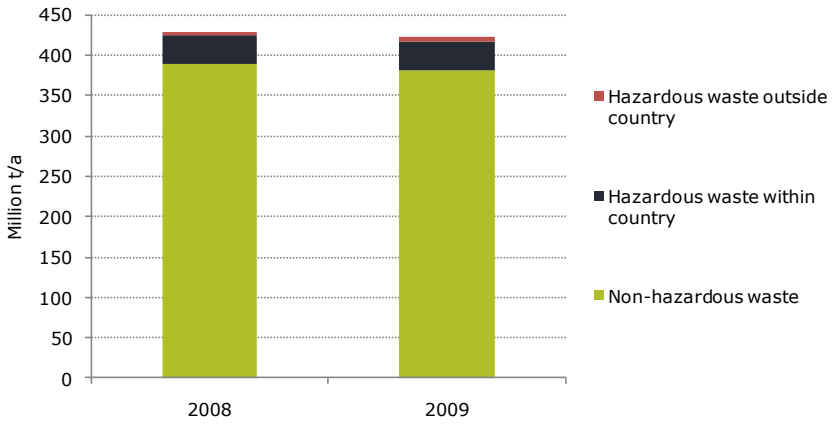
The total quantity of waste reported under E-PRTR 2009 by all countries was about 422 million tonnes per year[24] compared to 428 million tonnes under E-PRTR 2008 (Figure B.10). This represents a decrease of about 1 % in the total quantity of reported waste. For 2009, hazardous waste transferred within the country amounted to about 35.8 million tonnes per year (8 % of total) and hazardous waste transferred outside the country to about 4.6 million tonnes per year (1 % of total). The quantity of non-hazardous waste transfers accounted for 382 million tonnes per year (90 % of total).

[23] Serbia did not report any release reports to soil for 2009.

[24] Serbia did not report any transfers of waste for 2009.

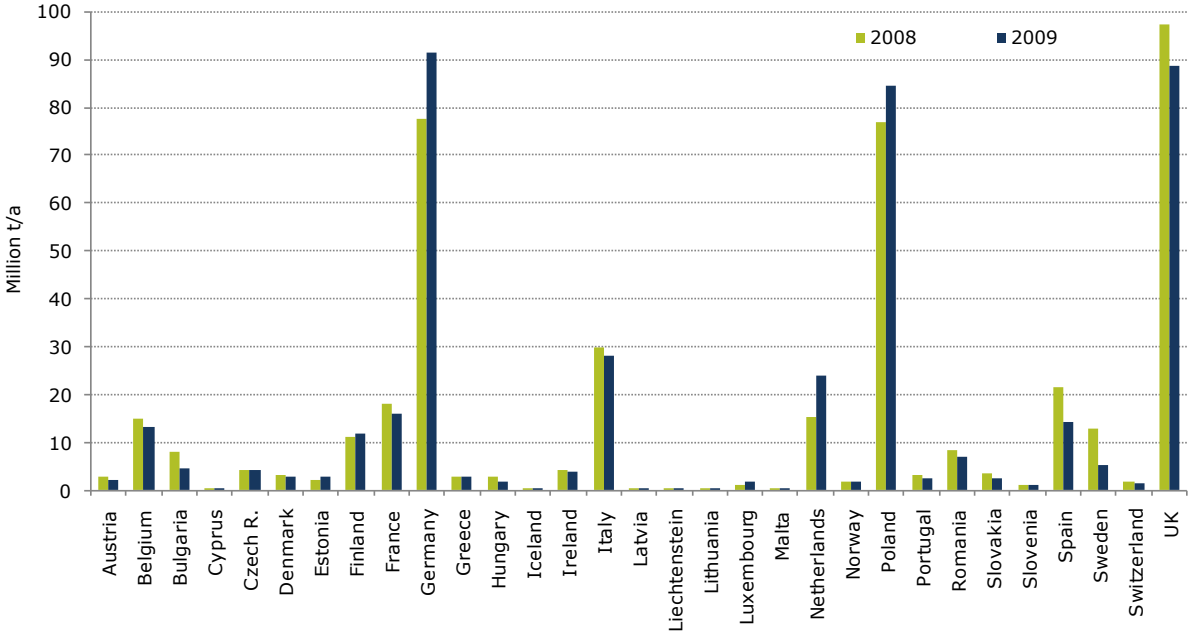
Figure B.10 shows that the amount of hazardous waste transferred inside the country and outside the country increased by 2 % and 49 % respectively between 2008 and 2009 whereas the quantity of non-hazardous waste transferred fell by 2 %. This correlates with the number of facilities reporting different waste types in 2008 and 2009. The number of facilities reporting hazardous waste transferred inside the country and outside the country increased by 5 % and 3 %, respectively, whereas the number of facilities reporting non-hazardous waste fell by 2 %.

Figure B.10 Total quantity of waste by waste types under E-PRTR 2008 and 2009



The distribution of waste types differs between countries, but non-hazardous waste is generally the dominant waste type reported by all countries (Figure B.10). Norway is the only country where non-hazardous and hazardous wastes have almost an equal share.

Figure B.11 Total quantity of waste reported by countries under E-PRTR 2008 and 2009

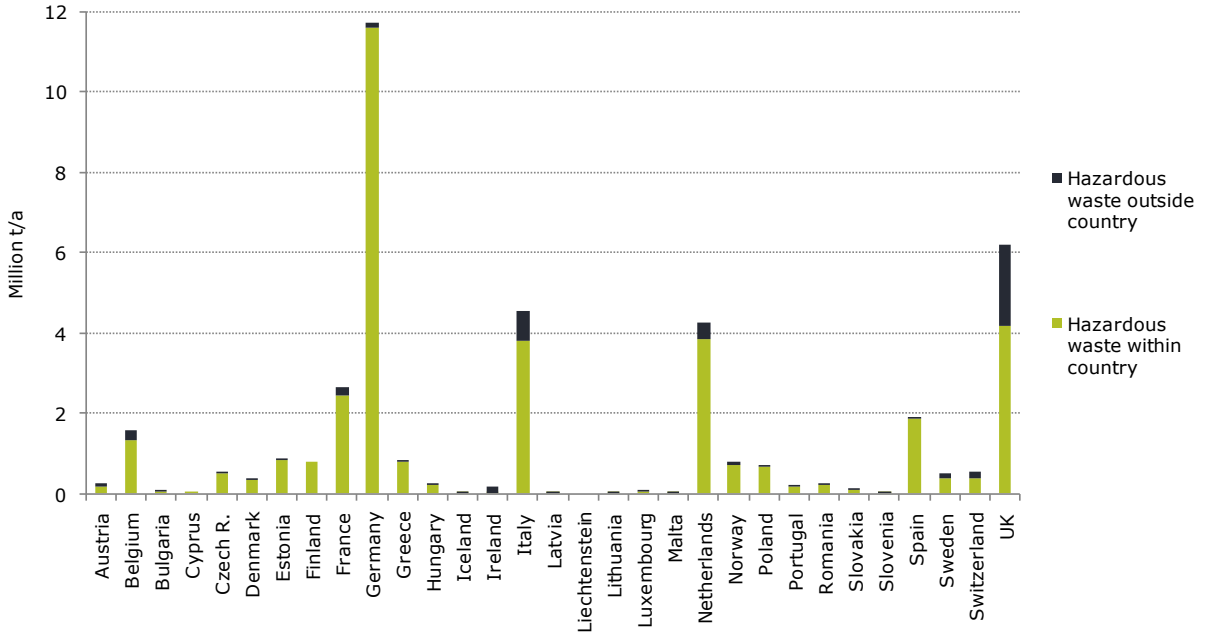


Note: *Serbia did not report any waste transfers for 2009.*

The change in the total quantity of waste reported in 2008 and 2009 varied between countries (Figure B.11). In Iceland and the Netherlands the total quantity of waste increased by more than 50 %, whereas in Lithuania and Sweden it fell around 60 %. These striking changes indicate potential inconsistencies in reporting and should be checked by those countries.

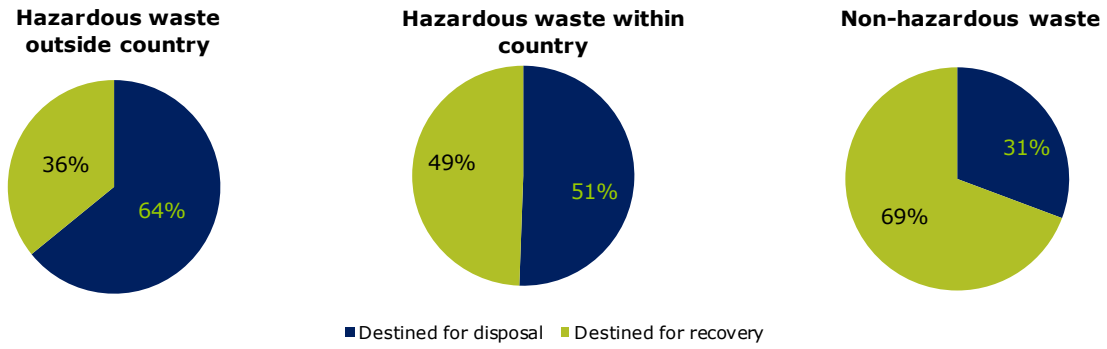
The total quantity of hazardous waste reported for 2009 is significantly higher than the total quantity reported for 2008. In general, the quantity of hazardous waste transferred within the country is significantly higher than the quantity transferred outside the country (Figure B.12). Hazardous waste within country has been reported by all countries except for Liechtenstein and Serbia whereas hazardous waste outside country was not reported by Cyprus, Finland, Liechtenstein and Serbia. A more in-depth analysis is provided in the chapter on the stage 2 review on the waste data.

Figure B.12 Total quantity of hazardous waste reported by countries under E-PRTR 2009



Note: *Serbia did not report any waste transfers for 2009.*

Figure B.13 Percentage of disposed or recovered waste for different waste types under E-PRTR 2009



Note: *Total amount of hazardous waste outside country: 4.6 million t/a, total amount of hazardous waste within country: 35.8 million t/a, total amount of non-hazardous waste: 382 million t/a*

Figure B.13 shows the percentage of waste that has been disposed or recovered for the different waste types. For hazardous waste transferred outside the country the distribution between the two treatment options has changed significantly between 2008 and 2009 with an increase in the share of disposed waste from 41 % to 64 %. For the other two waste types the distribution between the treatment options remained relatively stable between 2008 and 2009. Hazardous waste transferred inside the country in 2009 is equally destined for disposal and recovery while for non-hazardous waste the dominant waste treatment option is recovery with 69 %.

B.3 Reporting of confidential data

Article 11 of the E-PRTR Regulation provides the option of claiming confidentiality for certain data elements in E-PRTR reports in accordance with Article 4 of Directive 2003/4/EC[25] of the European Parliament and of the Council of 28 January 2003 on public access to environmental information. The allowed reasons for claiming confidentiality in E-PRTR reporting are: Article 4 (2) (a) on the confidentiality of the proceedings of public authorities, where such confidentiality is provided for by law; Article 4 (2) (b) to confidentiality based on the prevention of adverse effects on international relations, public security or national defence; Article 4 (2) (c) to confidentiality based on the prevention of adverse effects on the course of justice, the ability of any person to receive a fair trial or the ability of a public authority to conduct an enquiry of a criminal or disciplinary nature; Article 4 (2) (d) of Directive 2003/4/EC refers to the confidentiality of commercial or industrial information where such confidentiality is provided for by national or community law to protect a legitimate economic interest, including the public interest in maintaining statistical confidentiality and tax secrecy and Article 4 (2) (e) to confidentiality based on intellectual property rights. If confidentiality is claimed the country has to indicate separately for each facility the type of information that has been withheld and the reason why it has been withheld.

Table B.4 Facilities reporting confidential data in E-PRTR 2009

Country	Facility Report		Pollutant Release		Pollutant Transfer		Waste Transfer	
	2008	2009	2008	2009	2008	2009	2008	2009
Belgium	63	41					81	106
Bulgaria			4	10			4	3
Germany	3	2	4	1	2	2	7	3
Greece	1							
Luxembourg							3	3
Romania	1						4	2
Sweden							1	1
Switzerland							6	
United Kingdom							15	18

Confidential data has been evaluated at four different levels: the level of the facility report, the pollutant release report, the pollutant transfer report and the waste transfer report. Confidentiality

[25] OJ L 41, 14.2.2003, p. 26

related to the facility report refers to data elements that identify the facility (e.g. address). Confidentiality related to the pollutant release report, pollutant transfer report or waste transfer report refers to confidential data elements regarding the release/transfer reports, e.g. the pollutant.

Compared to E-PRTR 2008 the number of countries reporting confidential data has decreased from nine to seven countries (Belgium, Bulgaria, Germany, Luxembourg, Romania, Sweden, and United Kingdom) for 2009. Greece and Switzerland no longer reported confidential data for 2009. In total, 43 facilities reported confidential data related to the facility report, 11 facilities related to the pollutant release report, two facilities related to the pollutant transfer report and 136 facilities claimed confidentiality on data related to waste transfer reports.

A new element in the 2011 stage 1 review was a more detailed investigation into the reasons that countries provided for keeping information confidential. The most common reason for keeping information confidential was Article 4 (2) (d). Belgium, Luxembourg, Romania, Sweden and the United Kingdom exclusively referred to this reason for holding information confidential. Germany in addition referred to Articles 4 (2) (c) and 4 (2) (e) whereas Bulgaria did not refer to Article 4 (2) (d) but to Articles 4 (2) (a), (b) and (c) of Directive 2003/4/EC.

Another new element in the 2011 stage 1 review has been an analysis of the quantities of releases to air, water and soil and pollutant transfers in water that have been kept confidential. No confidentiality was claimed concerning releases to soil. Table B.5 shows the confidential quantities per pollutant group for releases to air, water and pollutant transfers in water.

Table B.5 Confidential quantities for releases to air, water and pollutant transfers in water

Pollutant group	Medium	Total quantity t/a	% share of total quantity of the pollutant group
Greenhouse gases	air	658,000	0.000078%
Other gases	air	1,488	0.000110%
Heavy metals	water	0.2	0.000053%
Inorganic substances	water	117	0.000002%
Inorganic substances	transfer in water	64,800	0.016933%
Other organic substances	transfer in water	0.1	0.000000%

B.4 Accidental releases

Table B.6 Number of accidental release reports (for all pollutants) by country in E-PRTR 2009 sorted by number of reports

Country	Number of accidental release reports
Spain	156
France	87
Netherlands	76
Poland	54
United Kingdom	48
Germany	43
Portugal	40
Italy	36
Slovenia	14
Czech Republic	9
Belgium	8
Ireland	7
Estonia	3
Switzerland	3
Bulgaria	2
Romania	2
Sweden	2
Austria	1
Malta	1
All countries	**592**

Under E-PRTR operators are required to report all releases and transfers from deliberate, accidental, routine and non-routine activities. Nineteen countries (out of 32) reported accidental releases under E-PRTR for 2009. In total, 592 accidental releases to air, water and soil of different pollutants were reported under E-PRTR in 2009 compared to 565 accidental releases under E-PRTR 2008. Table B.6 illustrates the total number of accidental release reports by country for releases to air, water and soil. Countries that are not included in this list did not report any accidental releases.

Countries can find detailed information on the quantity of the accidental releases for every pollutant and medium in the stage 1 country-specific Excel spreadsheets (sheet 6 "(06) Accidental releases")[26].

Table B.7 provides an overview of the pollutants for which the highest accidental releases to air reported under E-PRTR 2009. Pollutants with a share of ≥ 1 % in total E-PRTR releases to air have been included in the table. The total number of accidental release reports to air amounted to 310 under E-PRTR 2009 compared to 331 under E-PRTR 2008.

Table B.7 Pollutants with high accidental quantity of releases to air (> 1 % of total)

Pollutant	Quantity of accidental releases kg/a	Total quantity kg/a	Number of accidental releases	% share of accidental releases in total E-PRTR releases
Hydrochlorofluorocarbons(HCFCs)	20,191,387	28,797,943	511	70.1 %
Hydro-fluorocarbons (HFCs)	155,963	7,303,454	146	2.1 %
Hydrogen cyanide (HCN)	26,804	721,103	10	3.7 %
Tetrachloromethane (TCM)	3,900	287,699	10	1.4 %

The share of accidental releases for these pollutants differs between countries. For example, Malta reported 100 % accidental releases for HCFC; Ireland and the United Kingdom reported more than 50 %

[26] http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title

accidental releases for HCFC. For the pollutant HFC France, Ireland, Italy, the Netherlands and Poland reported accidental releases between 4 % and 48 % of their total HFC releases.

Concerning accidental releases to water only Tetrachloromethane (TCM) has more than a 1 % a share in total E-PRTR releases to water with a share of accidental releases of 12.7 %. The total number of accidental release reports to water amounted to 281 for 2009 compared to 234 for 2008.

Dichloromethane (DCM) was the only pollutant reported to be accidentaly released to soil under E-PRTR 2009 compared to no accidental release reports to soil reported under E-PRTR 2008.

B.5 Top polluting facilities

The lists of top polluting facilities in this chapter identify those facilities which have the highest releases and/or transfers. The fact that a facility is amongst the highest polluters does not provide any information concerning the environmental performance of those facilities. The necessary background information related to the facilities to perform such an assessment (e.g. capacity, fuel use, etc.) is not reported under E-PRTR.

B.5.1 Top polluting facilities for releases to air

Table B.8 below provides information for selected pollutants[27] on the five facilities with the highest share of total E-PRTR releases to air per pollutant. The selected pollutants are:
main GHGs reported also under UNFCCC; carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O)

acidifying pollutants and ozone precursors; ammonia (NH_3), carbon monoxide (CO), nitrogen oxides (NO_x/NO_2), non-methane volatile organic compounds (NMVOC), sulphur oxides (SO_x/SO_2) and

other pollutants reported under CLRTAP:

- particulate matter (PM_{10});
- heavy metals: arsenic and compounds (as As), cadmium and compounds (as Cd), chromium and compounds (as Cr), copper and compounds (as Cu), lead and compounds (as Pb), mercury and compounds (as Hg), nickel and compounds (as Ni), zinc and compounds (as Zn); and
- persistent organic pollutants (POPs): polycyclic aromatic hydrocarbons (PAHs), hexachloro-benzene (HCB), PCDD/F (dioxins /furans) (as Teq).

The complete list of facilities ranked among the E-PRTR top 20 polluting facilities including information on their share in total E-PRTR emission is provided in the stage 1 country specific Excelspreadsheets, sheet “E-PRTR TOP20”.

The distribution of emissions for some pollutants like CO_2, NO_x/NO_2 and NMVOC is more or less even – the share of the top five polluting facilities in Europe is mostly between 1 % and 2 % each. The situation for CH_4, SO_2, CO and PM_{10} is slightly different; the share of the biggest sources in E-PRTR totals lies in a range from 2 % to 8 %. The share of the biggest sources for the pollutants N_2O is above 26 % and heavy metals (HM) lies between 5 % and 58 %. The test also identified a number of potential anomalies, particularly in reporting of HMs, PCDD/F, PAHs and HCB, for which the share of some individual sources are more than 10 % or sometimes even more than 50 %. These findings should be further investigated

[27] The list of top 20 E-PRTR facilities for each pollutant (91 in total) can be produced with the *Stage1 tool* distributed to all countries on 27 July 2011 and available at the Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title&cookie=1

by countries and data corrected where needed for the next resubmission. One possible reason for the anomalies could be wrong reporting units.

The test also identified that a number of pollutants are reported by only one facility or just one country e.g. 1,2,3,4,5,6-hexachlorocyclohexane (HCH) (Italy), Asbestos (Germany), Fluorides, Phenols,Total nitrogen and Total Organic Carbon TOC (all Norway). This might indicate errors in reporting or that the threshold for these pollutants is too high and/or the reporting by countries is not complete.

Table B.8 Facilities with the highest releases to air of selected pollutants under E-PRTR 2009

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Greenhouse gases							
Carbon dioxide (CO2)	1298	05E000016	Poland	PGE Elektrownia Bełchatów S.A.	1.(c)	29,500,000,000	1.57%
	105961	06-05-300-0326774	Germany	RWE Power AG	1.(c)	26,300,000,000	1.40%
	108357	12-40710010000	Germany	Vattenfall Europe Generation AG Kraftwerk Jänschwalde	1.(c)	23,600,000,000	1.26%
	13777	EW_EA-67	United Kingdom	Drax Power Limited, Drax Power Ltd	1.(c)	20,500,000,000	1.09%
	106007	06-05-300-0877384	Germany	RWE Power AG	1.(c)	19,200,000,000	1.02%
Carbon dioxide (CO2) total "top5"						**119,100,000,000**	**6.36%**
Methane (CH4)	111033	06K000511	Poland	Kompania Węglowa S,A, Oddział Kopalnia Węgla Kamiennego "Brzeszcze-Silesia" - Ruch Brzeszcze	3,(a)	61,600,000	2.86%
	111009	12S000505	Poland	Jastrzębska Spółka Węglowa S,A, Kopalnia Węgla Kamiennego "Pniówek"	3,(a)	59,900,000	2.78%
	111023	12S000508	Poland	Katowicki Holding Węglowy S,A, Kopalnia Węgla Kamiennego "Mysłowice-Wesoła"	3,(a)	45,500,000	2.12%
	106410	06-05-800-4101019	Germany	RAG Anthrazit Ibbenbüren GmbH	3,(a)	44,400,000	2.06%
	111008	12S000503	Poland	Jastrzębska Spółka Węglowa S,A, Kopalnia Węgla Kamiennego "Krupiński"	3,(a)	41,700,000	1.94%
Methane (CH4) total "top5"						**253,100,000**	**11.77%**
Nitrous oxide (N2O)	98524	Bxl12	Belgium	Station d'épuration de Bruxelles Nord	5.(f)	41,200,000	26.47%
	109453	07-05-8290552	Germany	BASF SE	4.(a).(ii)	27,600,000	17.73%
	4511	067.00538	France	RHODIA OPERATIONS CHALAMPE	4.(b).(ii)	4,790,000	3.08%
	67386	1262	Finland	Fortum Power and Heat Oy, JOENSUUN VOIMALAITOS	1.(c)	4,100,000	2.63%
	13490	EW_EA-2660	United Kingdom	Growhow UK (East)Ltd, BILLINGHAM FERTILISER WORKS	4.(b)	3,590,000	2.31%
Nitrous oxide (N2O) total "top5"						**81,280,000**	**52.22%**
Other gases							
Ammonia (NH3)	99197	RO3IL_417	Romania	SC AMONIL SA SLOBOZIA	4.(c)	2,560,000	1.37%
	98913	13000006	Bulgaria	ploshtadka "Ptitsekombinat Yambol"	7.(a).(i)	1,920,000	1.03%
	98953	13000008	Bulgaria	ploshtadka s.Rupkite	7.(a).(i)	1,750,000	0.94%
	98912	13000005	Bulgaria	ploshtadka gr.Chirpan	7.(a).(i)	1,440,000	0.77%
	13154	EW_EA-1567	United Kingdom	KEMIRA GROWHOW UK LTD, Ince Fertiliser Manufacturing Site	4.(c)	1,340,000	0.72%

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Ammonia (NH3) total "top5"						**9,010,000**	**4.83%**
Carbon monoxide (CO)	105693	06-05-100-0209686	Germany	ThyssenKrupp Steel Europe AG Werk Schwelgern	2.(b)	154,000,000	5.39%
	14567	vl000694750 00114	Belgium	ARCELORMITTAL BELGIUM - GENT	2.(b)	118,000,000	4.13%
	105653	06-05-100-0077961	Germany	Hüttenwerke Krupp Mannesmann GmbH	2.(b)	111,000,000	3.88%
	4040	062.01729	France	ARCELOR Atlantique et Lorraine	2.(a)	109,000,000	3.81%
	119250	2007001763	Italy	ILVA S.P.A. Stabilimento di Taranto	2.(b)	106,000,000	3.71%
Carbon monoxide (CO) total "top5"						**598,000,000**	**20.91%**
Nitrogen oxides (NOx/NO2)	1298	05E000016	Poland	PGE Elektrownia Bełchatów S.A.	1.(c)	42,900,000	1.63%
	13777	EW_EA-67	United Kingdom	Drax Power Limited, Drax Power Ltd	1.(c)	38,400,000	1.46%
	12999	EW_EA-1048	United Kingdom	EDF Energy (Cottam Power) Ltd, Cottam Power Station	1.(c)	28,300,000	1.07%
	14245	EL5800876	Greece	PPC S.A. SES AGIOY DHMHTRIOY	1.(c)	24,800,000	0.94%
	124090	101217456/1	Serbia	PD Termoelektrane Nikola Tesla, TENT A	1.(c)	23,700,000	0.90%
Nitrogen oxides (NOx/NO2) total "top5"						**158,100,000**	**6.00%**
Non-methane volatile organic compounds (NMVOC)	18	000000019	Lithuania	AB "ORLEN Lietuva"	1.(a)	9,710,000	2.10%
	78682	1263.0002.01	Norway	Statoil Mongstad	1.(a)	7,450,000	1.61%
	14524	Scotland-52	United Kingdom	Ineos Manufacturing Scotland Ltd	1.(a)	6,880,000	1.49%
	108009	06-09-676-0081-0001	Germany	Cordenka GmbH	4.(a).(viii)	5,410,000	1.17%
	127426	EW_EA-5009	United Kingdom	CHEVRON LIMITED, Pembroke Refinary	1.(b)	5,070,000	1.10%
Non-methane volatile organic compounds (NMVOC) total "top5"						**34,520,000**	**7.48%**
Sulphur oxides (SOx/SO2)	99010	13000002	Bulgaria	"TETs Maritsa iztok 2" EAD	1.(c)	290,000,000	7.69%
	14192	EL1201188	Greece	PPC S.A. SES MEGALOPOLIS A'	1.(c)	184,000,000	4.88%
	99224	RO4GJ_11	Romania	COMPLEXUL ENERGETIC TURCENI	1.(c)	106,000,000	2.81%
	124106	104199176/2	Serbia	PD Termoelektrane i kopovi Kostolac, Termoelektrana Kostolac B	1.(c)	92,200,000	2.44%
	124090	101217456/1	Serbia	PD Termoelektrane Nikola Tesla, TENT A	1.(c)	80,800,000	2.14%
Sulphur oxides (SOx/SO2) total "top5"						**753,000,000**	**19.96%**
Inorganic substances							
Particulate matter (PM10)	99021	17000005	Bulgaria	TETs "Republika"	1.(c)	6,820,000	4.09%
	14192	EL1201188	Greece	PPC S.A. SES MEGALOPOLIS A'	1.(c)	5,590,000	3.35%
	124106	104199176/2	Serbia	PD Termoelektrane i kopovi Kostolac, Termoelektrana Kostolac B	1.(c)	5,480,000	3.28%
	124090	101217456/1	Serbia	PD Termoelektrane Nikola Tesla, TENT A	1.(c)	5,190,000	3.11%
	130700	EL5800902	Greece	PPC S.A. SES PTOLEMAIDAS	1.(c)	5,050,000	3.03%
Particulate matter (PM10) total "top5"						**28,130,000**	**16.85%**
Heavy metals							
Arsenic and compounds (as As)	5952	EE147275	Estonia	Eesti Energia Narva Elektrijaamad AS, Eesti soojuselektrijaam	1.(c)	6,120	20.10%
	8893	3421	Spain	FÁBRICA DE HUELVA (ATLANTIC COPPER, S.A.)	2.(e).(i)	1,440	4.73%

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
	5951	EE051174	Estonia	Eesti Energia Narva Elektrijaamad AS, Balti soojuselektrijaam	1.(c)	1,130	3.71%
	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	992	3.26%
	11043	CZ66069097	Czech Republic	Elektrárna Opatovice	1.(c)	747	2.45%
Arsenic and compounds (as As) total "top5"						**10,429**	**34.25%**
Cadmium and compounds (as Cd)	124222	100003441	Portugal	RESPOL, Resinas Sintéticas, S.A.	4.(a).(viii)	15,400	52.04%
	124293	100003698	Portugal	Petróleos de Portugal- Petrogal, S.A. (Refinaria de Sines)	1.(a)	1,760	5.95%
	8129	CZ33698019	Czech Republic	Elektrárna Mělník I - EMĚ I	1.(c)	1,190	4.02%
	120775	23301	Netherlands	Corus Staal BV	2.(b)	687	2.32%
	120890	56121	Netherlands	ThermPhos International BV	4.(b)	669	2.26%
Cadmium and compounds (as Cd) total "top5"						**19,706**	**66.60%**
Chromium and compounds (as Cr)	5952	EE147275	Estonia	Eesti Energia Narva Elektrijaamad AS, Eesti soojuselektrijaam	1.(c)	5,440	6.82%
	108173	06-10-0033945	Germany	Saarstahl AG - Werk Völklingen	2.(b)	4,200	5.27%
	67133	2110	Finland	Outokumpu Chrome Oy, Outokumpu Stainless Oy, Tornion tehtaat	2.(b)	3,110	3.90%
	13000	EW_EA-1055	United Kingdom	Elementis Chromium LLP, EAGLESCLIFFE CHROME WORKS	4.(b)	3,000	3.76%
	109282	06-05-100-0006538	Germany	ThyssenKrupp Nirosta GmbH	2.(b)	2,700	3.39%
Chromium and compounds (as Cr) total "top5"						**18,450**	**23.13%**
Copper and compounds (as Cu)	8893	3421	Spain	FÁBRICA DE HUELVA (ATLANTIC COPPER, S.A.)	2.(e).(i)	10,700	8.38%
	6488	12S000241	Poland	ArcelorMittal Poland S.A., Oddział w Dąbrowie Górniczej	2.(a)	9,780	7.66%
	109202	06-02-B2C100A009	Germany	Aurubis AG	2.(e).(i)	7,890	6.18%
	10557	CZ95150686	Czech Republic	ArcelorMittal Ostrava a.s.	2.(b)	6,350	4.97%
	110990	01D002750	Poland	KGHM POLSKA MIEDŹ S.A., Zakłady Górnicze RUDNA	3.(a)	5,670	4.44%
Copper and compounds (as Cu) total "top5"						**40,390**	**31.61%**
Lead and compounds (as Pb)	105693	06-05-100-0209686	Germany	ThyssenKrupp Steel Europe AG Werk Schwelgern	2.(b)	25,800	8.20%
	120775	23301	Netherlands	Corus Staal BV	2.(b)	24,400	7.76%
	5952	EE147275	Estonia	Eesti Energia Narva Elektrijaamad AS, Eesti soojuselektrijaam	1.(c)	20,400	6.49%
	6488	12S000241	Poland	ArcelorMittal Poland S.A., Oddział w Dąbrowie Górniczej	2.(a)	15,800	5.02%
	10251	57002803	Slovakia	U.S.Steel s.r.o.	2.(b)	13,400	4.26%
Lead and compounds (as Pb) total "top5"						**99,800**	**31.73%**
Mercury and compounds (as Hg)	1298	05E000016	Poland	PGE Elektrownia Bełchatów S.A.	1.(c)	1,580.00	5.05%
	127317	EW_EA-3688	United Kingdom	Celsa Manufacturing UK Ltd , Tremorfa New Melt Shop	2.(b)	1,380.00	4.41%
	109918	14-80-00009560000	Germany	Vattenfall Europe Generation AG Kraftwerk Lippendorf	1.(c)	1,070.00	3.42%
	14245	EL5800876	Greece	PPC S.A. SES AGIOY DHMHTRIOY	1.(c)	1,020.00	3.26%
	13122	EW_EA-1451	United Kingdom	INEOS CHLOR LTD, Runcorn Halochemicals	4.(a)	793.00	2.54%
Mercury and compounds (as Hg) total "top5"						**5,843**	**18.68%**

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Nickel and compounds (as Ni)	4639	069.00013	France	EDF GUYANE DDC	1.(c)	414,000	58.19%
	14245	EL5800876	Greece	PPC S.A. SES AGIOY DHMHTRIOY	1.(c)	21,000	2.95%
	6897	1527	Spain	REPSOL YPF REFINO ESPAÑA. COMPLEJO INDUSTRIAL DE TARRAGONA	1.(a)	12,500	1.76%
	4290	064.02211	France	Ineos Manufacturing France SAS	1.(a)	8,960	1.26%
	6898	1528	Spain	REPSOL PETROLEO S.A.	1.(a)	8,350	1.17%
Nickel and compounds (as Ni) total "top5"						**464,810**	**65.33%**
Zinc and compounds (as Zn)	102608	060.00427	France	UIOM de BRIVE	5.(b)	63,300	6.78%
	9176	3724	Spain	ACERÍA COMPACTA DE BIZKAIA, S.A. (ACERÍA COMPACTA DE BIZKAIA)	2.(b)	58,500	6.27%
	7067	1648	Spain	CORRUGADOS GETAFE	2.(b)	46,600	4.99%
	5952	EE147275	Estonia	Eesti Energia Narva Elektrijaamad AS, Eesti soojuselektrijaam	1.(c)	27,900	2.99%
	119250	2007001763	Italy	ILVA S.P.A. Stabilimento di Taranto	2.(b)	27,200	2.91%
Zinc and compounds (as Zn) total "top5"						**223,500**	**23.95%**
Chlorinated organic substances							
Hexachlorobenzene (HCB)	118381	2007000673	Italy	ACSM-AGAM S.P.A - FORNO INCENERITORE	5.(b)	22.30	52.72%
	67343	100186331	Finland	Yara Suomi Oy, Kokkolan tehtaat / Kaliumsulfaattitehdas	4.(b)	20.00	47.28%
Hexachlorobenzene (HCB) total "top5"						**42.30**	**100,00%**
PCDD + PCDF (dioxins + furans) (as Teq)	6497	12S000298	Poland	Południowy Koncer Energetyczny S.A., Elektrownia Jaworzno III - Elektrownia III	1.(c)	0.26	19.29%
	7121	16Z000479	Poland	PGE Zespół Elektrowni Dolna Odra S.A.	1.(c)	0.19	14.24%
	1220	058.01444	France	FONDERIE DE NORMANDIE	2.(d)	0.18	13.35%
	498	03L000044	Poland	Krajowa Spółka Cukrowa S.A., Oddział Cukrownia Krasnystaw	8.(b)	0.07	5.19%
	1323	05E000474	Poland	Dalkia Łódź S.A. Elektrociepłownia nr 4	1.(c)	0.05	3.84%
PCDD + PCDF (dioxins + furans) (as Teq) total "top5"						**0.75**	**55.92%**
Other organic substances							
Polycyclic aromatic hydrocarbons (PAHs)	78585	1003.0009.01	Norway	Alcoa aluminium, Lista	2.(e).(i)	9,000	10.50%
	105835	06-05-100-9000737	Germany	ERFTCARBON GmbH	9.(d)	8,470	9.88%
	6789	1478	Spain	ALCOA INESPAL, S.A. - LA CORU?A	2.(e).(i)	6,710	7.83%
	793	052.00420	France	Smurfit Kappa Cellulose du Pin	6.(a)	6,420	7.49%
	97978	W005	Belgium	ARCELORMITTAL UPSTREAM sa (COKE FONTE)	2.(b)	5,840	6.81%
Polycyclic aromatic hydrocarbons (PAHs) total "top5"						**36,440**	**42.52%**

Note: *Contributions of single facilities of over 10 % to the total E-PRTR emissions are highlighted in blue. Contributions of single facilities of over 50 % to the total E-PRTR emissions are highlighted in red.*

B.5.2 Top polluting facilities for releases to water

Table B.9 below provides information for selected pollutants[28] on the five facilities with the highest share of total E-PRTR releases to water per pollutant. The selected pollutants are:

- Heavy metals
- Total nitrogen
- Total phosphorus
- Total organic carbon (TOC)

The complete list of facilities ranked among the E-PRTR top 20 polluting facilities including information on their share in total E-PRTR emission is provided in the stage 1 country specific Excel spreadsheet, sheet "E-PRTR TOP20".

The top polluting facilities releasing heavy metals to water mostly have a share between 1 % and 17 % (Copper). However, there are outliers for Chromium and Cadmium with a share of 63 % and 27 % respectively for the top polluting facility's. This high share of the top polluter could indicate an anomaly in data and should be checked by the respective countries. For total nitrogen, total phosphorus and total organic carbon (TOC) the share of the top five polluters are more evenly distributed in a range between 1 % and 6 %.

Table B.9 Facilities with the highest releases to water of selected pollutants under E-PRTR 2009

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Heavy metals							
Arsenic and compounds (as As)	12857	CZ39774818	Czech Republic	Sokolovská uhelná,právní nástupce,a.s.-zpracovatelská část	1.(c)	2,870	5.88%
	118573	2007000915	Italy	SOLVAY CHIMICA ITALIA S.p.A. ROSIGNANO	4.(b)	2,670	5.47%
	124263	100009225	Portugal	Central Térmica da Vitória	1.(c)	1,720	3.52%
	78620	1149.0036.01	Norway	FMC BIOPOLYMER AS	4.(a).(viii)	1,630	3.34%
	111011	06K001688	Poland	Zakłady Górniczo-Hutnicze BOLESŁAW S.A., Pion Górniczo - Przeróbczy - Kopalnia	3.(a)	1,590	3.26%
Arsenic and compounds (as As) total "top5"						**10,480**	**21.46%**
Cadmium and compounds (as Cd)	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	7,600	27.42%
	119577	2007002183	Italy	Michelin Italiana stabilimento di Cuneo	9.(c)	4,160	15.01%
	99066	12000024	Bulgaria	Sofiyska prechistvatelna stantsia za otpadachni vodi Kubratovo	5.(f)	1,510	5.45%
	111011	06K001688	Poland	Zakłady Górniczo-Hutnicze BOLESŁAW S.A., Pion Górniczo - Przeróbczy - Kopalnia	3.(a)	975	3.52%
	103820	792.02501	France	STEP - Seine-centre	5.(f)	855	3.09%
Cadmium and compounds (as Cd) total "top5"						**15,100**	**54.48%**
Chromium and compounds (as Cr)	4200	064.00001	France	Aluminium Pechiney Usine de Gardanne	2.(e).(i)	316,000	62.51%
	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	18,200	3.60%
	10279	5717	Spain	CENTRAL TERMICA CICLE COMBINAT BESÓS - GRUPO 3	1.(c)	12,500	2.47%
	4788	070.00922	France	TIOXIDE EUROPE S.A.S	4.(a).(x)	12,000	2.37%

[28] The list of top 20 E-PRTR facilities for each pollutant (91 in total) can be produced with the *Stage1 tool* distributed to all countries on 30 July 2010 and available at the Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title&cookie=1

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
	98893	13000004	Bulgaria	Gorivna instalatsias nominalna toplinna moshtnost 1020MWt	1.(c)	4,960	0.98%
Chromium and compounds (as Cr) total "top5"						**363,660**	**71.94%**
Copper and compounds (as Cu)	99545	RO7AB_313	Romania	SC CUPRU MIN SA - Depozite de sterile	3.(b)	23,800	5.91%
	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	16,700	4.15%
	99008	03000003	Bulgaria	TETs Varna	1.(c)	9,900	2.46%
	78536	0105.0014.01	Norway	Borregaard Ind. Ltd., Cellulosesektor	6.(a)	6,420	1.59%
	4200	064.00001	France	Aluminium Pechiney Usine de Gardanne	2.(e).(i)	5,500	1.37%
Copper and compounds (as Cu) total "top5"						**62,320**	**15.48%**
Lead and compounds (as Pb)	111011	06K001688	Poland	Zakłady Górniczo-Hutnicze BOLESŁAW S.A., Pion Górniczo - Przeróbczy - Kopalnia	3.(a)	33,000	16.82%
	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	30,400	15.49%
	4200	064.00001	France	Aluminium Pechiney Usine de Gardanne	2.(e).(i)	11,500	5.86%
	99066	12000024	Bulgaria	Sofiyska prechistvatelna stantsia za otpadachni vodi Kubratovo	5.(f)	10,000	5.10%
	484	100423302	Hungary	ISD Dunaferr Zrt. Vasmű	2.(b)	7,320	3.73%
Lead and compounds (as Pb) total "top5"						**92,220**	**46.99%**
Mercury and compounds (as Hg)	98662	W325	Belgium	ARCELORMITTAL RINGMILL	2.(c).(ii)	963	15.21%
	124224	100017120	Portugal	ETAR da GUIA	5.(f)	548	8.66%
	99235	RO4VL_41	Romania	SC OLTCHIM SA	4.(b).(iii)	414	6.54%
	97966	W011	Belgium	DUFERCO LA LOUVIERE sa	2.(b)	365	5.77%
	131587	778	Spain	CENTRO DE TRATAMIENTO DE RESIDUOS INDUSTRIALES DE GALICIA	5.(d)	296	4.68%
Mercury and compounds (as Hg) total "top5"						**2,586**	**40.85%**
Nickel and compounds (as Ni)	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	18,200	6.08%
	14187	EL0600252	Greece	LARYMNA METALLURGIC PLANT	2.(e)	14,000	4.67%
	119342	2007001874	Italy	THYSSENKRUPP ACCIAI SPECIALI TERNI S.P.A. - stabilimento di TERNI	2.(b)	10,900	3.64%
	119250	2007001763	Italy	ILVA S.P.A. Stabilimento di Taranto	2.(b)	7,150	2.39%
	98517	W261	Belgium	IDEA - STEP de Wasmuel	5.(f)	7,130	2.38%
Nickel and compounds (as Ni) total "top5"						**57,380**	**19.16%**
Zinc and compounds (as Zn)	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	274,000	12.68%
	111011	06K001688	Poland	Zakłady Górniczo-Hutnicze BOLESŁAW S.A., Pion Górniczo - Przeróbczy - Kopalnia	3.(a)	138,000	6.39%
	484	100423302	Hungary	ISD Dunaferr Zrt. Vasmű	2.(b)	56,900	2.63%
	124263	100009225	Portugal	Central Térmica da Vitória	1.(c)	31,600	1.46%
	103820	792.02501	France	STEP - Seine-centre	5.(f)	30,800	1.43%
Zinc and compounds (as Zn) total "top5"						**531,300**	**24.59%**
Inorganic substances							
Total nitrogen	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	22,000,000	6.01%
	133081	7489	Spain	EDAR DE BESÒS	5.(f)	5,280,000	1.44%
	127785	EW_EA-6112	United Kingdom	Liverpool STW	5.(f)	4,070,000	1.11%
	127472	EW_EA-5203	United Kingdom	SEVERN TRENT WATER LTD, Minworth Final ASP Effluent	5.(f)	3,610,000	0.99%

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
	119801	2007002508	Italy	Depuratore Roma Sud	5.(f)	3,230,000	0.88%
Total nitrogen total "top5"						**38,190,000**	**10.43%**
Total phosphorus	127007	EW_EA-2677	United Kingdom	THAMES WATER UTILITIES LTD, BECKTON STW	5.(f)	1,620,000	3.89%
	119801	2007002508	Italy	Depuratore Roma Sud	5.(f)	1,550,000	3.72%
	127008	EW_EA-2678	United Kingdom	THAMES WATER UTILITIES LTD, CROSSNESS STW	5.(f)	882,000	2.12%
	66530	1665	Denmark	FAXE KALK A/S	3.(c)	871,000	2.09%
	128158	EW_EA-7258	United Kingdom	MOGDEN STW	5.(f)	828,000	1.99%
Total phosphorus total "top5"						**9,010,000**	**4.83%**
Other organic substances							
Total organic carbon (TOC) (as total C or COD/3)	14408	PS1	Malta	MARSA POWER STATION	1.(c)	19,900,000	2.97%
	104362	778.00501	France	SIAAP - Site Seine Aval	5.(f)	13,300,000	1.98%
	14409	PS2	Malta	DELIMARA POWER STATION	1.(c)	12,300,000	1.84%
	124224	100017120	Portugal	ETAR da GUIA	5.(f)	11,200,000	1.67%
	67082	1254	Finland	Stora Enso Oyj, Imatran tehtaat	6.(a)	6,770,000	1.01%
Total organic carbon (TOC) (as total C or COD/3) total "top5"						**63,470,000**	**9.47%**

Note: *Contributions of single facilities of over 10 % to the total E-PRTR emissions are highlighted in blue. Contributions of single facilities of over 50 % to the total E-PRTR emissions are highlighted in red.*

B.5.3 Top polluting facilities for transfers in water

Table B.10 below provides information for selected pollutants[29] on the five facilities with the highest share of total E-PRTR transfers in water per pollutant. The selected pollutants are:

- Heavy metals
- Total nitrogen
- Total phosphorus
- Total organic carbon (TOC)

The complete list of facilities ranked among the E-PRTR top 20 polluting facilities including information on their share in total E-PRTR emission is provided in the stage 1 Excel tool, sheet “E-PRTR TOP20”.

For the heavy metals the share of the top five polluters lies in a wide range between < 1 % and almost 100 %. For total organic carbon and total nitrogen the top polluters have a share of 50 % (Italy) and 27 % (United Kingdom), respectively. Very high shares of the top polluters for heavy metals, total organic carbon and total nitrogen could indicate an anomaly in data and should be checked by countries. For total phosphorus the shares of the top five polluters are distributed more evenly between 2 % and 6 %

[29] The list of top 20 E-PRTR facilities for each pollutant (91 in total) can be produced with the *Stage1 tool* distributed to all countries 30 July 2010 and available at the Eionet CIRCA website at: http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country-specific&vm=detailed&sb=Title&cookie=1

Table B.10 Facilities with the highest transfers to water of selected pollutants under E-PRTR 2009

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Heavy metals							
Arsenic and compounds (as As)	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	229,000	82.71%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	32,200	11.63%
	211	01D000161	Poland	Instytut Metali Nieżelaznych Oddział Legnica	2.(e)	11,200	4.05%
	133038	7376	Spain	AQUALIA - EDAR TALAVERA DE LA REINA	5.(f)	563	0.20%
	119417	2007001980	Italy	Discarica controllata per RSU di Gorla Maggiore - discarica residuale di Mozzate, loc. Cava Satima	5.(d)	326	0.12%
Arsenic and compounds (as As) total "top5"						**273,289**	**98.71%**
Cadmium and compounds (as Cd)	211	01D000161	Poland	Instytut Metali Nieżelaznych Oddział Legnica	2.(e)	16,300	63.74%
	130663	Scotland-2392	United Kingdom	Healthcare Environmental Services Ltd, Dundee	5.(a)	3,240	12.67%
	130662	Scotland-2391	United Kingdom	Healthcare Environmental Services Ltd, Shotts	5.(a)	1,800	7.04%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	1,050	4.11%
	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	918	3.59%
Cadmium and compounds (as Cd) total "top5"						**23,308**	**91.14%**
Chromium and compounds (as Cr)	128772	W22_54	United Kingdom	Magellan Areospace Wrexham.	2.(f)	68,000	25.03%
	119477	2007002049	Italy	GRUPPO DANI S.P.A.	9.(b)	51,900	19.10%
	120334	2009000205	Italy	DIVISIONE TECNOCONCIARIA ITALIA	9.(b)	38,100	14.02%
	119479	2007002051	Italy	RINO MASTROTTO GROUP S.p.A. - Divisione CALBE	9.(b)	32,900	12.11%
	5209	09R000054	Poland	BWI Poland Technologies Sp. z o.o. Oddział w Krośnie	2.(f)	14,900	5.48%
Chromium and compounds (as Cr) total "top5"						**205,800**	**75.74%**
Copper and compounds (as Cu)	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	33,900	25.94%
	130663	Scotland-2392	United Kingdom	Healthcare Environmental Services Ltd, Dundee	5.(a)	25,900	19.82%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	11,200	8.57%
	9031	3615	Spain	FINITEXTIL	9.(a)	8,160	6.24%
	12860	CZ53884341	Czech Republic	Synthesia a. s.	4.(a).(x)	5,790	4.43%
Copper and compounds (as Cu) total "top5"						**84,950**	**65.01%**
Lead and compounds (as Pb)	128797	E230_188	United Kingdom	Precision Disc Castings Ltd	2.(b)	19,500,000	99.75%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	10,600	0.05%
	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	8,900	0.05%
	118628	2007000995	Italy	ECO-BAT S.P.A. Stabilimento di Paderno Dugnano	2.(e)	8,290	0.04%
	120035	2008000265	Italy	CERAMICHE DAYTONA SPA	3.(g)	6,230	0.03%
Lead and compounds (as Pb) total "top5"						**19,534,020**	**99.92%**

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Mercury and compounds (as Hg)	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	1,600	37.83%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	938	22.18%
	105342	03-09-09090117300	Germany	Weser-Metall GmbH	2.(e).(i)	598	14.14%
	119417	2007001980	Italy	Discarica controllata per RSU di Gorla Maggiore - discarica residuale di Mozzate, loc. Cava Satima	5.(d)	326	7.71%
	106170	06-05-500-0152577	Germany	Infracor GmbH	1.(c)	229	5.41%
Mercury and compounds (as Hg) total "top5"						**3,691**	**87.26%**
Nickel and compounds (as Ni)	128797	E230_188	United Kingdom	Precision Disc Castings Ltd	2.(b)	7,780,000	98.93%
	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	43,200	0.55%
	106150	06-05-500-0053929	Germany	RUHR OEL GMBH Werk Scholven	1.(a)	3,650	0.05%
	130662	Scotland-2391	United Kingdom	Healthcare Environmental Services Ltd, Shotts	5.(a)	2,590	0.03%
	12849	CZ86757407	Czech Republic	závod Mladá Boleslav	9.(c)	2,350	0.03%
Nickel and compounds (as Ni) total "top5"						**7,831,790**	**99.59%**
Zinc and compounds (as Zn)	128797	E230_188	United Kingdom	Precision Disc Castings Ltd	2.(b)	15,600,000	95.31%
	211	01D000161	Poland	Instytut Metali Nieżelaznych Oddział Legnica	2.(e)	157,000	0.96%
	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	135,000	0.82%
	214	01D000168	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi GŁOGÓW	2.(e)	128,000	0.78%
	120041	2008000271	Italy	DIVISIONE LA GUGLIA	3.(g)	60,700	0.37%
Zinc and compounds (as Zn) total "top5"						**16,080,700**	**98.24%**
Inorganic substances							
Total nitrogen	128449	Scotland-1439	United Kingdom	Grampian Country Foods	8.(a)	13,300,000	26.81%
	13144	EW_EA-1545	United Kingdom	Johnson Matthey plc, CLITHEROE CATALYST FACTORY	4.(b)	2,710,000	5.46%
	109282	06-05-100-0006538	Germany	ThyssenKrupp Nirosta GmbH	2.(b)	1,220,000	2.46%
	13539	EW_EA-2791	United Kingdom	United Utilities Water Plc, Mersey Valley Processing Centre (MVPC)	5.(b)	1,200,000	2.42%
	13836	EW_EA-811	United Kingdom	Corus UK Limited, TEESSIDE INTEGRATED IRON AND STEELWORKS	2.(c)	1,070,000	2.16%
Total nitrogen total "top5"						**19,500,000**	**39.31%**
Total phosphorus	106950	06-70007370412	Germany	Clariant Produkte (Deutschland) GmbH Höchst	4.(a).(x)	368,000	5.50%
	103973	059.01243	France	EUROSERUM	8.(c)	274,000	4.10%
	120420	10006	Netherlands	Shell Nederland Chemie, inrichting moerdijk	4.(a)	249,000	3.72%
	4409	065.06552	France	Centre de Production de Vitry-sur-Seine	4.(e)	213,000	3.18%
	120819	42034	Netherlands	FrieslandCampina Veghel (DMV International)	8.(b)	145,000	2.17%
Total phosphorus total "top5"						1,249,000	18.67%
Other organic substances							

Pollutant group/ Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Total organic carbon (TOC) (as total C or COD/3)	119977	2008000193	Italy	Priolo Servizi S.C.p.A.	5.(a)	668,000,000	50.37%
	128449	Scotland-1439	United Kingdom	Grampian Country Foods	8.(a)	296,000,000	22.32%
	118656	2007001027	Italy	STABILIMENTO DI MACHERIO	4.(a)	26,200,000	1.98%
	127174	EW_EA-3311	United Kingdom	Glanbia Cheese Ltd , Glanbia Cheese Ltd, Llangefni	8.(c)	16,600,000	1.25%
	106942	06-59940040414	Germany	SE Tylose GmbH & Co. KG	4.(a).(viii)	6,830,000	0.52%
Total organic carbon (TOC) (as total C or COD/3) total "top5"						**1,013,630,000**	**76.44%**

Note: *Contributions of single facilities of over 10 % to the total E-PRTR emissions are highlighted in blue. Contributions of single facilities of over 50 % to the total E-PRTR emissions are highlighted in red.*

B.5.4 Top polluting facilities for waste transfers

Table B.11 below provides information on the top ten facilities with the highest share of total E-PRTR waste transfers by waste type:

Hazardous waste outside country

Hazardous waste transferred within the country

Non-hazardous waste

For hazardous waste transferred outside country one facility in the United Kingdom accounts for 41 % of the total E-PRTR hazardous waste transfers outside country. This is possibly an anomaly that should be investigated by the United Kingdom. For the other facilities the share in total E-PRTR waste transfers of hazardous waste outside country ranges between 0.9 % and 3.2 %. The share of the top polluters transferring hazardous waste within country range between 0.9 % and 6.2 % with the top facility from Germany accounting for 6.2 % of the total. For non-hazardous waste, the top ten facilities account for 0.8 % to 4.1 % of total transfers.

Table B.11 Top 10 facilities with the highest waste transfers per waste type under E-PRTR 2009

Waste type	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Hazardous waste outside country	125488	E31_111	United Kingdom	The Refinery	8.(b)	1,890,000	41.28%
	118224	2007000492	Italy	Systema Ambiente unità operativa ex Ecoservizi	5.(a)	147,675	3.23%
	99821	238	Switzerland	Eberhard Recycling AG / Erd- und Schotteraufbereitungsanlage ESAR	5.(a)	97,402	2.13%
	118949	2007001380	Italy	Piattaforma Polifunzionale di OrbassanoS.p.A.	5.(a)	66,473	1.45%
	120130	2008000377	Italy	centro risorse	5.(a)	61,129	1.34%
	5868	20000.00256	Austria	voestalpine Stahl GmbH	2.(b)	56,500	1.23%
	120817	41521	Netherlands	Afvalstoffen Terminal Moerdijk BV (ATM)	5.(a)	53,294	1.16%
	98306	vl00553761000288	Belgium	SITA REMEDIATION	5.(a)	43,800	0.96%
	118626	2007000992	Italy	ECOLTECNICA ITALIANA S.p.A.	5.(a)	41,401	0.90%
	119382	2007001934	Italy	Eco-Energy S.p.A. - Sito di Noventa di Piave	5.(a)	40,321	0.88%
Hazardous waste outside country - top 10 total						**2,497,994**	**54.56%**
Hazardous waste within country	110366	06-09-563-2030-0001	Germany	Adamec Recycling GmbH	5.(a)	2,210,000	6.18%
	120723	21507	Netherlands	Maritieme Afvalstoffen Inzameling Nederland BV (MAIN BV)	5.(a)	1,200,000	3.36%

Waste type	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
	126890	EW_EA-1913	United Kingdom	Northumbrian Water Ltd, Bran Sands Effluent Treatment Works	5.(a)	755,000	2.11%
	5953	EE147276	Estonia	Eesti Energia Õlitööstus AS, Auvere põlevkiviõlitehas	1.(a)	752,800	2.11%
	14187	EL0600252	Greece	LARYMNA METALLURGIC PLANT	2.(e)	717,015	2.00%
	119222	2007001728	Italy	Stabilimento di Priolo	4.(a)	559,097	1.56%
	119460	2007002027	Italy	Drahtzug Stein Divisione omim	2.(f)	407,620	1.14%
	126730	EW_EA-11595	United Kingdom	Harwell Western Groundwater Plant	5.(a)	393,000	1.10%
	120555	12168	Netherlands	Invista Nederland BV (Rozenburg)	4.(a)	311,934	0.87%
	67155	1152	Finland	Boliden Harjavalta Oy, Harjavallan tehtaat	2.(e)	303,075	0.85%
Hazardous waste within country - top 10 total						**7,609,541**	**21.28%**
Non-hazardous waste	110366	06-09-563-2030-0001	Germany	Adamec Recycling GmbH	5.(a)	15,700,000	4.11%
	110994	01D002751	Poland	KGHM POLSKA MIEDŹ S.A., Zakłady Wzbogacania Rud - Rejon RUDNA	3.(a)	13,720,000	3.59%
	213	01D000167	Poland	KGHM POLSKA MIEDŹ S.A., Zakłady Wzbogacania Rud - Rejon POLKOWICE	5.(a)	7,370,000	1.93%
	110993	01D001462	Poland	KGHM POLSKA MIEDŹ S.A., Zakłady Wzbogacania Rud - Rejon Lubin	3.(a)	6,670,000	1.75%
	111960	06K001666	Poland	Ubojnia Drobiu EKO-RÓB P.iW. Łosiowski, B. Rojowicz Sp.J.	8.(a)	5,900,000	1.54%
	119833	2008000016	Italy	Laminazione Sottile S.p.A.	2.(e).(ii)	4,665,000	1.22%
	110789	07W002745	Poland	"ENERGETYKA URSUS" SP. Z O.O., Elektrociepłownia	1.(c)	4,210,000	1.10%
	108357	12-40710010000	Germany	Vattenfall Europe Generation AG Kraftwerk Jänschwalde	1.(c)	3,190,000	0.84%
	67532	20051	Finland	HK Ruokatalo Oy, Outokummun tuotantolaitos	8.(a)	3,164,980	0.83%
	111009	12S000505	Poland	Jastrzębska Spółka Węglowa S.A. Kopalnia Węgla Kamiennego "Pniówek"	3.(a)	2,870,000	0.75%
Non-hazardous waste - top 10 total						**67,459,980**	**17.66%**

Note: *Contributions of single facilities of over 10 % to the total E-PRTR emissions are highlighted in blue.*

B.6 Contribution of individual facilities to E-PRTR 2009 releases to air– sector/activity level

This section shows the top three E-PRTR 2009 facilities for selected pollutants (CO_2, SO_x/SO_2, NO_x/NO_2, NMVOC, NH_3 ,and PM_{10}) for each of the E-PRTR activities plus the list of facilities which contribute significantly to total E-PRT-R emissions of other pollutants. Countries are invited to check facilities with releases listed in the tables below that are highlighted in colour in the "all countries share".

B.6.1 Energy (E-PRTR Sector 1)

Table B.12 shows the three facilities with the highest releases to air for CO_2, NO_x, SO_2 and PM_{10} reported in E-PRTR Energy Sector. For CO_2 and NO_x individual facilities contribute to Energy E-PRTR emissions with less than 2 % ('all countries share'). For SO_2 and PM_{10} the top three facilities produce together almost 15 % and 11 % respectively of total SO_2 and PM_{10} total E-PRTR emissions. Some potential anomalies have been identified; e.g. one facility in France reported 58 % of total E-PRTR Nickel releases.

Table B.12 Facilities with the highest releases to air of selected pollutants reported in E-PRTR Sector 1 - Energy under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Carbon dioxide (CO_2)	1298	05E000016	Poland	PGE Elektrownia Bełchatów S.A.	1.(c)	29,500,000,000	1.57%
	105961	06-05-300-0326774	Germany	RWE Power AG	1.(c)	26,300,000,000	1.40%
	108357	12-40710010000	Germany	Vattenfall Europe Generation AG Kraftwerk Jänschwalde	1.(c)	23,600,000,000	1.26%
Nitrogen oxides (NO_x/NO_2)	1298	05E000016	Poland	PGE Elektrownia Bełchatów S.A.	1.(c)	42,900,000	1.63%
	13777	EW_EA-67	United Kingdom	Drax Power Limited, Drax Power Ltd	1.(c)	38,400,000	1.46%
	12999	EW_EA-1048	United Kingdom	EDF Energy (Cottam Power) Ltd, Cottam Power Station	1.(c)	28,300,000	1.07%
Particulate Matter (PM_{10})	99021	17000005	Bulgaria	TETs "Republika"	1.(c)	6,820,000	4.09%
	14192	EL1201188	Greece	PPC S.A. SES MEGALOPOLIS A'	1.(c)	5,590,000	3.35%
	124106	104199176/2	Serbia	PD Termoelektrane i kopovi Kostolac, Termoelektrana Kostolac B	1.(c)	5,480,000	3.28%
Sulphur oxides (SO_x/SO_2)	99010	13000002	Bulgaria	"TETs Maritsa iztok 2" EAD	1.(c)	290,000,000	7.69%
	14192	EL1201188	Greece	PPC S.A. SES MEGALOPOLIS A'	1.(c)	184,000,000	4.88%
	99224	RO4GJ_11	Romania	COMPLEXUL ENERGETIC TURCENI	1.(c)	106,000,000	2.81%
Other pollutants							
Nickel and compounds (as Ni)	4639	069.00013	France	EDF GUYANE DDC	1.(c)	414,000	58.19%
Ethylene oxide	9119	37012102	Slovakia	Slovnaft, a.s.	1.(a)	22,700	27.65%
Arsenic and compounds (as As)	5952	EE147275	Estonia	Eesti Energia Narva Elektrijaamad AS, Eesti soojuselektrijaam	1.(c)	6,120	20.10%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red, those over 2 % are highlighted in blue.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.2 Production and processing of metals (E-PRTR Sector 2)

Table B.13 shows the three facilities with the highest releases to air for CO_2, NO_x, CO and heavy metals and selected facilities with a specifically high share of the E-PRTR total for other selected pollutants reported in Sector 2 – Production and processing of metals. For CO_2 and NO_x the share of the top three polluters are below 1 %. For CO and heavy metals the share of the top polluters are in the range between 1 % and 5 %.

Table B.13 Facilities with the highest releases to air of selected pollutants reported in Sector 2 - Production and processing of metals under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Arsenic and compounds (as As)	8893	3421	Spain	FÁBRICA DE HUELVA (ATLANTIC COPPER, S.A.)	2.(e).(i)	1,440	4.73%
	214	01D000168	Poland	KGHM POLSKA MIED? S.A., Huta Miedzi G?OGÓW	2.(e)	992	3.26%
	14815	vl01852224000788	Belgium	UMICORE - HOBOKEN	2.(e)	550	1.81%
Cadmium and compounds (as Cd)	120775	23301	Netherlands	Corus Staal BV	2.(b)	687	2.32%
	6488	12S000241	Poland	ArcelorMittal Poland S.A., Oddzia? w D?browie Górniczej	2.(a)	375	1.27%
	10557	CZ95150686	Czech Republic	ArcelorMittal Ostrava a.s.	2.(b)	288	0.97%

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Carbon dioxide (CO2)	4797	70.00956	France	ARCELORMITTAL SITE DE DUNKERQUE	2.(c).(i)	9,320,000,000	0.50%
	10251	57002803	Slovakia	U.S.Steel s.r.o.	2.(b)	7,560,000,000	0.40%
	5868	20000.00256	Austria	voestalpine Stahl GmbH	2.(b)	6,880,000,000	0.37%
Carbon monoxide (CO)	105693	06-05-100-0209686	Germany	ThyssenKrupp Steel Europe AG Werk Schwelgern	2.(b)	154,000,000	5.39%
	14567	vl00069475000114	Belgium	ARCELORMITTAL BELGIUM - GENT	2.(b)	118,000,000	4.13%
	105653	06-05-100-0077961	Germany	Hüttenwerke Krupp Mannesmann GmbH	2.(b)	111,000,000	3.88%
Mercury and compounds (as Hg)	127317	EW_EA-3688	United Kingdom	Celsa Manufacturing UK Ltd , Tremorfa New Melt Shop	2.(b)	1,380	4.41%
	120775	23301	Netherlands	Corus Staal BV	2.(b)	238	0.76%
	67133	2110	Finland	Outokumpu Chrome Oy, Outokumpu Stainless Oy, Tornion tehtaat	2.(b)	215	0.69%
Nitrogen oxides (NOx/NO2)	13045	EW_EA-122	United Kingdom	Alcan Aluminium UK Ltd, ALCAN LYNEMOUTH SMELTER	2.(e)	7,320,000	0.28%
	102376	54.01307	France	Salzgitter Mannesmann Precision Etirage	2.(f)	6,740,000	0.26%
	10251	57002803	Slovakia	U.S.Steel s.r.o.	2.(b)	5,860,000	0.22%
Anthracene	97978	W005	Belgium	ARCELORMITTAL UPSTREAM sa (COKE FONTE)	2.(b)	1,890	4.41%
	13836	EW_EA-811	United Kingdom	Corus UK Limited, TEESSIDE INTEGRATED IRON AND STEELWORKS	2.(c)	141	0.33%
	120775	23301	Netherlands	Corus Staal BV	2.(b)	103	0.24%
Fluorides (as total F)	78707	1424.0004.01	Norway	Hydro Aluminium AS Årdal, Årdal Metallverk	2.(e).(i)	82,900	21.60%
	78619	1149.0029.01	Norway	Hydro Aluminium AS Karmøy	2.(e).(i)	65,000	16.93%
	78836	1824.0013.01	Norway	Alcoa Mosjøen	2.(e).(i)	63,200	16.46%
Pentachlorobenzene	67074	1257	Finland	Ovako Bar Oy Ab, Imatran terästehdas	2.(b)	240	68.97%
	97960	W092	Belgium	ARCELORMITTAL UPSTREAM LIEGE sa - Chertal (Aciérie, CC, Laminoir à chaud)	2.(b)	107	30.75%
Pentachlorophenol (PCP)	97960	W092	Belgium	ARCELORMITTAL UPSTREAM LIEGE sa - Chertal (Aciérie, CC, Laminoir à chaud)	2.(b)	107	54.45%
Other pollutants							
Pentachlorobenzene	67074	1257	Finland	Ovako Bar Oy Ab, Imatran terästehdas	2.(b)	240	68.97%
	97960	W092	Belgium	ARCELORMITTAL UPSTREAM LIEGE sa - Chertal (Aciérie, CC, Laminoir à chaud)	2.(b)	107	30.75%
Pentachlorophenol (PCP)	97960	W092	Belgium	ARCELORMITTAL UPSTREAM LIEGE sa - Chertal (Aciérie, CC, Laminoir à chaud)	2.(b)	107	54.45%
Perfluorocarbons (PFCs)	3079	61.04466	France	ALUMINIUM PECHINEY	2.(e).(i)	1,470,000	77.39%
Tetrachloroethylene (PER)	98021	W113	Belgium	SONACA sa	2.(f)	109,000	31.54%
	124296	100004803	Portugal	TUPAI - Fábrica de Acessórios Industriais, S.A.	2.(f)	49,300	14.27%
Trichloroethylene	125437	E229_70	United Kingdom	Estover Works Plymbridge Rd	2.(b)	183,000	32.51%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red, those over 2 % are highlighted in blue.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.3 Mineral Industry (E-PRTR Sector 3)

E-PRTR 2009 releases from CO_2, NMVOC and PM_{10} are distributed evenly between the facilities with the highest share of 0.8 % of total E-PRTR releases (Table B.14). For Phenols and Total organic carbon (TOC) the top polluting facilities have much higher shares and have all been reported by Norway.

Table B.14 Facilities with the highest releases to air of selected pollutants reported in Sector 3 – Mineral industry under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Carbon dioxide (CO2)	5109	08O000134	Poland	Górażdże Cement S.A., Cementownia Górażdże	3.(c)	1,890,000,000	0.10%
	14213	EL4301082	Greece	HERACLES G.C.Co, VOLOS PLANT	3.(c)	1,790,000,000	0.10%
	14169	EL0300578	Greece	TITAN CEMENT S.A. - KAMARI PLANT	3.(c)	1,670,000,000	0.09%
Non-methane volatile organic compounds (NMVOC)	6908	1535	Spain	CASTELLAR VIDRIO, S.A. (ABANS VALVITRUM S.A.)	3.(e)	2,480,000	0.54%
	13067	EW_EA-1269	United Kingdom	Hanson Building Products Limited, WHITTLESEY BRICKWORKS	3.(g)	1,120,000	0.24%
	133160	2329	Spain	CALESTEP, S.L.	3.(c).(iii)	1,080,000	0.23%
Particulate matter (PM10)	124715	100022323	Portugal	Tecnovia-Sociedade de Empreitadas,S.A. - Delegação Rio Maior	3.(b)	1,340,000	0.80%
	9891	50	Cyprus	VASSILIKO CEMENT WORKS PUBLIC COMPANY LTD, Vassilikos Plant	3.(c).(i)	1,100,000	0.66%
	13067	EW_EA-1269	United Kingdom	Hanson Building Products Limited, WHITTLESEY BRICKWORKS	3.(g)	393,000	0.24%
Phenols (as total C)	78540	0124.0008.01	Norway	GLAVA AS, Askim	3.(e)	21,000	75.62%
	78808	1714.0031.01	Norway	GLAVA AS, Stjørdal	3.(e)	5,100	18.37%
	78533	0104.0039.01	Norway	ROCKWOOL AS, Fabrikk Moss	3.(f)	1,320	4.75%
Total organic carbon (TOC) (as total C or COD/3)	78568	0805.0028.01	Norway	Norcem Brevik	3.(c)	29,600	59.20%
	78867	1850.0002.01	Norway	Norcem Kjøpsvik	3.(c)	8,350	16.70%
	79057	1729.0010.01	Norway	Verdalskalk A.S	3.(c).(ii)	700	1.40%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red, those over 2 % are highlighted in blue.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.4 Chemical Industry (E-PRTR Sector 4)

The share of the releases of the top three facilities from the *chemical industry* sector of total E-PRTR releases ('All countries share') for the pollutants NH_3, NMVOC, NO_x/NO_2 and SO_x/SO_2 is distributed evenly and lies in a range from 0.1 % to 1.4 %. The top polluting facilities for other pollutants with an all countries share above 20 % (as explained in the coutry files sheet "E-PRTR Top 20") are listed in Table B.15. The top polluter for total nitrogen (Norway) has a 100 % share of total E-PRTR emissions to air. Total nitrogen is not included in the E-PRTR Regulation as a pollutant which is normally released to air. This release could therefore be a reporting mistake.

Table B.15 Facilities with the highest releases to air of selected pollutants reported in Sector 4 – Chemical industry under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Ammonia (NH3)	99197	RO3IL_417	Romania	SC AMONIL SA SLOBOZIA	4.(c)	2,560,000	1.37%
	13154	EW_EA-1567	United Kingdom	KEMIRA GROWHOW UK LTD, Ince Fertiliser Manufacturing Site	4.(c)	1,340,000	0.72%
	99277	RO7AB_41	Romania	SC GHCL UPSOM ROMANIA SA	4.(b).(iv)	1,300,000	0.70%
Nitrogen oxides (NOx/NO2)	124094	101263524	Serbia	Milan Blagojevic-namenska ad	4.(f)	8,640,000	0.33%
	4675	06K000440	Poland	Zakłady Azotowe w Tarnowie-Mościcach S.A.	4.(a)	6,200,000	0.24%
	6838	CZ17751142	Czech Republic	CHEMOPETROL	4.(a).(viii)	5,960,000	0.23%
Non-methane	108009	06-09-676-0081-	Germany	Cordenka GmbH	4.(a).(viii)	5,410,000	1.17%

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
volatile organic compounds (NMVOC)		0001					
	99235	RO4VL_41	Romania	SC OLTCHIM SA	4.(b).(iii)	3,610,000	0.78%
	1146	58.00348	France	ExxonMobil Chemical France	4.(a).(i)	1,850,000	0.40%
Sulphur oxides (SOx/SO2)	509	03L000438	Poland	Zakłady Azotowe "Puławy" S.A.	4.(c)	8,480,000	0.22%
	6838	CZ17751142	Czech Republic	CHEMOPETROL	4.(a).(viii)	6,400,000	0.17%
	111193	02C 000165	Poland	Soda Polska CIECH Sp. z o.o., Zakład Produkcyjny JANIKOSODA w Janikowie	4.(b)	5,300,000	0.14%
1,2-dichloroethane (DCE)	4256	64.00942	France	ARKEMA	4.(a).(vi)	204,000	22.12%
	4260	64.00982	France	VINYLFOS	4.(a).(vi)	162,000	17.57%
	13122	EW_EA-1451	United Kingdom	INEOS CHLOR LTD, Runcorn Halochemicals	4.(a)	154,000	16.70%
Chlorofluorocarbons (CFCs)	13650	EW_EA-3070	United Kingdom	Syngenta Ltd, Huddersfield Chemical Industry	4.(d)	35,100	41.05%
	120436	10079	Netherlands	Du Pont de Nemours (Ned.) BV	4.(a)	20,200	23.63%
	128828	EW_EA-1455	United Kingdom	INEOS FLUOR LTD, Runcorn Halochemicals	4.(b)	3,030	3.54%
Halons	14597	vl00106451000188	Belgium	BP CHEMBEL Geel	4.(a)	8,150	86.12%
	3030	61.03685	France	ARKEMA Pierre-Bénite	4.(a).(vi)	863	9.12%
	99898	56	Switzerland	Dottikon Exclusive Synthesis AG	4.(e)	7	0.07%
Other pollutants							
Cadmium and compounds (as Cd)	124222	100003441	Portugal	RESPOL, Resinas Sintéticas, S.A.	4.(a).(viii)	15,400	52.04%
Di-(2-ethyl hexyl) phthalate (DEHP)	100639	100339472	Hungary	Graboplast Zrt.	4.(a).(viii)	3,220	22.82%
Ethylene oxide	131904	3205	Spain	COGNIS IBERIA, S.A.U.	4.(a).(ii)	18,100	22.05%
	4693	70.00483	France	CECA Usine de Feuchy	4.(a).(iv)	12,400	15.11%
Hexachlorobenzene (HCB)	67343	100186331	Finland	Yara Suomi Oy, Kokkolan tehtaat / Kaliumsulfaattitehdas	4.(b)	20	47.28%
Hydro-fluorocarbons (HFCs)	14650	vl00302990000147	Belgium	ABRISO Bevrijdingslaan	4.(a)	375,000	25.57%
	107329	06-08-3643689	Germany	DOW Deutschland Anlagen GmbH Werk Rheinmünster	4.(a)	337,000	22.98%
Pentachlorophenol (PCP)	9238	3896	Spain	ECOCARBURANTES ESPAÑOLES	4.(a).(i)	47	24.27%
Tetrachloromethane (TCM)	120423	10018	Netherlands	Huntsman Holland BV	4.(a)	30,200	52.40%
Total nitrogen	78852	1837.0006.01	Norway	Yara Norge AS, Yara Glomfjord	4.(c)	21,900	100.00%
Trichloromethane	4256	64.00942	France	ARKEMA	4.(a).(vi)	58,500	32.07%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red, those over 2 % are highlighted in blue. All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.*

B.6.5 Waste and Waste Water Management (E-PRTR Sector 5)

In the sector *Waste and waste water management* the share the top polluting facilities in total E-PRTR releases seems to be distributed evenly for the pollutants NH_3, CH_4, NMVOC and the heavy metals Arsenic, Cadmium and Mercury. E-PRTR 2009 releases from the top three facilities do not exceed 1.1 % in total E-PRTR releases for these pollutants (Table B.16). However, some potential anomalies have been identified for other pollutants; e.g. one facility in Italy reported 100 % of total E-PRTR HCH releases and one facility in France reported 80 % of total E-PRTR 1,1,1-trichloroethane releases.

Table B.16 Facilities with the highest releases to air of selected pollutants reported in Sector 5 – Waste and waste water management under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Ammonia (NH3)	99099	3000009	Bulgaria	Depo za neopasni otpadatsi - Sguroshlamootval	5.(d)	549,000	0.29%
	98967	10000013	Bulgaria	Regionalno depo za neopasni, inertnr i opasni otpadatsi za obshtinite Ruse, Vetovo, Ivanovo, Slivo pole i Tutrakan	5.(d)	275,000	0.15%
	111781	15P000424	Poland	Zakład Rolniczo - Przemysłowy "FARMUTIL HS" S.A., Zakład Unieszkodliwiania Odpadów PILUTIL w Śmiłowie	5.(e)	201,000	0.11%
Arsenic and compounds (as As)	212	01D000166	Poland	KGHM POLSKA MIEDŹ S.A., Huta Miedzi LEGNICA	5.(d)	169	0.56%
	100581	100296854	Hungary	BÉM Borsodi Érc, Ásvány és Hulladékhasznosító Mű Zrt.	5.(a)	117	0.38%
	1011	100392330	Hungary	Fővárosi Közterület-Fenntartó Zrt.	5.(b)	49.8	0.16%
Cadmium and compounds (as Cd)	124268	100003383	Portugal	Enviroil- Resíduos e Energia, Lda	5.(a)	162	0.55%
	100581	100296854	Hungary	BÉM Borsodi Érc, Ásvány és Hulladékhasznosító Mű Zrt.	5.(a)	110	0.37%
	120430	10063	Netherlands	AVR NV (Rijnmond)	5.(b)	77	0.26%
Mercury and compounds (as Hg)	130535	EW_EA-3738	United Kingdom	Cambridge University Hospital NHS Foundation Trust, Addenbrooke's Hospital Incinerator	5.(a)	329	1.05%
	103083	68.04445	France	DRIMM	5.(d)	132	0.42%
	218	01D000268	Poland	PCC Rokita SA	5.(g)	100	0.32%
Methane (CH4)	99071	12000016	Bulgaria	depo za neopasni otpadatsi Suhodol II-ri etap	5.(d)	24,600,000	1.14%
	6888	1516	Spain	CENTRO DE ELIMINACION DE RESIDUOS "CER"	5.(c)	22,500,000	1.05%
	119584	2007002191	Italy	DISCARICA DI SCARPINO	5.(d)	21,000,000	0.98%
Non-methane volatile organic compounds (NMVOC)	218	01D000268	Poland	PCC Rokita SA	5.(g)	430,000	0.09%
	104697	66.00803	France	DISTILLERIE DESCOSTIERES	5.(c)	326,000	0.07%
	4248	64.00825	France	ARKEMA FRANCE site de St. AUBAN	5.(a)	255,000	0.06%
Other pollutants							
1,1,1-trichloroethane	4248	64.00825	France	ARKEMA FRANCE site de St. AUBAN	5.(a)	42,200	80.10%
1,2,3,4,5,6-hexachlorocyclohexane (HCH)	118381	2007000673	Italy	ACSM-AGAM S.P.A - FORNO INCENERITORE	5.(b)	22	100.00%
Hexachlorobenzene (HCB)	118381	2007000673	Italy	ACSM-AGAM S.P.A - FORNO INCENERITORE	5.(b)	22	52.72%
Nitrous oxide (N2O)	98524	Bxl12	Belgium	Station d'épuration de Bruxelles Nord	5.(f)	41,200,000	26.47%
Trichlorobenzenes (TCBs) (all isomers)	2923	61.02272	France	Trédi	5.(a)	355	45.76%
Trichloroethylene	128925	EW_EA-10090	United Kingdom	Entek International Ltd, Killingworth Solvent Recovery	5.(a)	142,000	25.23%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red, those over 2 % are highlighted in blue.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.6 Paper and Wood Production and Processing (E-PRTR Sector6)

In general, the share of the releases of the top three E-PRTR 2009 facilities in the sector *Paper and wood production* do not exceed 0.24 % of total E-PRTR releases for the pollutants NH_3, CO_2, NO_x, NMVOC and SO_2 (Table B.17). However, some potential anomalies have been identified for the United Kingdom with one facility reporting 89 % of total E-PRTR anthracene releases and another facility reporting 86 % of total E-PRTR naphtalene releases.

Table B.17 Facilities with the highest releases to air of selected pollutants reported in Sector 6 – Paper and wood production under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Ammonia (NH3)	7189	1764-101	Sweden	Gruvöns bruk	6.(a)	200,000	0.11%
	7756	2180-103	Sweden	Korsnäsverken	6.(a)	193,000	0.10%
	5099	0861-101	Sweden	Södra Cell Mönsterås	6.(a)	186,000	0.10%
Carbon dioxide (CO2)	67082	1254	Finland	Stora Enso Oyj, Imatran tehtaat	6.(a)	2,710,000,000	0.14%
	5099	0861-101	Sweden	Södra Cell Mönsterås	6.(a)	1,990,000,000	0.11%
	108979	17928	Germany	Zellstoff Stendal GmbH	6.(a)	1,770,000,000	0.09%
Nitrogen oxides (NOx/NO2)	6221	11G000163	Poland	INTERNATIONAL PAPER - KWIDZYN SP. Z O.O.	6.(b)	1,990,000	0.08%
	67082	1254	Finland	Stora Enso Oyj, Imatran tehtaat	6.(a)	1,740,000	0.07%
	111389	02C 002206	Poland	Mondi Świecie S.A.	6.(a)	1,380,000	0.05%
Non-methane volatile organic compounds (NMVOC)	7924	2284-108	Sweden	M-real Sverige AB, Husums fabrik	6.(a)	1,110,000	0.24%
	7756	2180-103	Sweden	Korsnäsverken	6.(a)	1,010,000	0.22%
	5099	0861-101	Sweden	Södra Cell Mönsterås	6.(a)	1,000,000	0.22%
	7189	1764-101	Sweden	Gruvöns bruk	6.(a)	1,000,000	0.22%
Sulphur oxides (SOx/SO2)	6221	11G000163	Poland	INTERNATIONAL PAPER - KWIDZYN SP. Z O.O.	6.(b)	2,560,000	0.07%
	14532	Scotland-62	United Kingdom	Markinch Papermill	6.(b)	1,610,000	0.04%
	111389	02C 002206	Poland	Mondi Świecie S.A.	6.(a)	1,390,000	0.04%
Other pollutants							
Anthracene	128768	W16_17	United Kingdom	Burt Boulton & Haywood Ltd - Newport Site	6.(b)	38,100	88.85%
Naphthalene	128768	W16_17	United Kingdom	Burt Boulton & Haywood Ltd - Newport Site	6.(b)	816,000	86.35%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.7 Intensive livestock production and aquaculture (E-PRTR Sector 7)

The share of the top three E-PRTR 2009 facilities for releases of NH_3 and N_2O of total E-PRTR releases in the sector Intensive livestock production and aquaculture is equally distributed and lies in a range between 0.02 % and 1 % (Table B.18).

Table B.18 Facilities with the highest releases to air of selected pollutants reported in Sector 7 - Intensive livestock production and aquaculture under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Ammonia (NH3)	98913	13000006	Bulgaria	ploshtadka "Ptitsekombinat Yambol"	7.(a).(i)	1,920,000	1.03%
	98953	13000008	Bulgaria	ploshtadka s.Rupkite	7.(a).(i)	1,750,000	0.94%
	98912	13000005	Bulgaria	ploshtadka gr.Chirpan	7.(a).(i)	1,440,000	0.77%
Nitrous oxide (N2O)	5783	EE520155	Estonia	Ekseko AS, Mäeltküla seafarm	7.(a).(ii)	209,000	0.13%
	110028	12983	Germany	Geflügelhof Möckern	7.(a).(i)	30,700	0.02%
	108534	13-60-14007	Germany	Geflügelhof Möckern, Bassin Zweigniederl. der Lohmann & Co. AG	7.(a).(i)	29,000	0.02%

Note: *All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.*

B.6.8 Animal and vegetable products from the food and beverage sector (E-PRTR Sector 8)

In general, the share of the releases of the top three E-PRTR 2009 facilities in the *Animal and vegetable products from the food and beverage sector* does not exceed 1 % of total E-PRTR releases for any pollutant. However, one significantly higher release report was identified for Hydrochlorofluorocarbons (HCFCs) having a share of 87 % of total E-PRTR HCFCs releases (Table B.19) It has to be mentioned that 80% of HCFC emissions were accidental which indicates that the high increase was due to accidental releases.

Table B.19 Facilities with the highest releases to air of selected pollutants reported in Activity 8- Animal and vegetable products from the food and beverage sector under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Hydrochlorofluorocarbons (HCFCs)	127151	EW_EA-3246	United Kingdom	Tulip Ltd, The Meat Plant	8.(a)	5,000,000	86.74%

Note: *Contributions of over 50 % to the total E-PRTR emissions are highlighted in red.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

B.6.9 Other activities (E-PRTR Sector 9)

In general, the share of the releases of the top three E-PRTR 2008 facilities in the sector *Other activities* does not exceed 1.5 % (Table B.20) of total E-PRTR releases for any pollutant. However, the review identified some top polluting facilities with shares ranging from 10 % to 42 % of total E-PRTR releases for the pollutants Polycyclic aromatic hydrocarbons (PAHs), Hydrogen cyanide (HCN) and Di-(2-ethyl hexyl) phthalate (DEHP).

Table B.20 Facilities with the highest releases to air of selected pollutants reported in Activity 9 – Other activities under E-PRTR 2009

Pollutant	Facility ID	National ID	Country	Facility Name	Main Activity	Total Quantity kg/a	All countries share
Hydrogen cyanide (HCN)	133451	7614	Spain	HEXCEL FIBERS S.L.	9.(d)	22,700	15.50%
Di-(2-ethyl hexyl) phthalate (DEHP)	130113	E375_42	United Kingdom	Renolit Cramlington Limited	9.(a)	5,950	42.17%
	111624	09R001818	Poland	Sanwil Polska Sp. z o.o.	9.(c)	1,580	11.20%
Polycyclic aromatic hydrocarbons (PAHs)	105835	06-05-100-9000737	Germany	ERFTCARBON GmbH	9.(d)	8,470	9.88%

Note: *Contributions of over 2 % are highlighted in blue.*

All countries share reflects the share on total releases of a certain pollutant for all activities and all countries under E-PRTR 2009.

C Stage 2 Review – AIR - Comparisons with other data on releases to air

The purpose of these tests is to put the data reported under E-PRTR into context and assess the comparability of reported E-PRTR data with other data officially reported by countries. Emissions reported under E-PRTR have been compared with emissions reported by countries under CLRTAP/NECD and under UNFCCC/EU Monitoring Mechanism (EU MM). Not all pollutants covered by E-PRTR are included under CLRTAP/UNFCCC and a direct comparison of emissions is impossible because the structure of reported data under E-PRTR and both Conventions differs significantly. The national emission inventories are reported in source categories[30] whereas the E-PRTR system identifies individual facilities. Each individual facility might undertake several activities which are reported under different categories in CLRTAP/UNFCCC. The reporting obligations under E-PRTR and the EU ETS overlap for CO_2 emissions. However, the capacity for combustion installations is 50 MW under E-PRTR and 20 MW under the ETS. In addition, the boundaries of a facility under E-PRTR do not always fully match the boundaries of the corresponding ETS installation. These differences constitute limitations when comparing E-PRTR to EU ETS data. Another difference between the two reporting obligations is that for the purposes of the EU ETS CO_2 emissions are reported excluding biomass emissions whereas under E-PRTR only the reporting of total CO_2 including emissions from biomass is mandatory. To enable comparisons the data reported under the sectors/activities of the different obligations have been aggregated and these aggregated sectors have been linked. Afterwards, three types of comparisons have been performed:

a. Comparison of E-PRTR national totals with totals of EU ETS (CO_2)

b. Comparison of E-PRTR emissions per country with national totals reported under CLRTAP/ NECD (NO_x, SO_2, NMVOC, NH_3 ,CO, PM_{10}, POPs, HMs) and with national totals reported under UNFCCC/EU MM (CO_2, CH_4, N_2O, F-gases)

c. Comparison of E-PRTR emissions reported per aggregated activity with (aggregated) sectoral emissions reported under CLRTAP and UNFCCC (NO_x, SO_2, NMVOC, NH_3 ,CO, PM_{10}, POPs, HMs, CO_2, CH_4, N_2O, F-gases)

CLRTAP emissions and UNFCCC emissions used in this report have been provided by the EEA[31] (ETC/ACCM database, task 1.2.1.1 and task 1.4.1.1). The EU ETS emissions have been downloaded from the Community Independent Transaction Log (CITL)[32].

An overview of the differences in national total emissions reported under E-PRTR 2009 and CLRTAP/UNFCCC 2009 is presented in Table C.1 and Table C.2. The number of outliers in the 2009 dataset has slightly decreased compared to the ones identified in the 2008 dataset in the previous review round in 2010. These two tables show:

a. Nine countries (Austria, Belgium, Hungary, Italy, Norway, Slovenia, Spain, Sweden and Switzerland), one more than in 2008, did not report emissions to air under CLRTAP 2009 for at least one pollutant while reporting such emissions under E-PRTR 2009.

b. Only six countries (12 in the previous year) reported higher releases under E-PRTR 2009 than their national totals reported under CLRTAP (NO_x – Serbia; SO_x – Serbia; Hg – Germany, the Netherlands;

[30] Most disaggregated level in CLRTAP/UNFCCC is the one where emissions are calculated

[31] Inventories as submitted by countries can be downloaded from: E-PRTR: http://cdr.eionet.europa.eu/, CLRTAP: http://rod.eionet.europa.eu/obligations/357/deliveries

[32] http://ec.europa.eu/environment/ets/

Ni – France; Zn – France; PAHs – Norway; PCDD/PCDF – France, the Netherlands, Poland). In a number of cases the difference is bigger than 200 %.

c. Four countries (five in the previous year) reported higher emissions under E-PRTR 2009 than their national totals reported under UNFCCC (CO_2 – Iceland, N_2O – Belgium, PFCs – France, Poland). The releases of PFCs reported by France and Poland for 2009 are by orders of magnitude higher than the ones reported for the year 2008, which might indicate a potential error in reporting units. The releases of CO_2 reported under E-PRTR might include CO_2 from biomass.

d. In most of the countries SO_2 and CO_2 E-PRTR emissions accounted for more than 50 % (up to 99 %) of the national total emissions. E-PRTR facilities also contribute significantly to national total emissions of NO_x and heavy metals.

e. PFC emissions were reported under E-PRTR 2009 by only 15 countries. For those countries, PFC emissions under E-PRTR have a significant share in national totals (more than 50 % in 12 countries).

f. In general, sources of NMVOC, NH_3, CH_4, and N_2O seem to lie under the E-PRTR thresholds. The share of these E-PRTR emissions in national totals rarely exceeds 20 %.

g. Reporting of POPs is rather incomplete, particularly under CLRTAP, and therefore options for data comparisons are limited. PCBs, for example, were reported by only 10 countries, HCB by Finland and Italy and HCH only by Italy. This might reflect the specific industries in these countries or gaps in reporting. .

Table C.1 Share of E-PRTR 2009 releases of UNFCCC/CLRTAP totals 2009 (Main pollutants, PM and GHGs)

	Other/Main pollutants						GHGs					
Country	Ammonia (NH3)	Carbon monoxide (CO)	Nitrogen oxides (NOx/NO2)	Sulphur oxides (SOx/SO2)	Non-methane volatile organic compounds (NMVOC)	Particulate matter (PM10)	Carbon dioxide (CO2)	Methane (CH4)	Nitrous oxide (N2O)	Hydro-fluorocarbons (HFCs)	Perfluorocarbons (PFCs)	Sulphur hexafluoride (SF6)
Austria	0%	19%	5%	24%	1%	2%	29%	2%	-	-	-	-
Belgium	4%	49%	25%	69%	24%	5%	42%	2%	196%	31%	89%	2%
Bulgaria	22%	7%	37%	84%	3%	38%	65%	17%	2%	-	-	-
Cyprus	36%	10%	48%	96%	1%	55%	66%	1%	2%	-	-	-
Czech Republic	7%	34%	44%	79%	3%	12%	64%	0.1%	6%	0.1%	-	-
Denmark	3%	1%	50%	38%	1%	5%	42%	2%	1%	0.0%	-	-
Estonia	4%	12%	56%	80%	5%	12%	67%	3%	6%	-	-	-
Finland	5%	3%	35%	70%	6%	2%	90%	17%	39%	-	-	-
France	2%	5%	19%	76%	7%	1%	34%	4%	8%	4%	2994%	38%
Germany	2%	24%	23%	54%	3%	5%	54%	10%	18%	6%	41%	3%
Greece	0%	5%	38%	76%	2%	-	59%	6%	8%	0.0%	97%	-
Hungary	16%	7%	13%	17%	1%	0%	43%	1%	0.2%	-	-	-
Iceland	-	-	-	-	-	-	150%	12%	24%	-	55%	-
Ireland	1%	1%	23%	59%	2%	3%	36%	6%	1%	1%	97%	57%
Italy	4%	7%	18%	55%	4%	2%	39%	8%	5%	2%	100%	28%
Latvia	2%	-	10%	15%	0%	2%	7%	0.1%	1%	-	-	-
Lithuania	12%	1%	10%	42%	14%	5%	38%	6%	10%	-	-	-
Luxembourg	-	-	-	-	-	-	21%	9%	-	-	-	-
Malta	-	-	-	-	-	-	76%	54%	-	-	-	-
Netherlands	2%	14%	19%	83%	10%	9%	54%	4%	13%	11%	67%	2%
Norway	2%	1%	8%	50%	10%	7%	30%	5%	15%	-	99%	-
Poland	2%	8%	35%	51%	1%	9%	56%	31%	6%	1%	5333%	-
Portugal	15%	5%	33%	57%	5%	4%	58%	9%	7%	0.1%	-	-
Romania	11%	5%	36%	89%	2%	13%	54%	7%	9%	-	1%	-
Serbia	-	-	155%	102%	-	-	-	-	-	-	-	-
Slovakia	3%	49%	36%	91%	7%	-	60%	4%	-	-	-	-
Slovenia	3%	7%	31%	62%	5%	2%	15%	20%	3%	0%	100%	-
Spain	12%	15%	28%	50%	8%	9%	42%	13%	6%	2%	30%	-
Sweden	5%	6%	18%	44%	13%	12%	99%	7%	9%	1%	95%	19%
Switzerland	1%	3%	6%	18%	3%	-	19%	0%	3%	0%	-	16%
United Kingdom	5%	14%	35%	75%	13%	10%	47%	23%	9%	1%	77%	9%

-	*No data reported under E-PRTR.*
25%	*Share of E-PRTR between 0% and <50%.*
75%	*Share of E-PRTR between >= 50% and <=100%.*
101%	*Share of E-PRTR > 100%.*
EPRTR	*Data reported under E-PRTR only.*

Table C.2 Share of E-PRTR 2009 on UNFCCC/CLRTAP totals 2009 (Heavy metals and POPs)

	POPs					Heavy Metals							
Country	1,2,3,4,5,6-hexachlorocyclohexane (HCH)	Hexachlorobenzene (HCB)	PCDD + PCDF (dioxins + furans) (as Teq)	Polychlorinated biphenyls (PCBs)	Polycyclic aromatic hydrocarbons (PAHs)	Arsenic and compounds (as As)	Cadmium and compounds (as Cd)	Chromium and compounds (as Cr)	Copper and compounds (as Cu)	Lead and compounds (as Pb)	Mercury and compounds (as Hg)	Nickel and compounds (as Ni)	Zinc and compounds (as Zn)
Austria	-	-	4%	-	-	-	-	-	-	4%	14%	EPRTR	EPRTR
Belgium	-	-	35%	EPRTR	3%	37%	23%	78%	4%	41%	56%	44%	45%
Bulgaria	-	-	-	-	-	1%	7%	4%	3%	3%	9%	1%	2%
Cyprus	-	-	-	-	-	93%	60%	-	3%	-	91%	84%	70%
Czech Republic	-	-	39%	1%	10%	44%	60%	13%	49%	43%	65%	38%	15%
Denmark	-	-	5%	-	-	9%	-	-	-	-	36%	-	2%
Estonia	-	-	-	-	-	97%	84%	91%	32%	88%	91%	83%	86%
Finland	-	59%	9%	2%	1%	20%	14%	25%	3%	12%	45%	34%	11%
France	-	-	234%	1%	59%	40%	43%	47%	9%	39%	62%	524%	101%
Germany	-	-	51%	2%	7%	49%	25%	28%	1%	29%	126%	10%	3%
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	-	-	19%	EPRTR	0.3%	5%	4%	-	-	16%	9%	1%	13%
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	-	-	8%	-	-	2%	3%	4%	-	-	8%	5%	3%
Italy	EPRTR	76%	20%	15%	1%	4%	6%	9%	4%	7%	10%	23%	15%
Latvia	-	-	-	-	1%	-	-	-	-	-	21%	-	-
Lithuania	-	-	-	-	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	-	-	148%	-	1%	53%	85%	43%	3%	73%	100%	78%	43%
Norway	-	-	6%	-	272%	15%	13%	4%	6%	17%	7%	EPRTR	EPRTR
Poland	-	-	211%	-	14%	7%	2%	14%	10%	7%	24%	5%	7%
Portugal	-	-	9%	-	1%	25%	539%	18%	11%	2%	13%	42%	81%
Romania	-	-	0.1%	-	-	1%	16%	1%	-	4%	29%	6%	7%
Serbia	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	6%	14%	25%	16%	28%	17%	10%	15%
Slovenia	-	-	3%	-	1%	EPRTR	-	EPRTR	EPRTR	-	7%	EPRTR	EPRTR
Spain	-	-	38%	EPRTR	8%	23%	12%	21%	7%	13%	28%	27%	27%
Sweden	-	-	EPRTR	-	2%	38%	14%	49%	2%	31%	32%	14%	11%
Switzerland	-	-	2%	EPRTR	-	EPRTR	1%	EPRTR	-	6%	24%	EPRTR	EPRTR
United Kingdom	-	-	16%	1%	11%	7%	21%	28%	10%	52%	57%	19%	10%

-	*No data reported under E-PRTR.*
25%	*Share of -EPRTR between 0% and <50%.*
75%	*Share of E-PRTR between >= 50% and <=100%.*
101%	*Share of E-PRTR > 100%.*
EPRTR	*Data reported under E-PRTR only.*

C.1 Comparison of E-PRTR CO_2 releases with emissions included in the EU ETS

A comparison of total CO_2 releases reported under E-PRTR with emissions reported under the EU ETS provides interesting findings (Figure C.1, Figure C.2). The assessment of the results is, however, limited by the different definitions of sectors (EU ETS) and activities (E-PRTR) (see Table C.3). Boundaries of facilities/installations differ under E-PRTR and ETS, capacity for combustion facilities/installations is 50 MW under E-PRTR and 20 MW under the ETS reporting. In addition, the E-PRTR reporting obligation requires CO_2 to be reported including releases from biomass whereas under the EU ETS only CO_2 emissions from fossil fuels have to be reported. A more detailed comparison (on the activity level) of CO_2 emissions is provided in the stage 1 country Excel files that have been submitted to countries.

Table C.3 Sectors included in comparison of ETS and E-PRTR CO_2 emissions

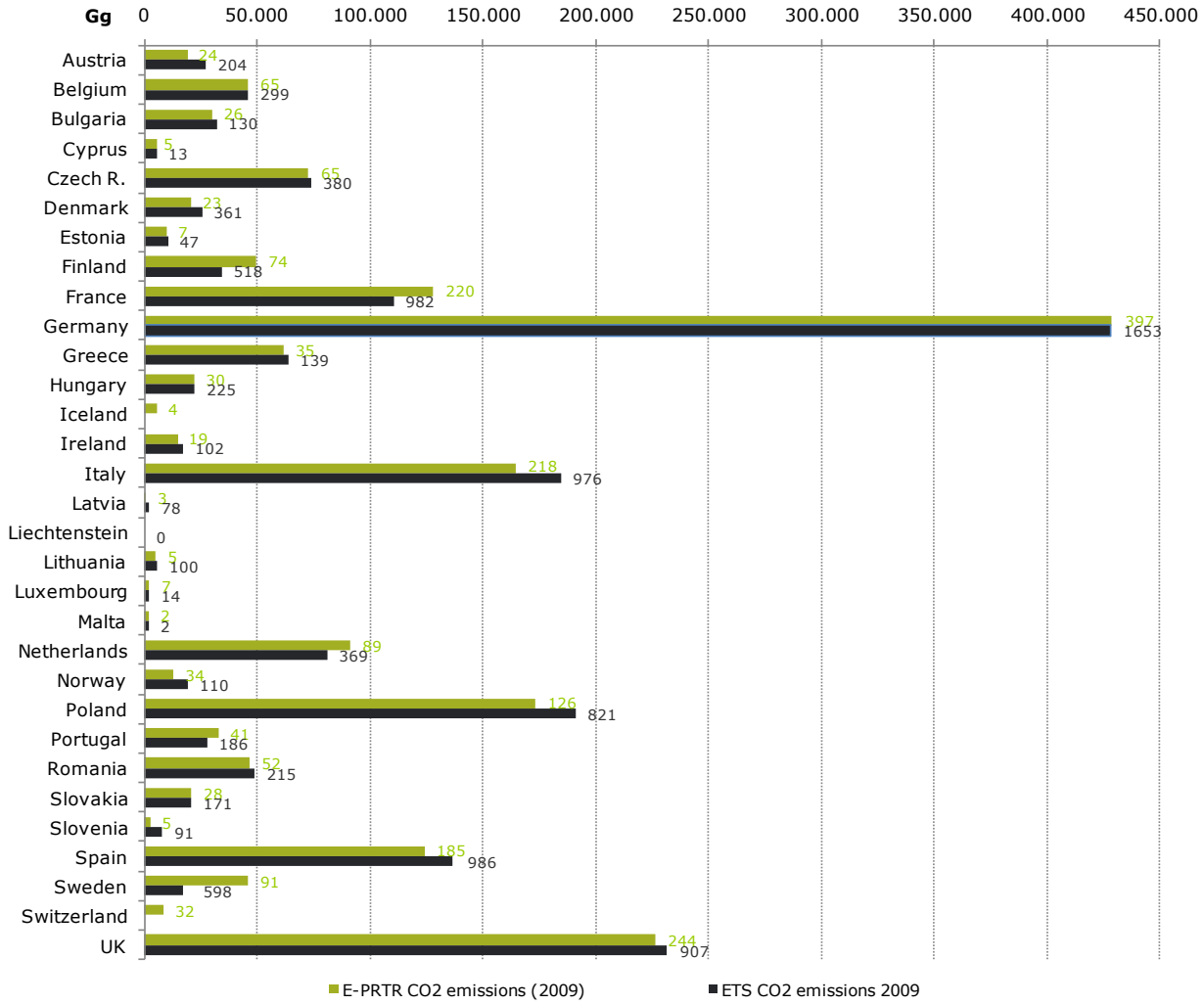
EU ETS sector	EU ETS sector description (Annex I)	E-PRTR activity codes	Description
1	Combustion installations	1.(c)	Thermal power stations and other combustion installations
2	Mineral oil refineries	1.(a)	Mineral oil and gas refineries
3	Coke ovens	1.(d)	Coke ovens
4	Metal ore roasting or sintering installations	2.(a)	Metal ore (including sulphide ore) roasting or sintering installations
5	Production of pig iron or steel	2.(b)	Installations for the production of pig iron or steel (primary or secondary melting) including continuous casting
6	Production of cement clinker or lime	3.(c)	Installations for the production of: Cement clinker in rotary kilns + Lime in rotary kilns + Cement clinker or lime in other furnaces
7	Manufacture of glass including glass fibre	3.(e)	Installations for the manufacture of glass, including glass fibre
8	Manufacture of ceramic products by firing	3.(g)	Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain
9	Production of pulp, paper and board	6.(a) + 6.(b)	Industrial plants for the production of pulp from timber or similar fibrous materials + production of paper and board and other primary wood products
99	Other activity opted-in	-	-

In general, the number of facilities included in E-PRTR is about five times lower than the number of installations in the EU ETS but countries' total CO_2 emissions under both reporting obligations are comparable. For most countries the share of E-PRTR CO_2 emissions compared to the ETS CO_2 emissions is between 80 % and 99 %. Only two countries (Latvia and Slovenia) reported less than a 40 % share of E-PRTR emissions in EU ETS emissions. Eight countries (Germany, France, Finland, Luxembourg, the Netherlands, Portugal, Slovakia and Sweden) reported more emissions under E-PRTR than under the EU ETS. It is the responsibility of the countries to check whether such differences between the two sets of emission data are reasonable.

One potential reason for higher E-PRTR emissions is the inclusion of emissions from biomass combustion in the reporting. However, there is no complete information available for the 2009 E-PRTR dataset on which countries have reported CO_2 including releases from biomass and which ones reported CO_2 excluding releases from biomass. Eleven countries (Cyprus, Estonia, Finland, Germany, Malta, Netherlands, Norway, Romania, Slovenia, Sweden, United Kingdom) have reported the voluntary

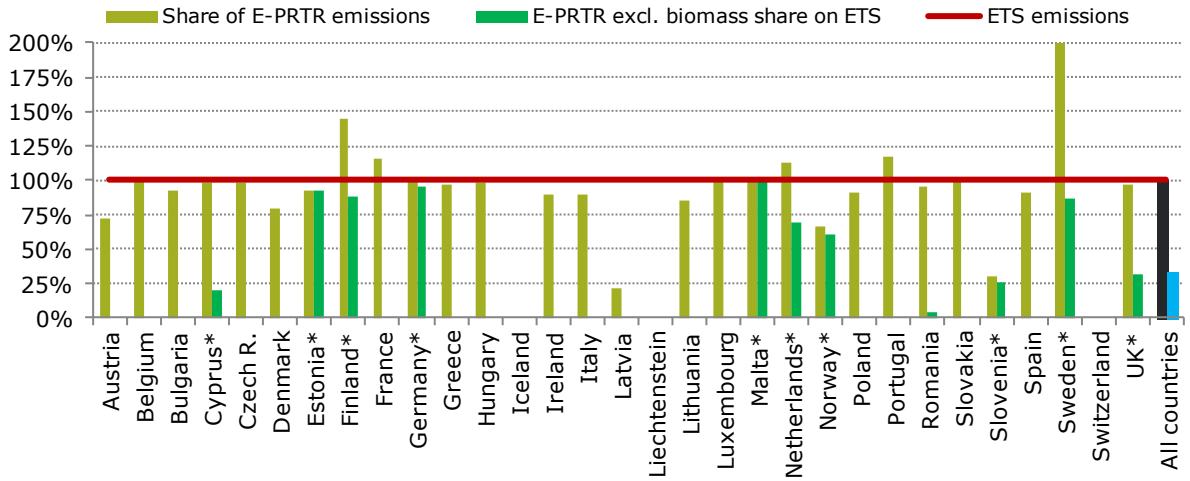
pollutant CO_2 excluding biomass under E-PRTR 2009. For these countries there is certainty that they have reported the mandatory pollutant CO_2 as total CO_2 including biomass. Consequently, for Finland, Germany, the Netherlands and Sweden the reason for the higher E-PRTR CO_2 releases compared to the ETS CO_2 emissions is very likely to be the reporting of CO_2 from biomass combustion under E-PRTR. On the other side, low share of CO_2 excluding biomass emissions in some countires (e.g. Cyprus or Romania) might indicte that not all facilities provided such information. Figure C.2 ilustrates the lack of harmonyand clarityin the reporting of CO_2 releases to air under E-PRTR.

Figure C.1 Comparison of CO_2 emissions and number of facilities reported under E-PRTR 2009 and ETS



Notes: *Iceland did not report CO_2 emissions under the EU ETS and Switzerland was not included in the EU ETS in 2009. Liechtenstein and Serbia did not report CO_2 emissions under E-PRTR 2009.*
Numbers in green and blue indicate how many facilities were reported under E-PRTR 2009 and EU ETS 2009, respectively.

Figure C.2 Comparison of CO_2 emissions and CO_2 emissions exluding biomass* reported under E-PRTR 2009 and ETS



Note: *Iceland did not report CO_2 emissions under the EU ETS and Switzerland was not included in EU ETS in 2009. Liechtenstein and Serbia did not report CO_2 emissions under E-PRTR 2009.*
** The reporting of CO_2 emissions excluding biomasss by countries is voluntary*

C.2 Share of main E-PRTR activities in total E-PRTR releases and comparison of E-PRTR data with national total and sectoral emissions reported under CLRTAP/ UNFCCC

The stage 2 review compared releases of all E-PRTR pollutants which are reported under CLRTAP or UNFCCC. Summary results can be found in Table C.1 and Table C.2. However, the scope of this report does not allow presenting all the findings in detail. This chapter shows the results for selected pollutants[33] as illustrated in the figures in this chapter.

Comparison of E-PRTR and national total emissions reported under CLRTAP/UNFCCC

The releases reported under E-PRTR are from large point sources and should not exceed national total emissions reported under CLRTAP or UNFCCC, which include all anthropogenic emissions occurring in the geographical area of the country (large point sources and diffuse sources). If the total E-PRTR emissions exceed CLRTAP/UNFCCC national total emissions (with or without transport) this indicates inconsistent reporting of countries under different reporting obligations.

The figures showing the share of different activities in the E-PRTR total releases reflect the structure of the economies in the individual countries and thus cannot be identical for all countries. In some cases, however, the comparison highlights both significant differences between countries and a number of common elements.

Comparison of aggregated sectoral data of E-PRTR and CLRTAP

The comparison of sectoral data has limitations because of the differences between the reporting obligations under E-PRTR, CLRTAP, UNFCCC and EU ETS as explained earlier in this report. It has to be noted that a) not all E-PRTR pollutants are reported under CLRTAP/UNFCCC and b) a significant share of

[33] Gothenburg protocol pollutants: SOx, NOx, NMVOC, NH_3, most important GHG; CO_2, and PM_{10} as indicator of health impacts) and HMs

E-PRTR in CLRTAP/UNFCCC has been observed only in sectors A (Energy, manufacturing industries and waste incineration) and C (Agriculture (poultry, pigs) and only for some pollutants.

A list of the aggregated E-PRTR sectors used for comparison with the national totals reported under CLRTAP/ UNFCCC is shown in Table C.4

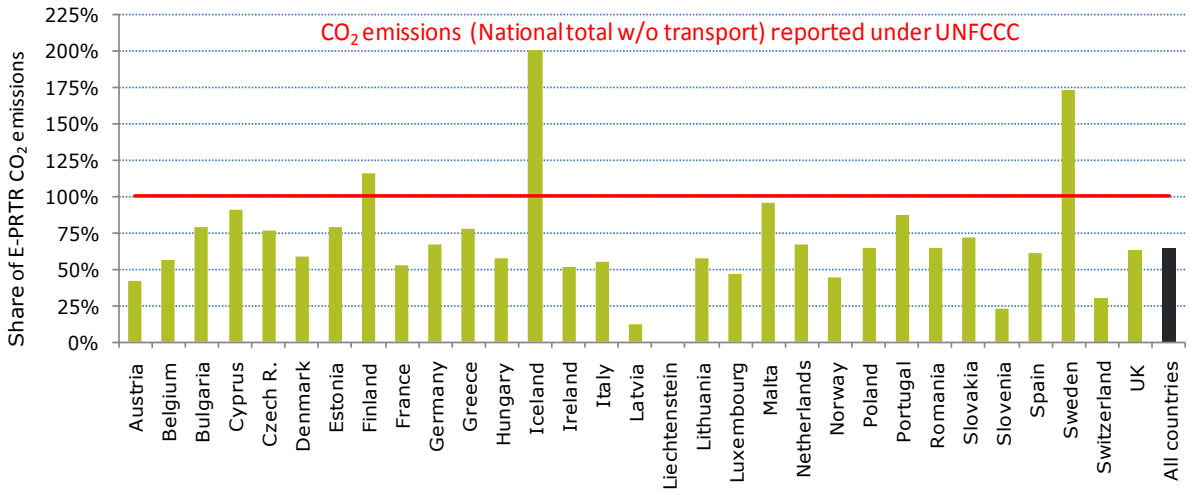
Table C.4 Aggregated E-PRTR sectors as used for comparison with national totals reported under CLRTAP/UNFCCC

Aggregated sector	Description	E-PRTR	CLRTAP/UNFCCC
A	Energy, manufacturing industries and waste incineration	1 (a-f), 2 (a-f), 3(c-g) 4 (a -f), 5 (a-b), 5 (e), 6 (a-c), 8(a-c), 9 (b-e)	1A1, 1A2, 1B1, 1B2, 2A - 2G, 3A, 3B, 3C, 3D1, 3D2, 6C
B	Fugitive emissions from mining	3(a), 3 (b)	1B1a, 2A7 a-d
C	Agriculture (poultry, pigs)	7(a) , 7(a) i-iii	4B8, 4B9 a-d
D1	Landfills/waste disposal	5 (c), 5 (d)	6A
D2	Waste water treatment	5 (f), 5 (g)	6B

The mapping of energy and industry sectors between E-PRTR and CLRTAP/UNFCCC is difficult because under the LRTAP/UNFCCC conventions emissions occurring in industrial processes are reported separately from combustion emissions in the industrial sector whereas under E-PRTR all emissions occurring in one facility are reported as sum under the main activity. To enable at least some comparisons combined emissions of key pollutants from energy, manufacturing industries and waste incineration are compared (Figure C.7, Figure C.10, Figure C.18, Figure C.23).

C.2.1 CO_2

Figure C.3 Share of E-PRTR CO_2 releases in the national total reported under UNFCCC (national totals without transport)



Note: *Cyprus, Estonia, Finland, Germany, Malta, Netherlands, Norway, Romania, Slovenia, Sweden, United Kingdom included CO_2 from biomass combustion in E-PRTR 2009. Information on inclusion/non-inclusion of CO_2 from biomass combustion in other countries is not available.*

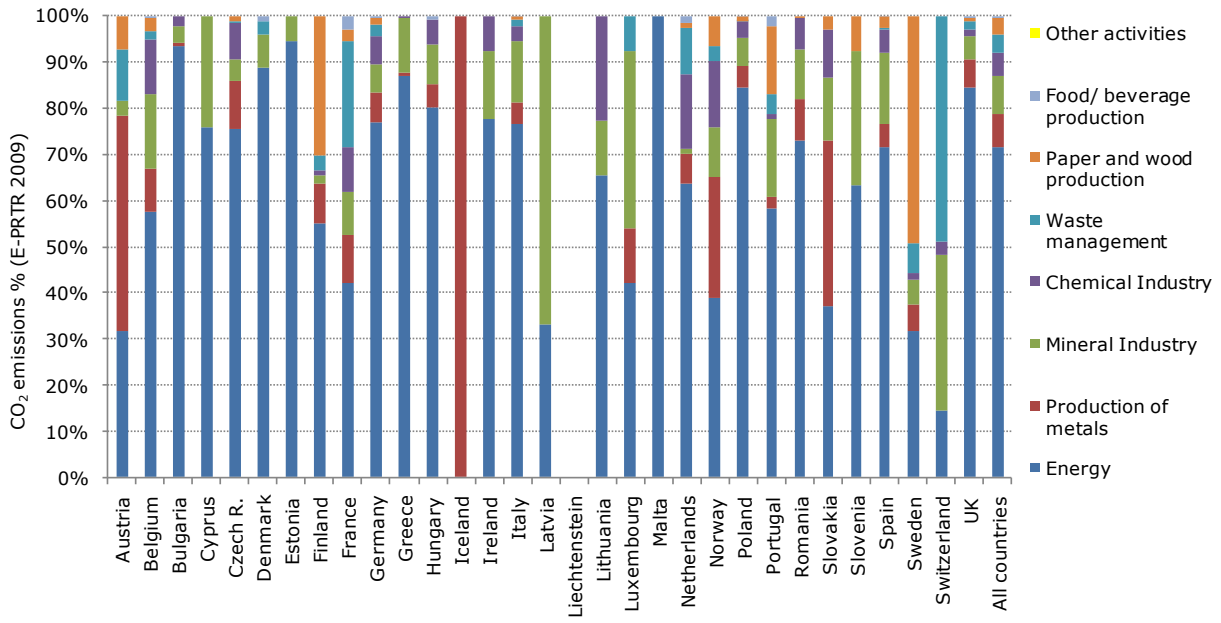
Liechtenstein and Serbia did not report CO_2 emissions under E-PRTR 2009. Serbia did not report CO_2 emissions under CLRTAP in 2009.

The total CO_2 emissions reported by all countries under E-PRTR amount to 65 % of the sum of all national totals (without transport) reported under UNFCCC. Finland, Iceland and Sweden reported higher emissions under E-PRTR than national totals without transport under UNFCCC. This might indicate inconsistent reporting at the national level. While E-PRTR releases do not include sources below the threshold such as residential heating, E-PRTR includes CO_2 emissions from biomass combustion for most countries, which might explain some of the anomalies (e.g. for Sweden). Eleven countries (Cyprus, Estonia, Finland, Germany, Malta, Netherlands, Norway, Romania, Slovenia, Sweden, and United Kingdom) reported the voluntary pollutant CO_2 excluding biomass under E-PRTR 2009.

For individual countries the share of E-PRTR CO_2 emissions in UNFCCC CO_2 emissions without transport is on average 71 % (minimum 12 % for Latvia, maximum 201 % for Iceland, standard deviation 38 %) (Figure C.3). This confirms that most of the CO_2 emissions emitted in Europe come from large point sources.

In most countries the energy sector has the highest share in total CO_2 emissions reported under E-PRTR. In Austria and Iceland *Production of metals* has the highest share, in Latvia *Mineral industry*, in Sweden *Paper and wood production* and in Switzerland *Waste management* (Figure C.4). Iceland is the only country that did not report any CO_2 emissions in the E-PRTR *Energy sector*.

Figure C.4 Contribution of E-PRTR main activities to total CO_2 emissions reported under E-PRTR 2009



Note: *Liechtenstein and Serbia did not report CO_2 emissions under E-PRTR 2009.*

C.2.2 SO_2

The total SO_2 emissions reported by all countries under E-PRTR amount to 72 % of the sum of all national totals (without transport) reported under CLRTAP (Figure C.5). The results confirm that large facilities (e.g. power plants) are the main source of SO_2 emissions in Europe. The five facilities with the highest SO_2 releases under E-PRTR contributed altogether 20 % of total E-PRTR releases for SO_2 (

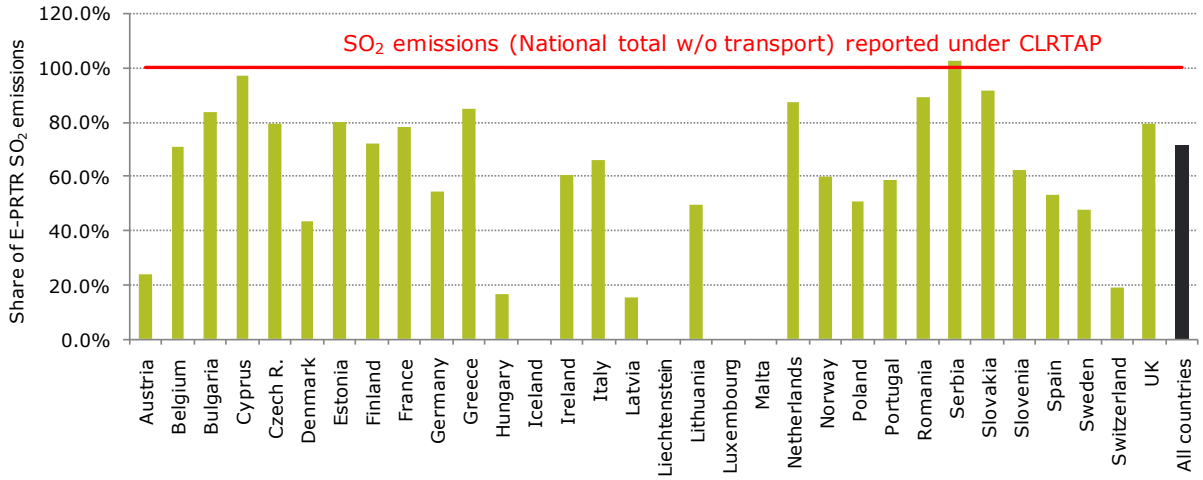
Table B.8). For individual countries the total percentage of SO_2 emissions reported under E-PRTR is on average 64 % of the national CLRTAP total (minimum 15 % for Latvia, maximum 102.5 % for Serbia,

standard deviation 24 %), with eight countries reporting more than 80 % of SO_2 releases occurring in E-PRTR.

As indicated in the introduction, E-PRTR emissions should not exceed national total emissions. Therefore, the 102.5 % E-PRTR share of Serbia should be further investigated and a revision of either the CLRTAP or E-PRTR dataset should be considered by the country. Rather low E-PRTR shares compared to the average share of 64 % should be checked by the countries concerned (Austria, Hungary, Latvia, Switzerland).

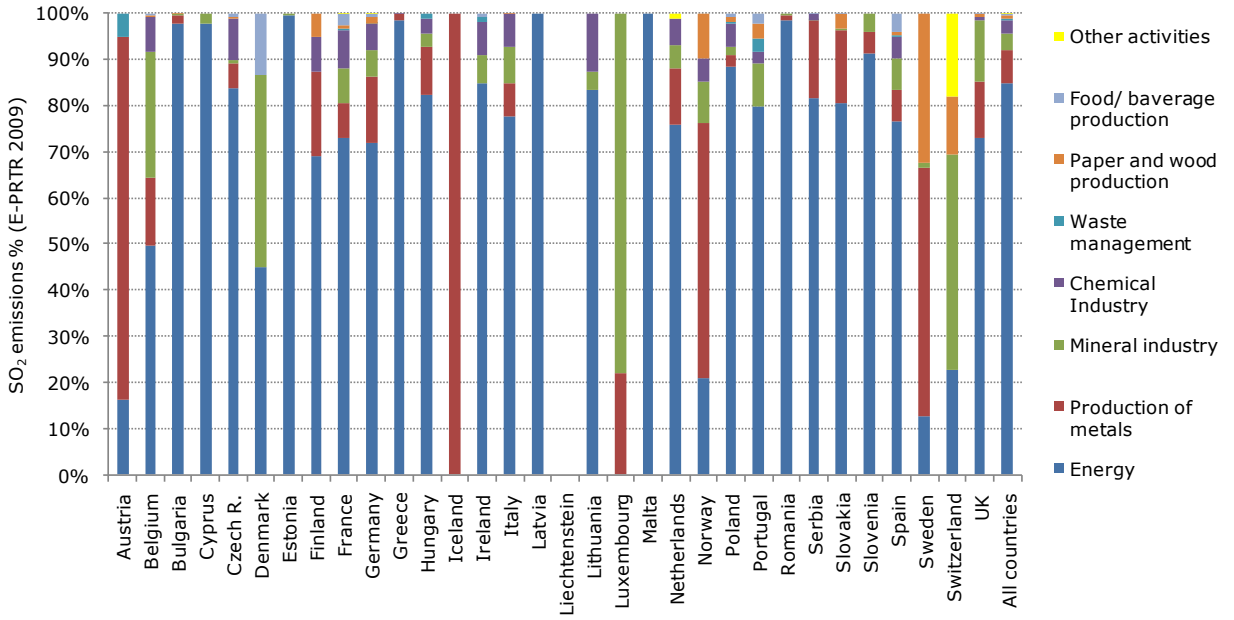
The main source of SO_2 emissions is from the *Energy* sector, followed by *Production of metals* and *Mineral industry* (Figure C.6). Sweden and Switzerland reported a significant share of SO_2 emissions from *Paper and wood production.*

Figure C.5 Share of E-PRTR SO_2 releases in the national total reported under CLRTAP (national totals without transport)



Note: *Liechtenstein did not report SO_2 emissions under E-PRTR 2009. Iceland, Luxembourg and Malta did not submit emissions under CLRTAP 2009.*

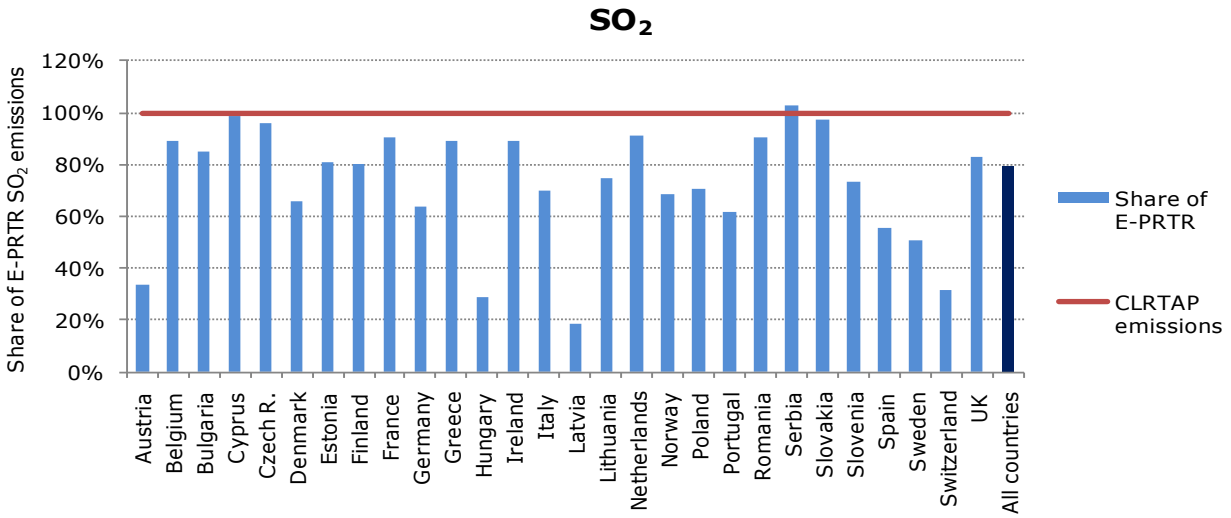
Figure C.6 Contribution of E-PRTR main activities to the total SO_2 releases reported under E-PRTR 2009



Note: *Liechtenstein did not report SO_2 emissions under E-PRTR 2009.*

The comparison between SO_2 emissions from the aggregated sector A with sectoral CLRTAP emissions shows very similar results to the comparison of total SO_2 E-PRTR emissions with the national total (without transport) reported under CLRTAP. This confirms that most of the SO_2 emissions occur from combustion processes in large point sources. Thirteen countries have a share of E-PRTR releases from the aggregated sector A in sectoral emissions reported under CLRTAP between 80 % and 100 % (Figure C.7). Serbia is the only country that reported higher emissions under E-PRTR than their national total reported under CLRTAP (102 %). Latvia reported the lowest share of E-PRTR releases (<20 %) in sectoral emissions reported under CLRTAP. Malta did report SO_2 releases in this sector under E-PRTR 2008 which amounted almost 100% of CLRTAP emissions. The difference indicates incomplete or inconsistent reporting of Malta.

Figure C.7 **Share of E-PRTR SO_2 releases in sector A (Energy, manufacturing industries and waste incineration) of sectoral emissions reported under CLRTAP**



Note: *Iceland, Liechtenstein, Luxembourg and Malta did not report* SO_2 *emissions for Energy sector under E-PRTR 2009.*

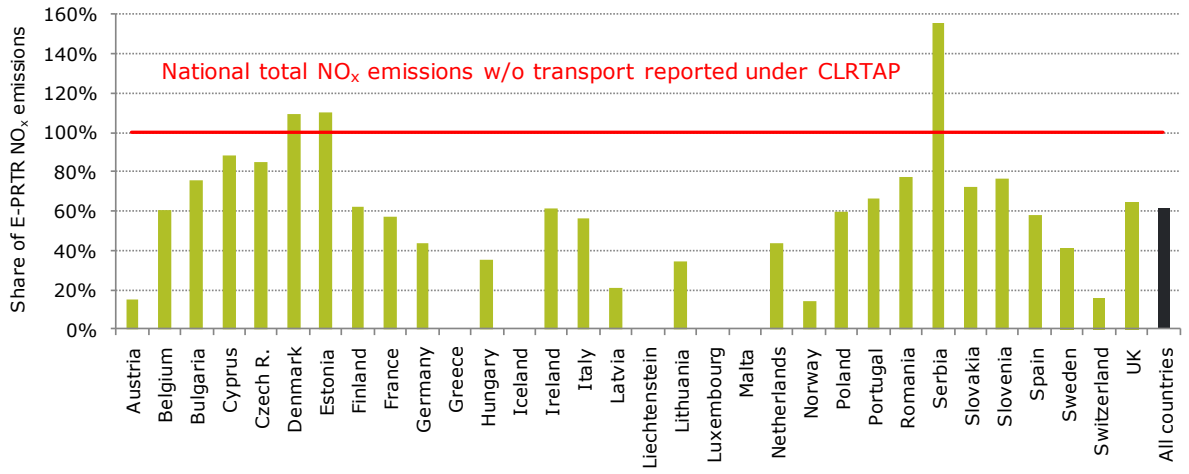
C.2.3 NO_x

The share of E-PRTR releases in the national total is significant for NO_x – the total percentage of NO_x emissions accounted for in E-PRTR reporting for all countries is 61 % of the national CLRTAP total without transport reported (Figure C.8). For individual countries the total percentage of NO_x emissions accounted for is on average 61 % (minimum 14 % for Norway, maximum 155 % for Serbia, standard deviation 32 %).

The very high share of E-PRTR NO_x releases of Denmark, Estonia and Serbia may indicate that transport emissions under CLRTAP are overestimated and/or national total emissions are underestimated and/or E-PRTR releases are incorrect. Some countries have a very low share of E-PRTR NO_x emissions, namely Austria, Latvia, Norway and Switzerland which indicates a possible underreporting and should be checked by the countries concerned.

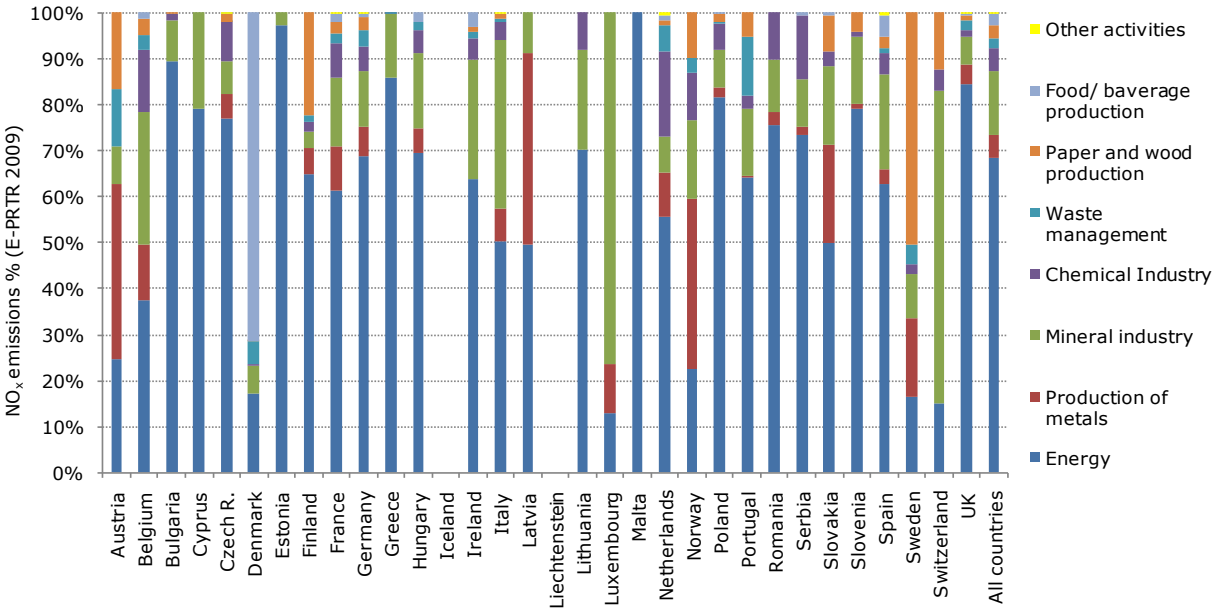
E-PRTR NO_x releases mainly stem from *Energy*, followed by *Mineral industry, Production of metals, Paper and wood processing and Chemical industry*. As expected, the share of *Energy* in E-PRTR NO_x releases is lower than the share of *Energy* in SO_2 E-PRTR releases (compare Figure C.9).

Figure C.8 Share of E-PRTR NO_x releases in the national total reported under CLRTAP (national total without transport)



Note: Iceland and Liechtenstein did not report *NO_x* emissions under E-PRTR 2009. Greece, Iceland, Liechtenstein, Luxembourg and Malta *did not report NO_x emissions under CLRTAP 2009.*

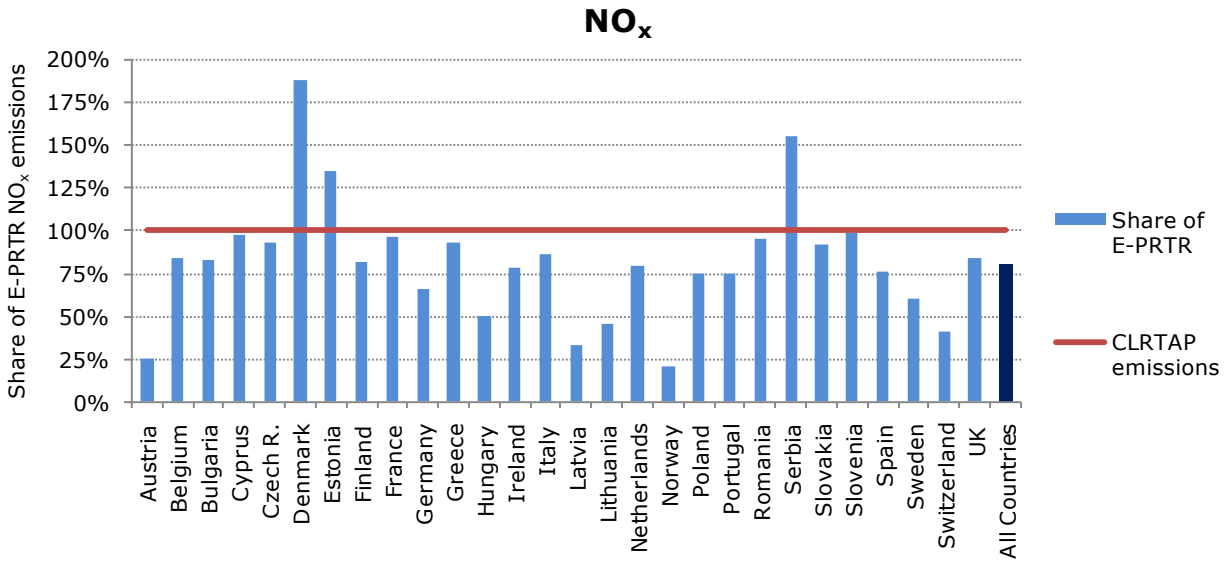
Figure C.9 Relative contribution of E-PRTR main activities to the total NO_x releases reported under E-PRTR 2009



Note: Iceland and Liechtenstein did not report *NO_x* emissions under E-PRTR 2009

In 15 countries the share of NO_x E-PRTR aggregated sector A releases in sectoral emissions reported under CLRTAP is between 80 % and 100 % (Figure C.10). In Denmark, Serbia and Estonia E-PRTR NO_x releases account for more than 100 % of the sectoral emissions reported under CLRTAP. These emissions should be checked by the countries concerned.

Figure C.10 **Share of E-PRTR NO_x releases in sector A (Energy, manufacturing industries and waste incineration) in sectoral emissions reported under CLRTAP**

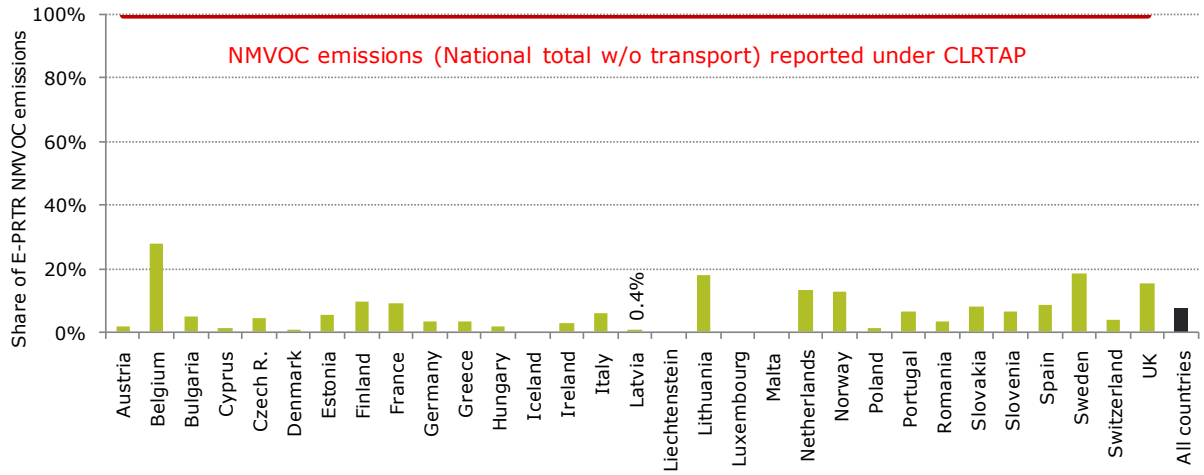


Note: *Iceland, Liechtenstein, Luxembourg and Malta did not report NO_x emissions for Energy sector under E-PRTR 2009.*

C.2.4 NMVOC

Total NMVOC emissions in E-PRTR reporting for all countries is 7 % of the national total reported under CLRTAP (Figure C.11). For individual countries, the total percentage of NMVOC emissions is on average 7 % (minimum 0.4 % for Latvia, maximum 28 % for Belgium, standard deviation 7 %). This finding is consistent with the results of the CLRTAP key category analyses indicating that in general NMVOC emissions occur from a number of small area diffuse sources[34] like residential heating and domestic solvent and other product use.

Figure C.11 **Share of E-PRTR NMVOC emissions in the national total reported under CLRTAP (national total without transport)**

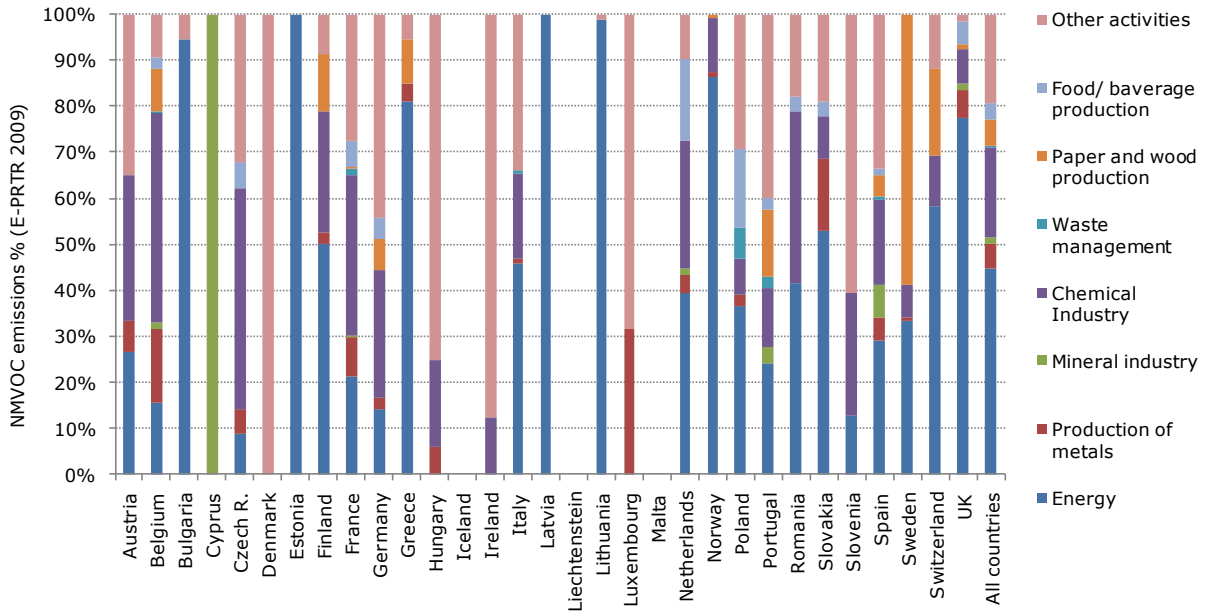


[34] See results of KCA analyses in CEIP &EEA report; Inventory Review 2009. http://www.ceip.at/review-process/review-2009/

Note: *Iceland, Liechtenstein, Malta and Serbia did not report NMVOC emissions under E-PRTR 2009. Luxembourg did not submit emissions under CLRTAP 2009.*

Figure C.12 shows that *Energy* and *Other activities* are the most important activities for NMVOC releases under E-PRTR. Belgium, the Czech Republic and Luxembourg also reported significant NMVOC emissions from *Production of metals* while in Cyprus relevant NMVOC emissions only occurred in *Mineral industry*.

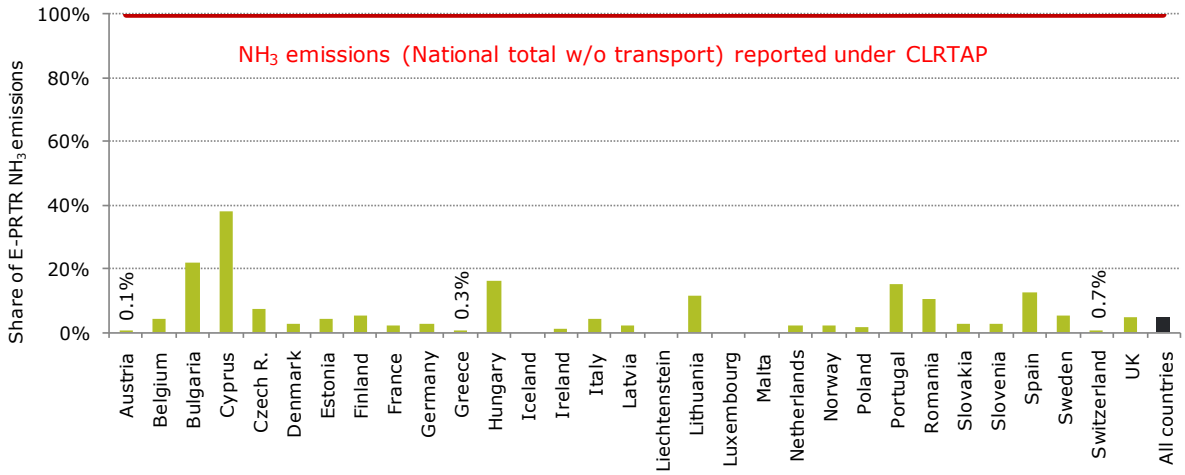
Figure C.12 Contribution of E-PRTR main activities to the total NMVOC releases reported under E-PRTR 2009



Note: *Iceland, Liechtenstein, Malta and Serbia did not report NMVOC emissions under E-PRTR 2009.*

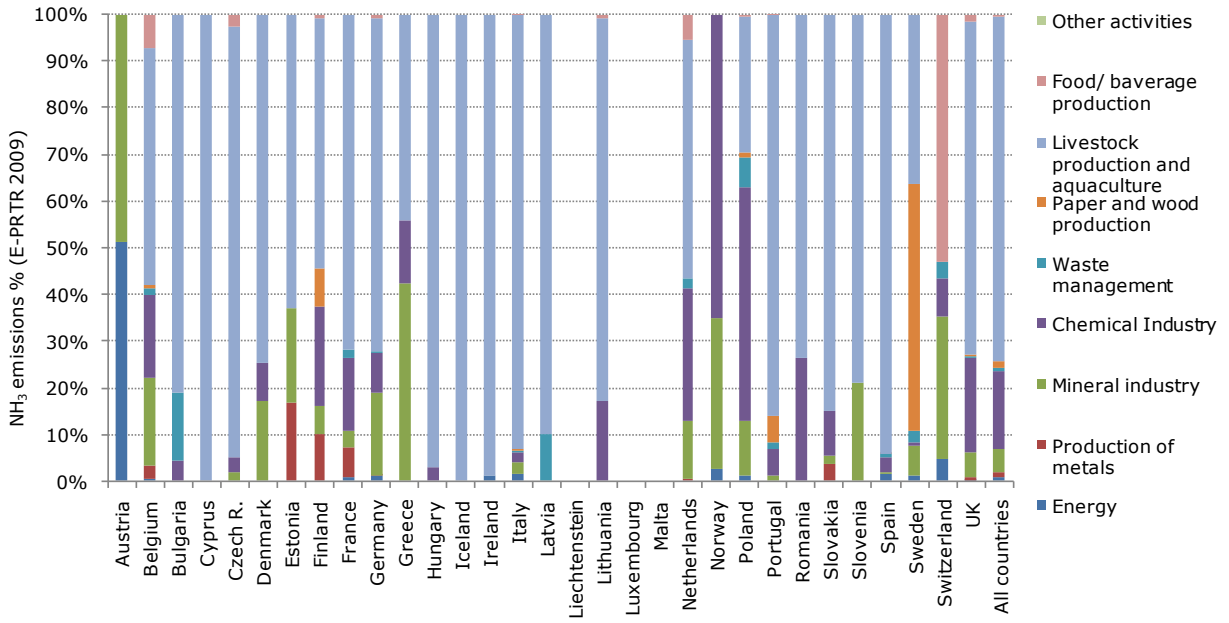
C.2.5 NH_3

Figure C.13 Share of E-PRTR NH_3 emissions in the national total reported under CLRTAP (national total without transport), 2009



Note: *Liechtenstein and Serbia did not report NH_3 emissions under E-PRTR 2009. Iceland, Luxembourg and Malta reported zero emissions. All five countries did not report NH_3 emissions under CLRTAP 2009.*

Figure C.14 Contribution of E-PRTR main activities to the total NH_3 releases reported under E-PRTR 2009



Note: *Liechtenstein, Luxembourg, Malta and Serbia did not report NH_3 emissions under E-PRTR 2009.*

All countries but Iceland, Luxembourg, Liechtenstein, Malta and Serbia reported NH_3 emissions under E-PRTR 2009. The total percentage of NH_3 emissions accounted for in E-PRTR reporting by all countries is 5 % of the national total reported under CLRTAP (Figure C.13). For individual countries, the percentage of NH_3 emissions is on average 7 % (minimum 0.1 % for Austria, maximum 38 % for Cyprus, standard deviation 8.3 %). The results indicate that NH_3 emissions are emitted prevailingly by small or area sources.

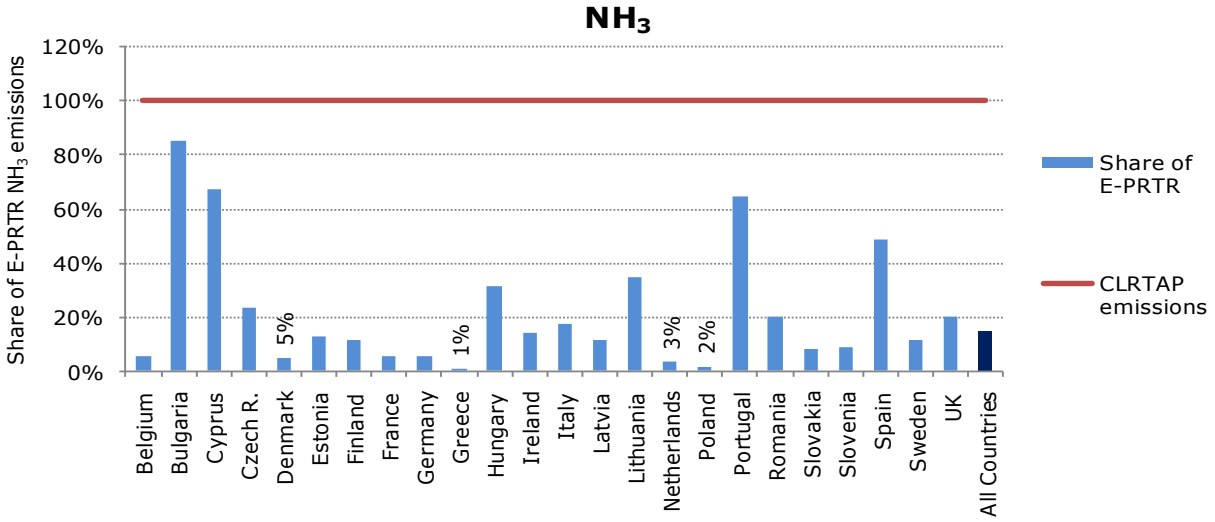
The main source of NH_3 emissions under E-PRTR is *Livestock production and aquaculture* followed by *Chemical industry* and *Mineral industry* (Figure C.14). However, three countries (Austria, Norway and Switzerland) did not report any NH_3 emissions occurring in *Livestock production and aquaculture*.

Sweden is the only country reporting a high share of NH_3 emission from *Paper and wood production*. Such anomalies could be correct but can only be verified by the countries themselves. The E-PRTR dataset does not contain sufficient explanatory information to make an assessment.

C.2.5.1 Agriculture (C)

The comparison of emissions stemming from the *Agriculture* sector shows a limited share of E-PRTR releases in CLRTAP emissions reported by most countries (Figure C.15). This indicates that this type of emission occurs prevailingly from sources beneath the E-PRTR thresholds. In 15 countries the share of E-PRTR 2009 NH_3 emissions in CLRTAP emissions is below 20 %. A significantly higher share has been observed only for Bulgaria (85 %), Cyprus (67 %) and Portugal (65 %).

Figure C.15 Share of E-PRTR NH_3 emissions (Agriculture – Poultry, pigs) in the CLRTAP emissions (Manure management), 2009

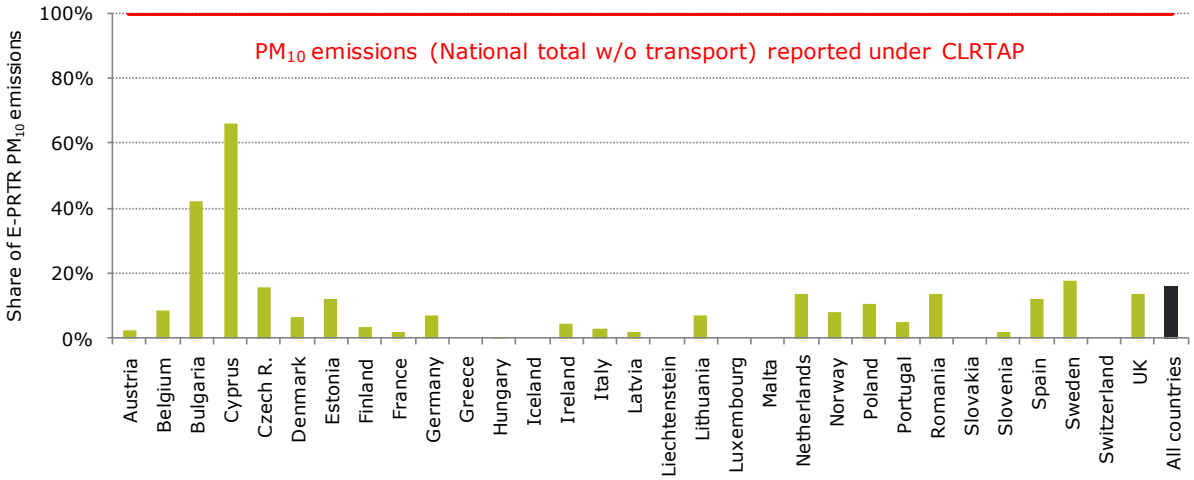


Note: *Austria, Iceland, Liechtenstein, Luxembourg, Malta, Norway, Switzerland and Serbia did not report NH_3 emissions for the "Agriculture" sector under E-PRTR 2009.*

C.2.6 PM_{10}

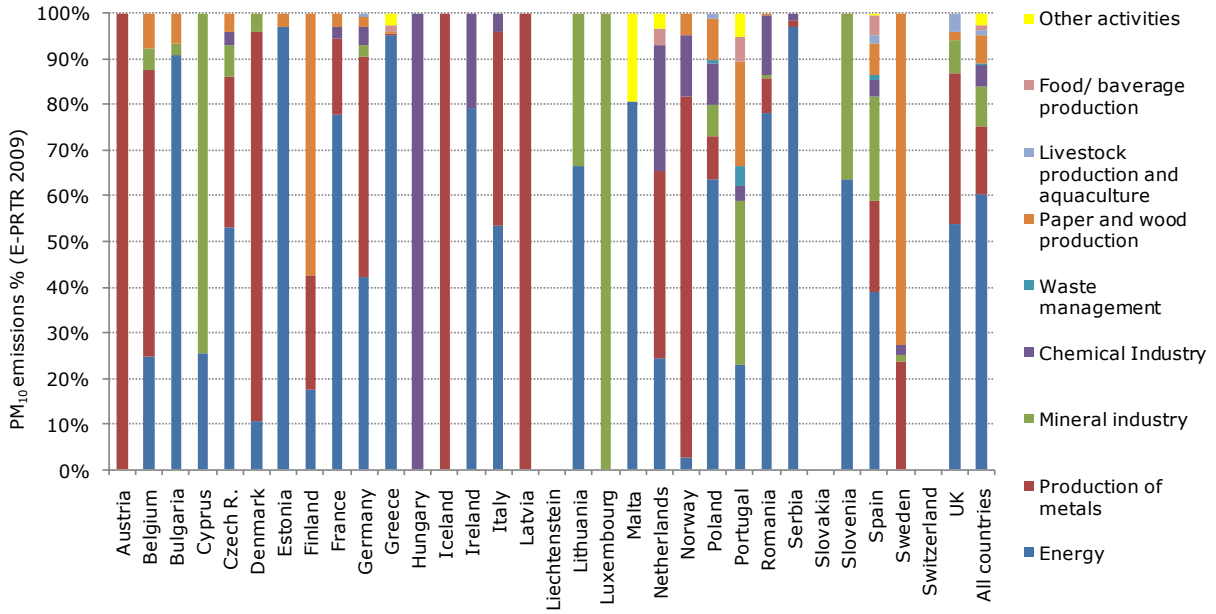
The percentage of PM_{10} emissions for all countries in E-PRTR reporting is 16 % of the national total without transport reported under CLRTAP (Figure C.16). For individual countries, the total percentage of PM_{10} emissions is rather variable with an average of 12 % (minimum 0.4 % for Hungary, maximum 66 % for Cyprus, standard deviation 15 %).

Figure C.16 Share of E-PRTR PM_{10} emissions in the national total reported under CLRTAP (national total without transport), 2009



Note: *Liechtenstein, Slovakia and Switzerland did not report PM_{10} emissions under E-PRTR 2009. Greece, Iceland, Malta and Serbia did not report PM_{10} emissions under CLRTAP 2009*

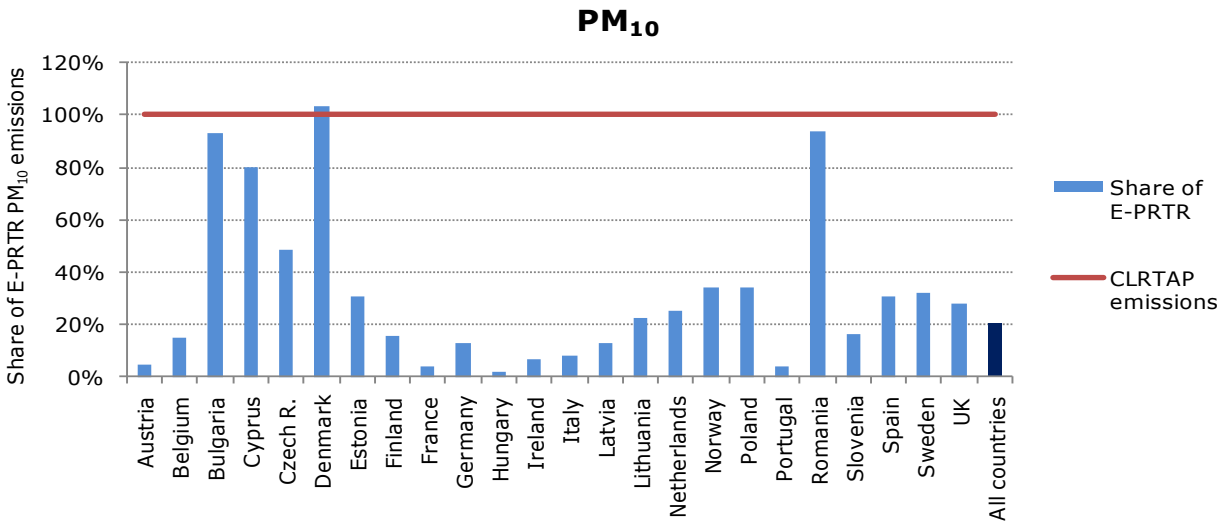
Figure C.17 Contribution of E-PRTR main activities to the total PM_{10} releases reported under E-PRTR 2009



Note: *Liechtenstein, Slovakia and Switzerland did not report PM_{10} emissions under E-PRTR 2009.*

The most relevant activities for the production of PM_{10} emissions are *Energy* and *Industry* (production of metals and mineral industry). Sweden and Finland also reported a relatively high share of PM_{10} emissions from *Paper and Wood production*. The results of key category analysis under CLRTAP also indicate that PM emissions occur from a number of area sources (diffuse emissions).

Figure C.18 Share of E-PRTR PM_{10} releases (Energy, manufacturing industries and waste incineration) in sectoral emissions reported under CLRTAP



Note: *Liechtenstein, Slovakia and Switzerland did not report PM_{10} emissions under E-PRTR 2009. Greece, Iceland, Malta and Serbia did not report PM_{10} emissions under CLRTAP 2009*

For PM_{10} the results differ widely for individual countries. Only three countries (Bulgaria, Cyprus and Romania) have a share of PM_{10} E-PRTR releases in sectoral CLRTAP emissions between 80 % and 100 %

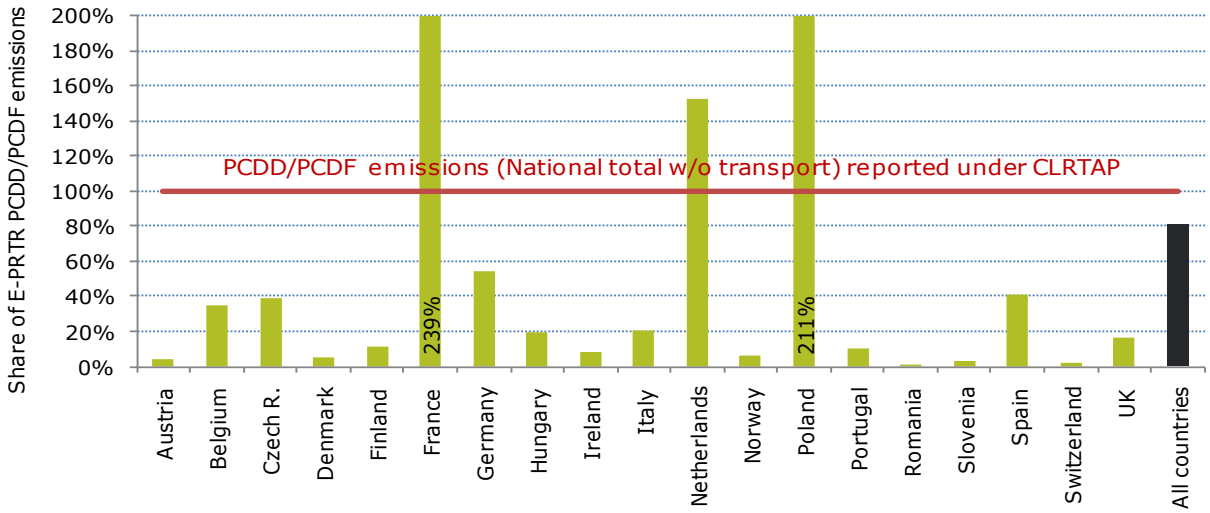
while in six countries the share is less than 10 % (Figure C.18). This is consistent with 2008 E-PRTR and CLRTAP data, however, Latvia and Malta reported more than an 80 % share in 2008.

C.2.7 Dioxins and furans (PCDD/PCDF)

Reporting of PCDD/PCFD under E-PRTR 2009 is extremely inconsistent between countries. Three countries (France, Netherlands and Poland) have a share of E-PRTR emissions in the national total reported under CLRTAP far above 100 % while most other countries have a share below 50 % (Figure C.19).

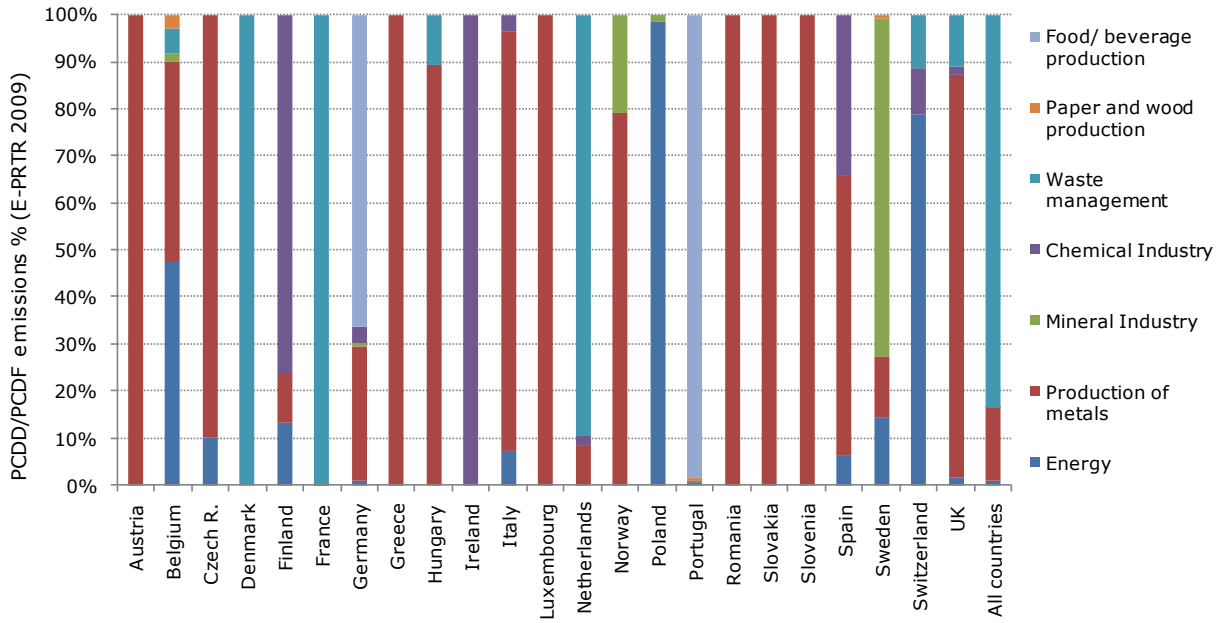
The most relevant activities that involve releases of PCDD/PCFD are *Production of metals* followed by *Energy and Waste management* (Figure C.20). The high share of waste management for all countries is caused by France which reported an extremely high quantity of 77,000 g PCDD/PCFD emissions in 2009 compared to only 0.34 g for 2008. This is likely to indicate a mistake in reporting units and should be checked by the country. Ireland reported 100 % of their PCDD/PCFD emissions from *Chemical Industry* while Germany and Portugal reported a relatively high share of emissions from *Food and beverage production*. Poland did not report any PCDD/PCFD emissions from *Production of metals* although the sector contains 230 facilities for 2009 in the E-PRTR dataset. This might indicate underreporting and should be checked by Poland.

Figure C.19 Share of E-PRTR PCDD/PCFD emissions in the national total reported under CLRTAP (national total without transport)



Note: *Bulgaria, Cyprus, Estonia, Latvia, Liechtenstein, Lithuania, Malta and Serbia did not report PCDD/PCFD emissions under E-PRTR 2009.*
Greece, Luxembourg,Malta, Serbia and Sweden did not report PCDD/PCFD emissions under CLRTAP 2009.

Figure C.20 Contribution of E-PRTR main activities to the total PCDD/PCFD releases reported under E-PRTR 2009

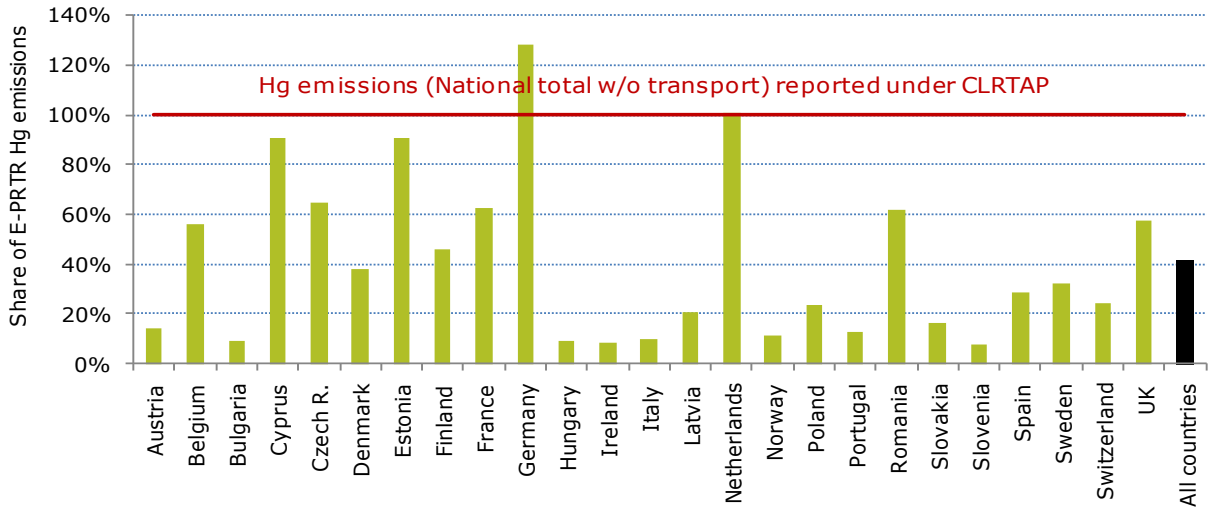


Note: *Bulgaria, Cyprus, Estonia, Latvia, Liechtenstein, Lithuania, Malta and Serbia did not report PCDD/PCFD emissions under E-PRTR 2009.*

C.2.8 Mercury (Hg)

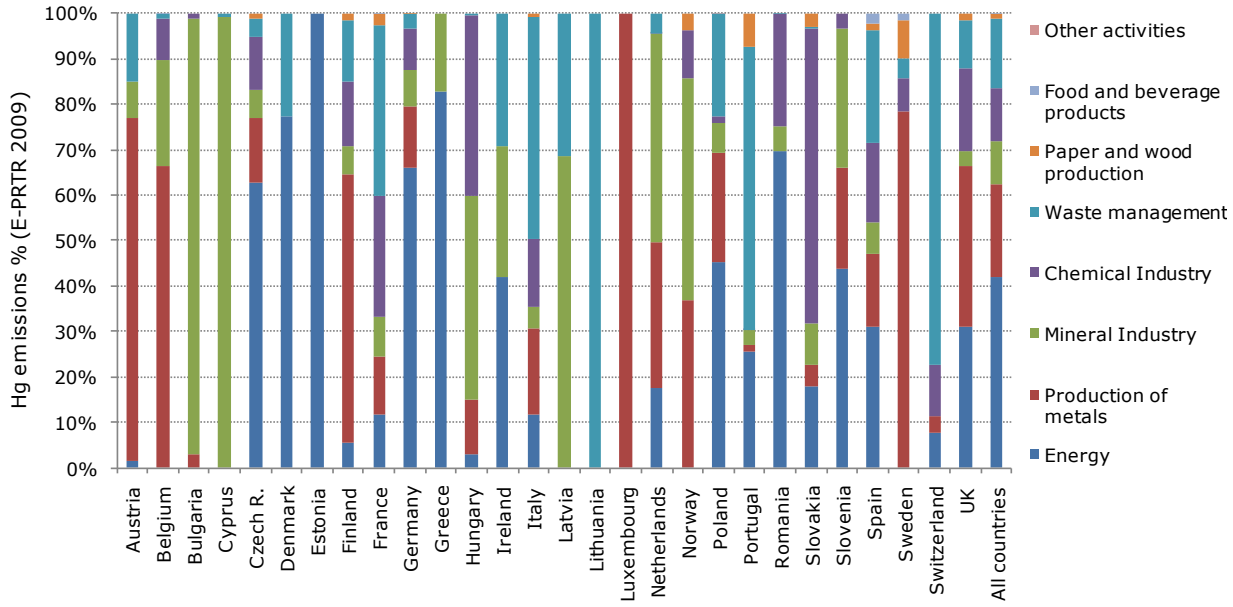
The percentage for all countries of **Hg** emissions in E-PRTR reporting is 41 % of the national total without transport reported under CLRTAP (Figure C.21). For individual countries the total percentage of Hg emissions is rather variable (minimum 8 % for Italy, maximum 128 % for Germany, standard deviation 34 %).

Figure C.21 Share of E-PRTR Hg emissions in the national total reported under CLRTAP (national total without transport)



Note: *Greece, Iceland, Liechtenstein, Lithuania, Luxembourg, Malta and Serbia did not report Hg emissions under E-PRTR 2009 and under CLRTAP 2009.*

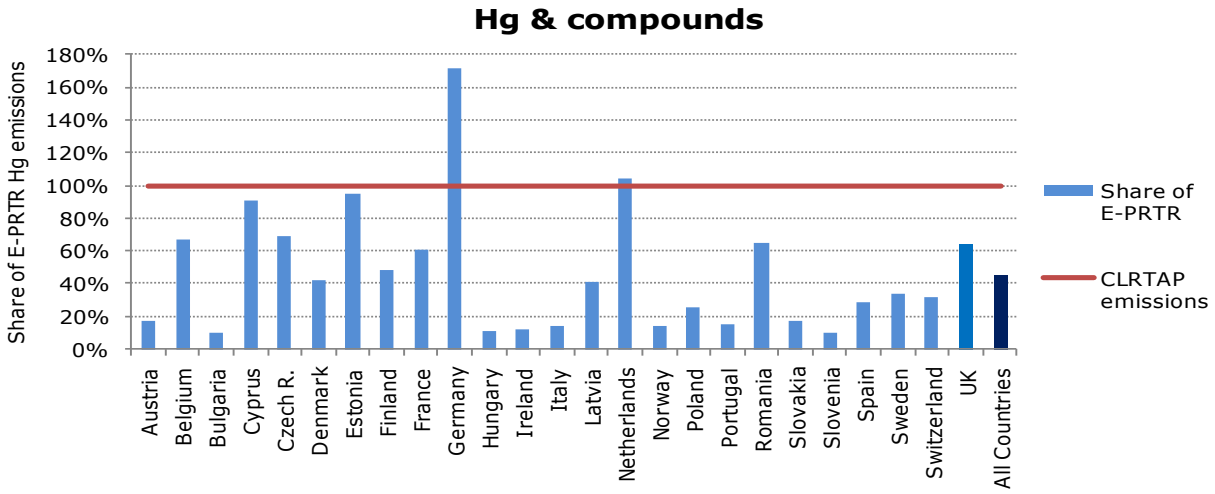
Figure C.22 Contribution of E-PRTR main activities to the total Hg releases reported under E-PRTR 2009



Note: *Greece, Iceland, Liechtenstein, Lithuania, Luxembourg, Malta and Serbia did not report Hg emissions under E-PRTR 2009.*

E-PRTR Hg releases mainly stem from *Energy*, *Production of metals, Mineral industry and Chemical industry and waste management* (Figure C.22), the share differing substantially between countries.

Figure C.23 Share of E-PRTR Hg releases (Energy, manufacturing industries and waste incineration) in sectoral emissions reported under CLRTAP



Note: *Greece, Iceland, Lithuania, Liechtenstein, Luxembourg, Malta and Serbia did not report E-PRTR Hg emissions for „Energy" sector in 2009.*

The share of E-PRTR Hg emissions (Energy, manufacturing industries and waste incineration) in sectoral CLRTAP emissions also differs very much between countries. In Germany and the Netherlands the share of Hg E-PRTR releases in sectoral CLRTAP emissions is above 100 % (172 % and 105 %), in seven countries (Belgium, Cyprus, the Czech Republic, Estonia, France, Romania and the United Kingdom) the

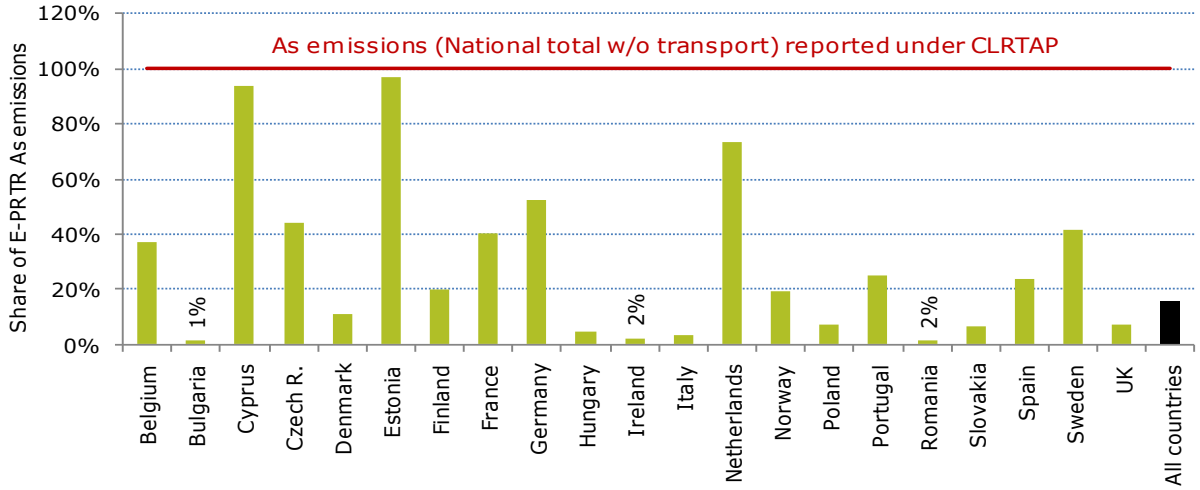
share is between 60 % and 100 % and in another nine countries (Austria, Bulgaria, Hungary, Ireland, Italy, Portugal, Slovakia and Slovenia) less than 20 % (Figure C.23).

C.2.9 Other heavy metals (HMs)

All countries reported releases of at least one heavy metal (HM) under E-PRTR. Reporting of HM under E-PRTR seems to be more complete than reporting of HMs under CLRTAP. Large point sources produce on average more than 20 % of national total HM emissions. For individual HMs between seven and eight countries have a share of E-PRTR emissions of above 50 %. For individual HMs the Czech Republic, Germany, France, the Netherlands and Portugal reported significantly higher emissions under E-PRTR than national totals under CLRTAP. This indicates either incomplete reporting under CLRTAP or errors in E-PRTR data.

The total percentage of **As** emissions accounted for in E-PRTR reporting for all countries is 16 % of the national total without transport reported under CLRTAP (Figure C.24). For individual countries, the total percentage of As emissions is rather variable with a minimum of 1.4 % for Bulgaria and a maximum of 97 % for Estonia (standard deviation 29 %).

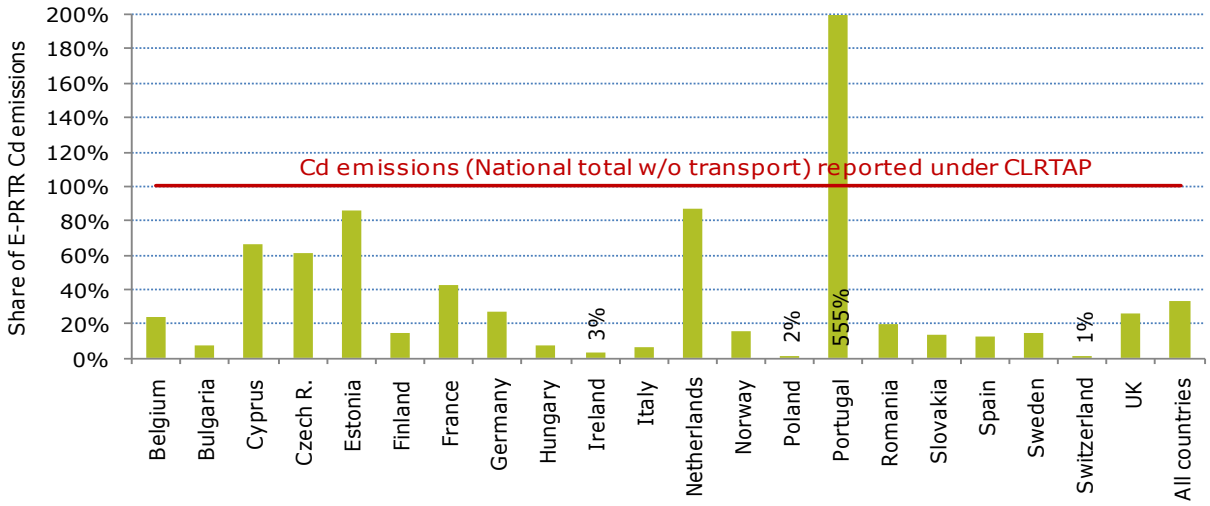
Figure C.24 Share of E-PRTR As emissions in the national total reported under CLRTAP (national total without transport)



Note: *Austria, Greece, Latvia, Liechtenstein, Lithuania and Luxembourg did not report As emissions under E-PRTR 2009. Austria, Greece, Iceland, Latvia, Liechtenstein, Luxembourg, Serbia, Slovenia and Switzerland did not report As emissions under CLRTAP 2009.*

The total percentage of **Cd** emissions accounted for in E-PRTR reporting for all countries is 33 % of the national total without transport reported under CLRTAP (Figure C.25). For individual countries the total percentage of Cd emissions is highly variable with a minimum of 1 % for Switzerland and a maximum of 555 % for Portugal (standard deviation 118 %).

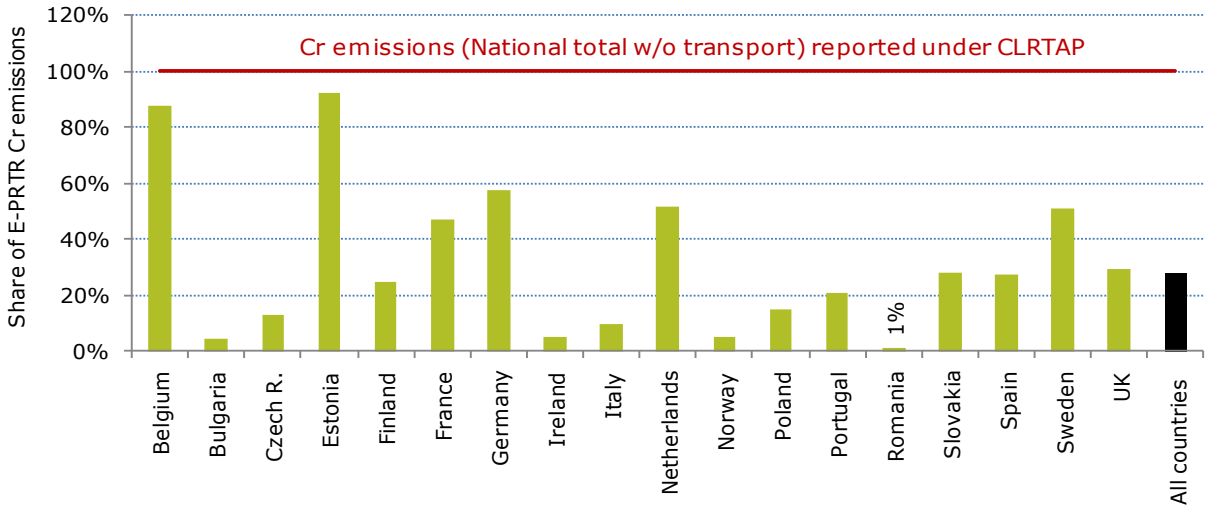
Figure C.25 Share of E-PRTR Cd emissions in the national total reported under CLRTAP (national total without transport)



Note: *Austria, Denmark, Greece, Iceland, Latvia, Liechtenstein, Lithuania, Luxembourg, Serbia and Slovenia did not report Cd emissions under E-PRTR 2009. Austria, Denmark, Greece, Iceland, Liechtenstein, Lithuania, Luxembourg, Malta, Serbia and Switzerland did not report Cd emissions under CLRTAP 2009.*

The total percentage of **Cr** emissions accounted for in E-PRTR reporting for all countries is 28 % of the national total without transport reported under CLRTAP (Figure C.26). For individual countries the total percentage of Cr emissions is variable with a minimum of 1 % for Romania and a maximum of 92 % for Estonia (standard deviation 28 %).

Figure C.26 Share of E-PRTR Cr emissions in the national total reported under CLRTAP (national total without transport)

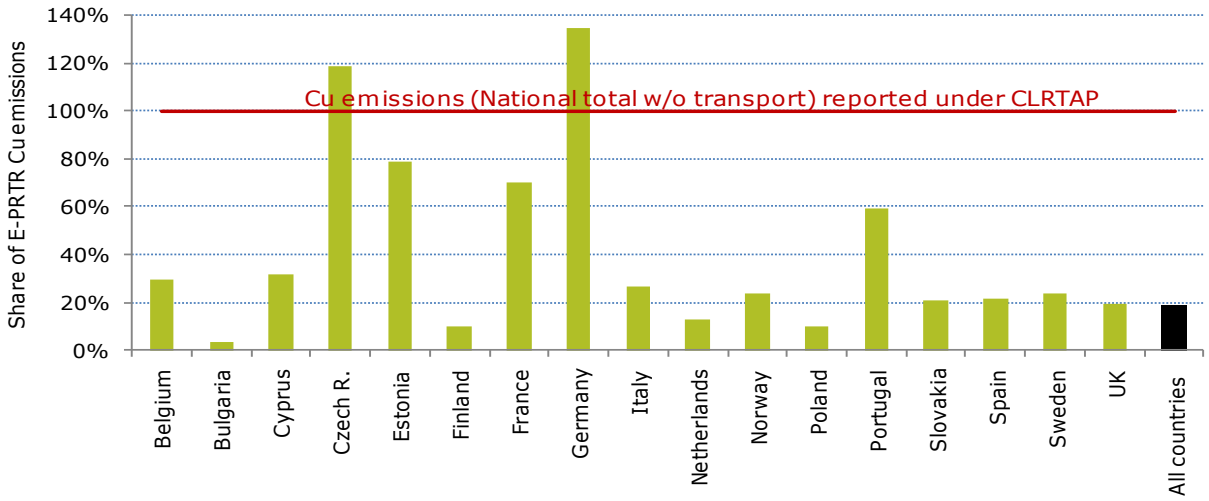


Note: *Austria, Cyprus, Denmark, Hungary, Greece, Iceland, Latvia, Liechtenstein, Lithuania, Luxembourg and Malta did not report Cr emissions under E-PRTR 2009. Austria, Greece, Iceland, Liechtenstein, Luxembourg, Malta, Serbia, Slovenia and Switzerland did not report Cr emissions under CLRTAP 2009.*

The total percentage of **Cu** emissions accounted for in E-PRTR reporting for all countries is 19 % of the national total without transport reported under CLRTAP (Figure C.27). For individual countries the total

percentage of Cu emissions is rather variable with a minimum of 3 % for Bulgaria and a maximum of 135 % for Germany (standard deviation 39 %).

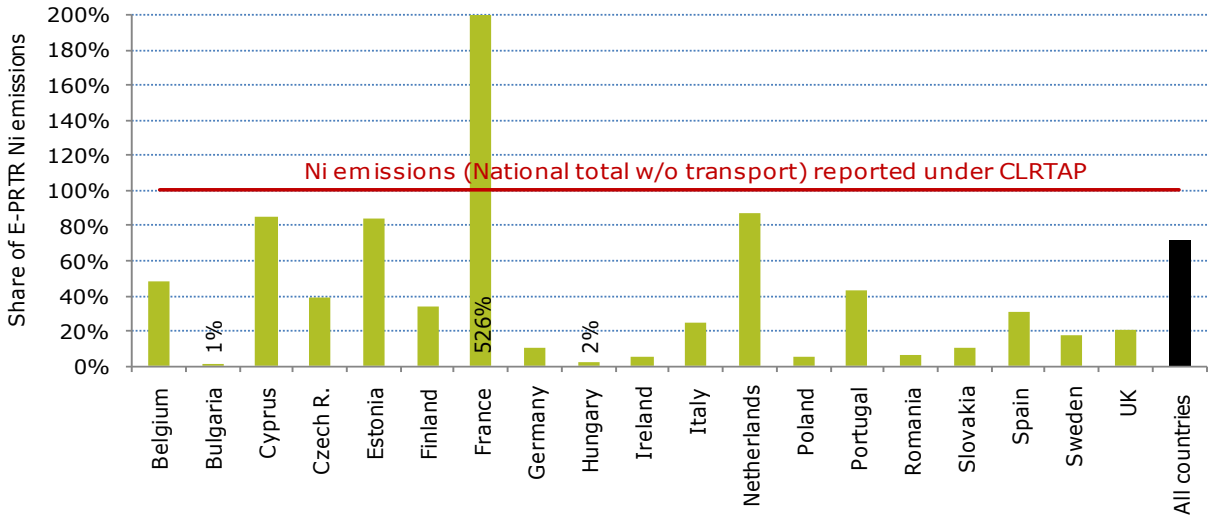
Figure C.27 Share of E-PRTR Cu emissions in the national total reported under CLRTAP (national total without transport)



Note: *Austria, Denmark, Greece, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Romania, Serbia and Switzerland did not report Cu emissions under E-PRTR 2009. Austria, Denmark, Greece, Iceland, Ireland, Liechtenstein, Lithuania, Luxembourg, Malta, Romania, Serbia, Slovenia and Switzerland did not report Cu emissions under CLRTAP 2009.*

The total percentage of **Ni** emissions accounted for in E-PRTR reporting for all countries is 71 % of the national total without transport reported under CLRTAP (Figure C.28). For individual countries the total percentage of Ni emissions is highly variable with a minimum of 1 % for Lithuania and a maximum of 526 % for the Netherlands (standard deviation 117 %).

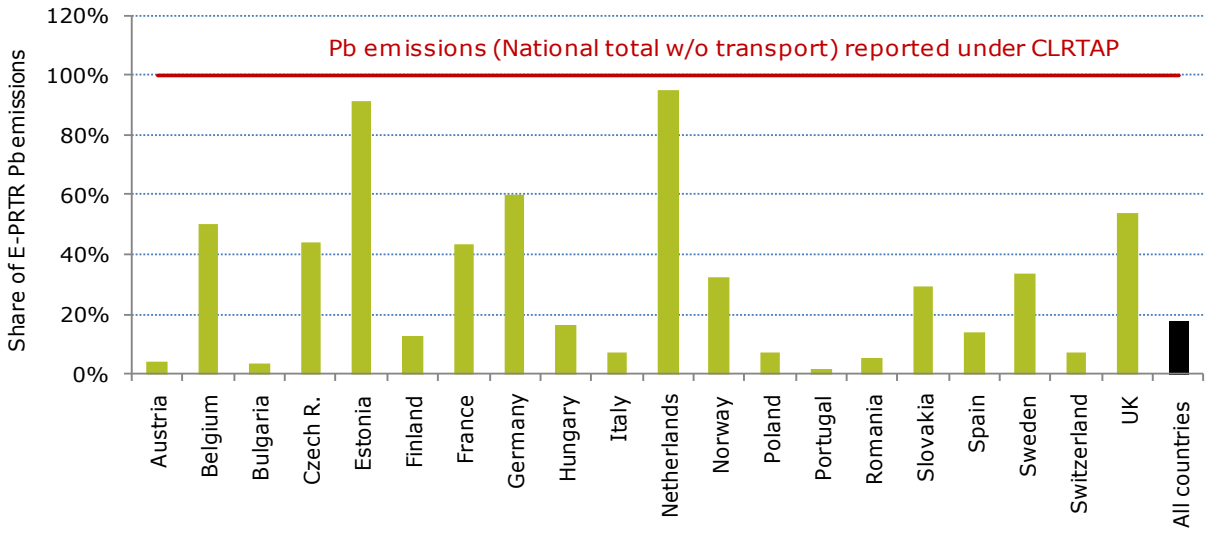
Figure C.28 Share of E-PRTR Ni emissions in the national total reported under CLRTAP (national total without transport)



Note: *Denmark, Greece, Iceland, Latvia, Liechtenstein, Luxembourg, Malta, Norway, Serbia and Switzerland did not report Ni emissions under E-PRTR 2009. Austria, Denmark, Greece, Iceland, Latbvia, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Serbia, Slovenia and Switzerland did not report Ni emissions under CLRTAP 2009.*

The total percentage of **Pb** emissions accounted for in E-PRTR reporting for all countries is 18 % of the national total without transport reported under CLRTAP (Figure C.29). For individual countries the total percentage of Pb emissions is rather variable with a minimum of 2 % for Portugal and a maximum of 95 % for the Netherlands (standard deviation 28 %).

Figure C.29 Share of E-PRTR Pb emissions in the national total reported under CLRTAP (national total without transport)



Note: *Cyprus, Denmark, Greece, Iceland, Ireland Latvia, Liechtenstein, LIthuania, Luxembourg, Malta, Serbia and Slovenia did not report Pb emissions under E-PRTR 2009. Cyprus, Denmark, Greece, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Serbia and Slovenia did not report Pb emissions under CLRTAP 2009.*

D Stage 2 Review – Waste - Comparisons with other data on waste transfers

The stage 2 review of the E-PRTR dataset for waste comprises a comparison of the 2009 data with external sources, a number of checks regarding incineration plants and landfills as well as a comparison of the 2008 data with the 2009 data on waste transfers.

The checks included the following:

1. **Comparison to external sources**
    - Comparison of E-PRTR hazardous waste transfers with the transboundary shipment of waste database.
    - Establishing of a correlation between E-PRTR and Eurostat reporting systems.
2. **Incineration plants and landfills**
    - Identification of incineration plants that have potentially omitted CO_2 reporting.
    - Identification of incineration plants that do not report hazardous waste transfers.
    - Identification of landfills that report transfers of water pollutants.
3. **E-PRTR waste data comparison across reporting years**
    - Number of facilities per country that report on waste transfers in 2007, 2008 and 2009.
    - Comparison of amounts of waste transferred per country in 2007, 2008 and 2009.
    - Comparison of amounts of waste transferred for all countries per E-PRTR activity classification in 2007, 2008 and 2009.
    - Identification of outstanding facilities that provoke significant changes in an E-PRTR activity's total waste transfers reported in 2008 and 2009.
    - Identification of facilities with significant changes in their waste treatment distribution between 2008 and 2009.

The stage 2 review of the E-PRTR dataset for waste for the reporting year 2009 was constraint by the fact that other relevant waste data were not available at the time the review was conducted. The Eurostat waste generation data for 2008 were reported by the EU Member States according to the EU Waste Statistical Regulation[35] in 2010, but the comparison of the 2008 Eurostat dataset with the 2008 E-PRTR waste dataset will be a part of the formal E-PRTR regulation review. The only external data source used in the 2009 data stage 2 review is the transboundary shipment of waste database which contains relatively complete data for all countries in 2007 and 2008 reporting, but only fragmented data for 2009. The 2009 transboundary shipment of waste database might be completed later in 2011.

35 Waste Regulation: Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics, (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:332:0001:0036:EN:PDF)

D.1 Comparison to external sources

D.1.1 Transboundary shipment of waste and E-PRTR waste transfers

Table D.1: Comparison of the sum of hazardous waste transboundary shipped, reported under waste regulation, and the sum of hazardous waste transferred outside the country according to the E-PRTR reporting in the years 2007, 2008 and 2009

	Absolute values in tonnes					
	2007		2008		2009	
Country	E-PRTR	Transboundary Shipments	E-PRTR	Transboundary Shipments	E-PRTR	Transboundary Shipments
Austria	149,898	284,941	178,374	339,305	71,736	346,550
Belgium	333,541	1,029,282	264,671	862,020	279,231	672,596
Bulgaria	1,208	293	3,870	908	1,975	395
Cyprus	27	4,075	0	0	0	0
Czech Republic	421	3,542	1,158	5,937	6,367	7,286
Denmark	103,765	78,251	79,146	125,824	69,105	101,816
Estonia	907	2,663	601	714	878	4,664
Finland	0	74,201	0	113,545	0	106,971
France	261,745	0	254,115	0	184,331	0
Germany	91,882	234,576	151,079	244,796	132,087	163,259
Greece	2,451	8,423	461	25,381	4,614	0
Hungary	6,235	72,170	673	76,633	685	69,257
Iceland	218	0	3,320	0	5,170	0
Ireland	274,743	320,115	446,406	576,218	145,959	190,860
Italy	441,343	1,038,676	659,387	1,130,115	744,771	1,247,975
Latvia	11,340	7,178	5,410	2,316	1,890	10,895
Lithuania	2,238	4,064	2,881	6,466	9,393	17,258
Luxembourg	7,607	72,686	46,502	44,296	27,541	114,067
Malta	642	0	916	1,966	987	1,853
Netherlands	346,776	3,120,561	410,611	3,030,893	413,412	2,767,458
Norway	0	0	34,744	0	94,445	0
Poland	10,644	66,423	12,299	12,961	17,496	25,589
Portugal	85,269	7,520	174,559	6,363	43,830	61,365
Romania	60	37,220	301	2,361	78	23,431
Slovakia	5,626	2,192	5,080	3,428	4,815	2,979
Slovenia	21,874	42,710	27,934	35,244	39,831	27,968
Spain	31,722	60,179	12,175	52,135	10,775	53,999
Sweden	85,712	175,953	94,032	255,592	122,074	183,605
Switzerland	46,314	0	91,242	0	156,342	0
United Kingdom	77,019	149,297	103,800	171,408	1,988,250	164,214
Total	**2,401,226**	**7,612,050**	**3,065,745**	**7,725,993**	**4,578,065**	**5,461,724**

The transboundary shipment of waste database[36] provides information on notified waste. From its database, it is possible to isolate the hazardous waste exported from each country which corresponds well with the category "hazardous waste transferred outside the country" of the E-PRTR reporting scheme. The comparison of the two datasets is not straightforward since the reporting obligations, methods, assumptions and format are not the same, but such a comparison would give a good indication on possible inconsistencies of the E-PRTR reporting (e.g. given the reporting obligations, it is not possible that the hazardous waste exports are higher in the E-PRTR reporting than the transboundary shipment data for a country).

Table D.1 shows the sums of exported hazardous waste for all reporting countries according to the two databases and for the reporting years 2007, 2008 and 2009. The zero values mean that the country did not report any amount for that year. Table D.2 presents the percentage of the transbounday shipment data sum that the E-PRTR reporting covers. The cells highlighted in red contain values above 100 % % which means that the sum of reported exported hazardous waste under the E-PRTR regulation is higher than the transboundary shipped hazardous waste in the corresponding year. On the other hand, the cells highlighted in yellow contain values below 10 % which might indicate a reporting error since, even though there is a threshold value above which facilities report under the E-PRTR regulation, it is highly unlikely that the sum of E-PRTR reported amounts covers less than 10 % of the Eurostat reported amount. For such a low percentage to appear, there should be a high percentage of facilities with very low waste transfers (below the E-PRTR threshold values), which is not likely.

There are twelve cases where the sum of hazardous waste transferred outside the country (E-PRTR) is higher than the amount reported under the transboundary shipment of waste regulation. This is not possible since under the E-PRTR regulation, only industrial sources report waste and waste transfers are reported only if they exceed a certain threshold value (2 tonnes per year). Therefore, the waste reported under E-PRTR is by definition less than the waste reported in the transboundary shipment database. Therefore, these twelve cases should be examined by countries as they indicate a reporting inconsistency. Any possible reporting error is not necessarily located in the E-PRTR reporting, but it could be under the transboundary shipment reporting.

Table D.2: E-PRTR hazardous waste, transferred outside the country, coverage of the transboundary shipped hazardous waste in the years 2007, 2008 and 2009

Country	2007	2008	2009
Austria	53%	53%	21%
Belgium	32%	31%	42%
Bulgaria	412%	426%	500%
Cyprus	1%	No TS data	No TS data
Czech Republic	12%	19%	87%
Denmark	133%	63%	68%
Estonia	34%	84%	19%
Finland	0%	0%	0%
France	No TS data	No TS data	No TS data
Germany	39%	62%	81%
Greece	29%	2%	No TS data
Hungary	9%	1%	1%
Iceland	No TS data	No TS data	No TS data

[36] The database is hosted by Copenhagen Resource Institute on behalf of Eurostat.

Country	2007	2008	2009
Ireland	86%	69%	76%
Italy	42%	58%	60%
Latvia	158%	234%	17%
Lithuania	55%	45%	54%
Luxembourg	10%	105%	24%
Malta	No TS data	47%	53%
Netherlands	11%	14%	15%
Norway	No TS data	No TS data	No TS data
Poland	16%	95%	68%
Portugal	53%	100%	71%
Romania	0%	13%	0%
Slovakia	257%	148%	162%
Slovenia	51%	79%	142%
Spain	53%	23%	20%
Sweden	49%	37%	66%
Switzerland	No TS data	No TS data	No TS data
United Kingdom	52%	61%	1211%
Total	**32%**	**40%**	**84%**

D.1.2 Correlation between Eurostat and E-PRTR reporting systems

The Eurostat and the E-PRTR reporting systems have different systems for classifying economic activities. The Eurostat system is represented by the NACE codes classification while the E-PRTR regulation describes the economic activities codes in the Annex of the Regulation. A correlation between the two systems would be a good basis for interlinkages and comparisons especially in view of the forthcoming formal review of the E-PRTR regulation and reporting.

E-PRTR covers only part of the activities belonging to a NACE code system on the 2-digit level. The linkage has been undertaken by using the different E-PRTR activity codes and NACE codes, which the facilities have reported, when reporting to the E-PRTR.

When looking at NACE codes on a 4-digit level related to the equivalent E-PRTR activity codes, then the correlation can be seen to be not very good, as overall a large number of NACE codes on a 4-digit level are assigned to a single E-PRTR code. This means that it is difficult to derive a meaningful result as many of the NACE codes on a 4-digit level are related to more than one of the E-PRTR codes making a straight correlation troublesome.

It appears that at a more aggregated level, such as with NACE codes on a 2-digit level, the correlation is better; however uncertainty still remains regarding individual NACE codes on a 2-digit level. It appears that for many of the activities there are usually one or two NACE codes that clearly stand out and which cover almost all of the E-PRTR code in term of amounts. The correlation between the two systems functions relatively well, although some NACE codes are not represented in the E-PRTR classification.

The correlation between the two systems is illustrated in the Annex E of this report.

D.1.2.1 Incineration plants and landfills

A number of data review checks have been undertaken by comparing the waste data reported under E-PRTR with other available information in the E-PRTR reporting mechanism. These checks have been

done on facility level for each country and detailed results at facility level have been reported to each country. The following checks have been undertaken:

- Identification of incineration plants that have potentially omitted CO_2 reporting.
- Identification of incineration plants that do not report hazardous waste transfers.
- Identification of landfills that report transfers of water pollutants.

The different checks and the review results are presented in the following sections.

D.1.2.2 Incineration plants and CO_2 reporting

The residual waste fraction after incineration will normally amount to 25 – 30 % of the original waste mass. Taking into account that the incineration of one metric tonne of waste generates approximately one tonne of CO_2 (sum of fossil and biogenic), a facility with a residual waste fraction of more than 25,000 tonnes could therefore be assumed to be above the reporting threshold for CO2 emissions. Table D.3 shows that 199 incineration plants of non-hazardous waste reported under E-PRTR a waste transfer of more than 25,000 tonnes. These waste transfers could correspond to transfers of residual waste after incineration and could therefore indicate a missing CO_2 emissions reporting, as only 137 records of CO_2 emissions were reported to the register.

Table D.3: Comparison of CO2 emissions from waste incineration plants of non-hazardous waste (Activity 5.(b)) with CO2 estimations based on E-PRTR waste transfer data for the same facility.

		5.(b) facilities reporting > 25,000 tonnes waste / year		
Country	**# 5.(b) facilities**	**# facilities**	**Number of 5.(b) facilities with waste transfer > 25,000 reporting CO2**	**Number of 5.(b) facilities with waste transfer > 25,000 tonnes – Number of 5.(b) facilities with waste transfer > 25,000 tonnes reporting CO_2 = facilities with a potential missing reporting on CO_2**
Austria	8	5	4	1
Belgium	10	7	3	4
Czech Republic	2	0	0	0
Denmark	19	8	1	7
Finland	2	0	0	0
France	134	46	32	14
Germany	90	65	43	22
Hungary	1	1	0	1
Italy	27	14	12	2
Luxembourg	1	1	1	0
Netherlands	12	10	10	0
Norway	13	2	1	1
Poland	1	1	0	1
Portugal	3	2	2	0
Slovakia	1	1	0	1
Slovenia	1	0	0	0
Spain	9	5	2	3
Sweden	15	6	5	1
Switzerland	30	14	14	0

		5.(b) facilities reporting > 25,000 tonnes waste / year		
Country	**# 5.(b) facilities**	**# facilities**	**Number of 5.(b) facilities with waste transfer > 25,000 reporting CO2**	**Number of 5.(b) facilities with waste transfer > 25,000 tonnes – Number of 5.(b) facilities with waste transfer > 25,000 tonnes reporting CO_2 = facilities with a potential missing reporting on CO_2**
United Kingdom	17	11	7	4
Total	**396**	**199**	**137**	**62**

As a part of the stage 2 review process, the reporting countries have received the names and the national identity code of incineration plants that reported at least 25,000 tonnes of waste transfer to the E-PRTR in 2008 but did not report any CO2 emissions in 2008.

D.1.2.3 Incineration plants and hazardous waste transfers

All incineration plants generate hazardous waste from flue gas cleaning. Taking into account that this waste fraction amounts to approximately 1% to 5% of the original waste mass[37], the reporting threshold for E-PRTR (2 tonnes hazardous waste) would be reached for a waste incineration plant with an annual load between forty and two hundred tonnes (at 5% and 1% respectively). Therefore it could be assumed that all waste incineration plants under activity code 5.(b) should report hazardous waste unless there is a hazardous waste disposal site at the site of the facility. Table D.4 shows that all together nine facilities have not reported any transfer of hazardous waste.

Table D.4: Number of non-hazardous waste incineration plants (Activity 5.(b)) not reporting generation of hazardous waste

Countries	Number of non-hazardous waste incineration plants not reporting hazardous waste transfers
Austria	1
Czech Republic	1
Germany	4
Poland	1
Sweden	1
United Kingdom	1
Total	**9**

As a part of the stage 2 review process, the Member Countries have received the names and the national identity code of incineration plants, which have not reported hazardous waste transfers to the E-PRTR in 2008.

D.1.2.4 Landfills and water pollutants

There is an indication that leachate from some landfills may have been reported as waste water transfer (reported as pollutant transfer in water) instead of waste transfer. Table D.5 states the number of landfills that have reported either only “pollutant transfer in water” or which have reported both “pollutant transfer in water” and “waste transfer”. In both cases there might be an error in the reporting.

37 Affaldsteknologi, 1998. Edited by Thomas H. Christensen. Teknisk Forlag A/S, Copenhagen (1998).

As a part of the stage 2 review process, the Member Countries have received the names and the national identity code of landfills that reported only pollutant transfer in water or which have reported both pollutant transfer and waste transfer (http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/&vm=detailed&sb=Title).

Table D.5: Number of landfills (Activity 5.(d)) reporting only pollutant transfers in water and no waste transfers or reporting both pollutant transfers in water and waste transfers

Countries	Facilities reporting both waste and pollutant transfer	Facilities reporting only pollutant transfer	Total
France	0	10	10
Czech Rapublic	1	0	1
Germany	3	13	16
Spain	1	17	18
Finland	5	0	5
Italy	9	3	12
Netherland	4	1	5
Poland	2	1	3
Portugal	11	4	15
Romania	0	1	1
Sweden	1	3	4
Slovenia	1	0	1
Slovakia	0	1	1
United Kingdom	3	10	13
Total	**41**	**64**	**105**

D.1.3 E-PRTR waste data comparison across reporting years

Any potential large changes in the reporting of 2007, 2008 and 2009 might indicate reporting errors if the changes are substantial. Therefore, a number of checks are performed in an attempt to locate the changes that are most relevant for the reporting countries to explore further. These checks are:

- Number of facilities per country that report on waste transfers in 2007, 2008 and 2009.
- Comparison of amounts of waste transferred per country in 2007, 2008 and 2009.
- Comparison of amounts of waste transferred for all countries per E-PRTR activities classification in 2007, 2008 and 2009.
- Identification of outstanding facilities that provoke significant changes in an E-PRTR activity's total waste transfers reported in 2008 and 2009.
- Identification of facilities with significant changes in their waste treatment distribution between 2008 and 2009.

The results of the checks are presented below.

D.1.3.1 Facilities reporting waste transfers in 2007, 2008 and 2009

A comparison on the number of facilities reporting each year (2007, 2008 and 2009) reveals information on the harmonisation of the reporting system. If there are large changes in the number of reporting facilities, that might indicate a misinterpretation of the E-PRTR Regulation. Therefore, the countries should investigate further the accuracy of the facilities reporting. As a part of the stage 2 review process, the countries have received individual detailed comments on the changes in the number of reporting facilities. Table D.6 below shows the number of reporting facilities per country for hazardous waste transfers while Table D.7 shows the corresponding information for non-hazardous waste transfers.

The facilities reporting hazardous waste transfer inside the country (domestic) increased both between 2007-2008 and 2008-2009 for all reporting countries. From 14,781 facilities reporting in 2007, the number rose to 16,133 in 2008 and a smaller increase was observed in 2009 with 16,638 facilities reporting this type of waste. The same type of development is observed in facilities reporting hazardous waste transfers outside the country (transboundary) with 1,102 facilities reporting in 2007, rising to 1,210 in 2008 and to 1,274 in 2009. The development seems reasonable since it could indicate a gradual adjustment to the Regulation for the facilities with a bigger increase in 2008 than in 2009.

In the case of non-hazardous waste transfers, the 8,338 reporting facilities in 2007 rose to 9,648 in 2008. However, the total number of reporting facilities in all countries decreased in 2009 to 9,489 facilities. The difference is not large enough to signal a serious problem. It is not possible to examine the development closer at this aggregated level.

The different orders of magnitude for the hazardous waste and the non hazardous waste data are partly due to the different reporting threshold for operators. Off-site transfers of non-hazardous waste must be reported if the facility transfers more than 2000 tonnes per year. For hazardous waste the threshold is 2 tonnes per year.

Table D.6: Number of facilities reporting hazardous waste transfers per country and for the years 2007, 2008 and 2009

	Hazardous waste -Domestic						Hazardous waste -Transboundary					
	2007		2008		2009		2007		2008		2009	
Country	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities
Austria	218,696	150	302,145	160	188,472	109	149,898	20	178,374	27	71,736	18
Belgium	1,360,245	524	1,486,380	567	1,318,872	718	333,541	131	264,671	126	279,231	150
Bulgaria	419,432	51	187,875	58	74,599	57	1,208	3	3,870	4	1,975	5
Cyprus	661	11	858	10	1,084	11	27	1	0	0	0	0
Czech Republic	326,783	401	332,591	438	524,032	560	421	7	1,158	11	6,367	12
Denmark	246,979	202	436,491	226	338,969	166	103,765	30	79,146	29	69,105	20
Estonia	603,356	63	746,777	75	833,079	73	907	10	601	7	878	9
Finland	1,527,738	335	1,416,881	338	794,624	338	0	0	0	0	0	0
France	2,768,627	1,969	2,777,239	2,248	2,458,993	2,326	261,745	263	254,115	270	184,331	295
Germany	9,733,958	3,070	10,679,972	3,299	11,618,240	3,351	91,882	69	151,079	94	132,087	86
Greece	55,527	89	61,052	99	819,741	82	2,451	11	461	10	4,614	7
Hungary	264,634	247	219,161	263	207,635	306	6,235	7	673	6	685	6
Iceland	5,514	3	3,171	2	10,559	3	218	1	*3,320*	*1*	5,170	1
Ireland	43,873	180	47,745	191	35,427	183	274,743	142	446,406	149	145,959	145
Italy	3,166,479	1,571	3,476,873	1,736	3,796,298	1,795	441,343	86	659,387	98	744,771	111
Latvia	5,584	17	8,023	21	3,266	17	11,340	3	5,410	2	1,890	1
Liechtenstein	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	7,216	31	7,924	48	7,755	40	2,238	2	2,881	3	9,393	4
Luxembourg	98,197	21	101,368	21	76,306	21	7,607	13	46,502	11	27,541	12
Malta	1,531	3	14,705	4	11,623	7	642	2	916	3	987	4
Netherlands	1,788,889	354	1,786,598	452	3,851,208	522	346,776	90	410,611	92	413,412	114
Norway	598,310	138	676,279	149	718,386	167	0	0	34,744	13	94,445	23

	Hazardous waste -Domestic						Hazardous waste -Transboundary					
	2007		2008		2009		2007		2008		2009	
Country	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities	Waste Transfer (tonnes)	Facilities
Poland	1,146,059	684	605,584	742	673,243	749	10,644	18	12,299	19	17,496	15
Portugal	117,646	303	200,765	328	167,331	341	85,269	30	174,559	26	43,830	16
Romania	183,485	109	261,085	116	235,558	112	60	1	301	2	78	2
Slovakia	118,255	175	129,723	209	97,990	221	5,626	5	5,080	5	4,815	7
Slovenia	121,293	87	51,508	108	21,002	106	21,874	40	27,934	55	39,831	54
Spain	2,920,554	1,631	2,479,099	1,751	1,873,712	1,686	31,722	18	12,175	17	10,775	23
Sweden	363,457	308	462,772	381	400,333	415	85,712	21	94,032	38	122,074	43
Switzerland	397,867	148	531,025	173	406,041	176	46,314	37	91,242	38	156,342	35
United Kingdom	6,459,739	1,906	5,679,181	1,920	4,197,196	1,980	77,019	41	103,800	54	1,988,250	56
Total	**35,070,580**	**14,781**	**35,170,848**	**16,133**	**35,761,573**	**16,638**	**2,401,226**	**1,102**	**3,065,745**	**1,210**	**4,578,065**	**1,274**

Table D.7: Number of facilities reporting non-hazardous waste transfers per country and for the years 2007, 2008 and 2009

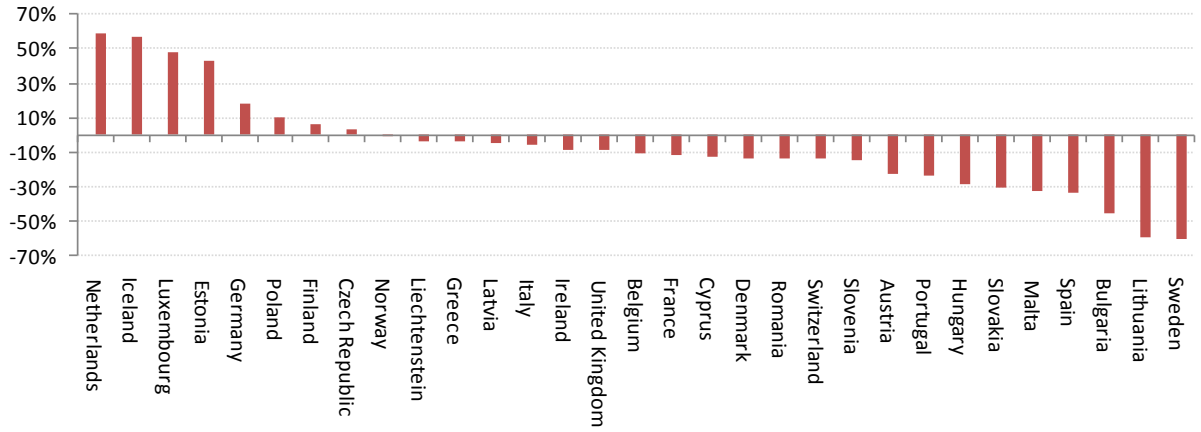
	Non-hazardous waste					
	2007		2008		2009	
Country	Waste transfer (tonnes)	Facilities	Waste transfer (tonnes)	Facilities	Waste transfer (tonnes)	Facilities
Austria	2,478,183	96	2,528,817	101	2,064,109	72
Belgium	13,167,441	363	13,076,811	344	11,707,890	413
Bulgaria	7,990,770	44	8,028,500	43	4,404,870	43
Cyprus	17,550	3	17,220	3	14,640	3
Czech Republic	3,830,061	168	3,904,850	186	3,840,840	159
Denmark	3,131,866	136	2,754,794	102	2,435,431	61
Estonia	1,434,911	31	1,362,688	37	2,192,904	36
Finland	10,549,611	223	9,838,554	229	11,184,887	224
France	8,604,250	488	15,164,643	661	13,490,480	712
Germany	60,819,265	1,562	66,810,872	1,684	79,789,378	1,665
Greece	2,770,780	34	2,973,508	40	2,094,480	29
Hungary	1,565,872	104	2,487,216	120	1,740,047	96
Iceland	31,879	3	66,605	2	98,950	3
Ireland	4,551,029	108	3,621,311	122	3,574,568	117
Italy	19,165,866	826	25,792,726	893	23,572,832	863
Latvia	47,448	7	113,534	10	116,235	5
Liechtenstein	2,430	1	2,180	1	2,100	1
Lithuania	203,213	17	344,967	20	128,499	18
Luxembourg	1,097,937	16	1,114,766	17	1,768,511	18
Malta	5,131	1	2,960	1	0	0
Netherlands	11,069,892	216	12,967,588	277	19,837,776	300
Norway	799,104	41	1,128,526	51	1,023,088	57
Poland	78,482,190	655	76,165,471	697	83,940,881	674
Portugal	10,618,382	126	2,831,123	134	2,229,883	123
Romania	8,142,961	175	7,972,517	191	6,914,259	187
Slovakia	3,395,629	66	3,526,901	84	2,447,908	99
Slovenia	923,974	51	1,092,148	65	943,129	62
Spain	19,512,593	620	19,228,227	655	12,503,283	611
Sweden	3,058,478	150	12,446,863	196	4,595,960	210
Switzerland	984,850	50	1,092,507	55	922,668	56
United Kingdom	100,754,516	1,957	91,547,670	2,627	82,431,230	2,572
Total	**379,208,060**	**8,338**	**390,007,066**	**9,648**	**382,011,714**	**9,489**

D.1.3.2 Amounts of waste transfers in 2007, 2008 and 2009

A comparison of the amounts of waste transferred per country and per type of waste between 2007, 2008 and 2009 provides information at a national level. If there are large changes in the reported amounts, this could potentially indicate problems with the implementation of the regulation or its misinterpretation in a particular country.

Figure D.1 shows the total amount of waste transferred per reporting country and for all waste in 2009, compared to 2008 in percentage points.

Figure D.1: Development from 2008 to 2009 of overall amounts of off-side waste transfers (hazardous+ non-hazardous waste) related to country and stated in percentage



Netherlands, Iceland, Luxembourg and Estonia have reported an increase of more than 40 %, whereas Bulgaria, Lithuania and Sweden have reported decreases larger 50 %. These very large changes might indicate reporting errors and should be checked by the countries.

Table D.8 shows that the total amount of domestically transferred hazardous waste increased slightly between 2007 and 2008 (by around 100,000 tonnes) and increased again (by around 591,000tonnes) from 2008 to 2009.

Table D.8 also shows that 4.58 million tonnes of transboundary shipment of hazardous waste have been reported in 2009 compared with 3.07 million tonnes in 2008 and 2.40 million tonnes in 2007. The large increase in the amount of hazardous waste being transboundarily shipped between 2008 and 2009 is mainly due to a huge increase in the amount reported by the UK. This might indicate a reporting error since one facility (P Waddington & Co Ltd) alone accounted for more than 40 % of the total amount of transboundary transferred hazardous waste in Europe. This facility only started reporting in 2009 which may also indicate a reporting error fro previous E-PRTR reporting years.

In 2009, 382 million tonnes of non-hazardous waste transfers were reported by all countries compared with 390 and 379.2 million tonnes in 2008 and 2007 respectively. The in non-hazardous waste transfer from 2008 to 2009 by the likes of Sweden, Spain, UK and Bulgaria, outweigh the major increases in non-hazardous waste transfer in Germany, the Netherlands and Poland.

Some countries have high percentage changes even though the change in amount of waste is relatively small. Table D.8 shows that Bulgaria, Czech Republic, Greece, Iceland, Latvia, the Netherlands and Slovenia have for domestic transfers of hazardous waste percentage changes larger than +/- 50 %. For transboundary transfers of hazardous waste, Austria, Czech Republic, Greece, Iceland, Ireland, Latvia, Lithuania, Norway, Portugal, Romania, Switzerland and the UK have changes larger than +/- 50 %. Table D.8 shows that the total amount of transferred hazardous waste (domestic plus transboundary transfer)

has also changed considerably for some countries. Bulgaria, Czech Republic, Greece, Iceland, Ireland, Latvia, Lithuania and the Netherlands have for total amount of hazardous waste changes larger than 50 %.

For non-hazardous waste transfers Estonia, Lithuania, Luxembourg, the Netherlands and Sweden have changes larger than +/- 50 %.

These large changes in absolute and percentage values might indicate reporting errors in the indicated countrys' reporting, particularly when the change is larger than +/- 50 %, and even more so if the changes in percentage values are based on reasonable high amounts.

Table D.8: Quantities of off-side waste transfers domestic and transboundary shipment in 2009 compared with 2008 and 2007 - hazardous waste

Country	Domestic transfer Tonnes	Change to 2008 %	Change to 2007 %	Transb. transfer Tonnes	Change to 2008 %	Change to 2007 %	Total transfer Tonnes	Change to 2008 %	Change to 2007 %
Austria	188,472	-38%	-14%	71,736	-60%	-52%	260,208	-46%	-29%
Belgium	1,318,872	-11%	-3%	279,231	6%	-16%	1,598,103	-9%	-6%
Bulgaria	74,599	-60%	-82%	1,975	-49%	64%	76,574	-60%	-82%
Cyprus	1,084	26%	64%	0	Null	-100%	1,084	26%	58%
Czech Republic	524,032	58%	60%	6,367	450%	1412%	530,398	59%	62%
Denmark	338,969	-22%	37%	69,105	-13%	-33%	408,074	-21%	16%
Estonia	833,079	12%	38%	878	46%	-3%	833,957	12%	38%
Finland	794,624	-44%	-48%	0	Null	Null	794,624	-44%	-48%
France	2,458,993	-11%	-11%	184,331	-27%	-30%	2,643,325	-13%	-13%
Germany	11,618,240	9%	19%	132,087	-13%	44%	11,750,327	8%	20%
Greece	819,741	1243%	1376%	4,614	901%	88%	824,356	1240%	1322%
Hungary	207,635	-5%	-22%	685	2%	-89%	208,319	-5%	-23%
Iceland	10,559	233%	91%	5,170	56%	2272%	15,729	142%	174%
Ireland	35,427	-26%	-19%	145,959	-67%	-47%	181,386	-63%	-43%
Italy	3,796,298	9%	20%	744,771	13%	69%	4,541,069	10%	26%
Latvia	3,266	-59%	-42%	1,890	-65%	-83%	5,156	-62%	-70%
Liechtenstein	0	-	-	0	-	-	0	-	-
Lithuania	7,755	-2%	7%	9,393	226%	320%	17,148	59%	81%
Luxembourg	76,306	-25%	-22%	27,541	-41%	262%	103,848	-30%	-2%
Malta	11,623	-21%	659%	987	8%	54%	12,610	-19%	480%
Netherlands	3,851,208	116%	115%	413,412	1%	19%	4,264,619	94%	100%
Norway	718,386	6%	20%	94,445	172%	-	812,831	14%	36%
Poland	673,243	11%	-41%	17,496	42%	64%	690,739	12%	-40%
Portugal	167,331	-17%	42%	43,830	-75%	-49%	211,160	-44%	4%

Country	Domestic transfer Tonnes	Change to 2008 %	Change to 2007 %	Transb. transfer Tonnes	Change to 2008 %	Change to 2007 %	Total transfer Tonnes	Change to 2008 %	Change to 2007 %
Romania	235,558	-10%	28%	78	-74%	30%	235,636	-10%	28%
Slovakia	97,990	-24%	-17%	4,815	-5%	-14%	102,804	-24%	-17%
Slovenia	21,002	-59%	-83%	39,831	43%	82%	60,833	-23%	-58%
Spain	1,873,712	-24%	-36%	10,775	-12%	-66%	1,884,487	-24%	-36%
Sweden	400,333	-13%	10%	122,074	30%	42%	522,407	-6%	16%
Switzerland	406,041	-24%	2%	156,342	71%	238%	562,383	-10%	27%
United Kingdom	4,197,196	-26%	-35%	1,988,250	1815%	2482%	6,185,446	7%	-5%
Total	35,761,573	2%	2%	4,578,065	49%	91%	40,339,638	6%	8%

Table D.9: Quantities of off-site waste transfers shipment in 2009 compared with 2008 and 2007 - non-hazardous waste

Country	Non-hazardous waste 2009		
	Total transfer	Change compared to 2008	Change compared to 2007
	Tonnes	%	%
Austria	2,064,109	-18%	-17%
Belgium	11,707,890	-10%	-11%
Bulgaria	4,404,870	-45%	-45%
Cyprus	14,640	-15%	-17%
Czech Republic	3,840,840	-2%	0%
Denmark	2,435,431	-12%	-22%
Estonia	2,192,904	61%	53%
Finland	11,184,887	14%	6%
France	13,490,480	-11%	57%
Germany	79,789,378	19%	31%
Greece	2,094,480	-30%	-24%
Hungary	1,740,047	-30%	11%
Iceland	98,950	49%	210%
Ireland	3,574,568	-1%	-21%
Italy	23,572,832	-9%	23%
Latvia	116,235	2%	145%
Liechtenstein	2,100	-4%	-14%
Lithuania	128,499	-63%	-37%
Luxembourg	1,768,511	59%	61%
Malta	0	-100%	-100%
Netherlands	19,837,776	53%	79%
Norway	1,023,088	-9%	28%
Poland	83,940,881	10%	7%
Portugal	2,229,883	-21%	-79%
Romania	6,914,259	-13%	-15%
Slovakia	2,447,908	-31%	-28%
Slovenia	943,129	-14%	2%
Spain	12,503,283	-35%	-36%
Sweden	4,595,960	-63%	50%
Switzerland	922,668	-16%	-6%
United Kingdom	82,431,230	-10%	-18%
Total	**382,011,714**	**-2%**	**1%**

Legend:

	Change more than +/- 25 %
	Change more than +/- 50 %
	Change more than +/- 75 %

D.1.3.3 Amounts of waste transfers per E-PRTR activity classification

The distributions of the different types of waste transfers over the different E-PRTR activities are shown in Table D.10 and Table D.11. The increase or the decrease in percentage from 2007 to 2008 is also shown.

Table D.10 shows that E-PRTR code 5.(a). (Installations for recovery or disposal of hazardous waste) reports the largest amount of domestically transferred hazardous waste (14.77 million tonnes out of a total of 35.76 million tonnes). E-PRTR code 8.(b) (Treatment and processing intended for the production of food and beverage products from animal and vegetable raw materials) has the largest reporting of transboundary transferred hazardous waste (1.89 million tonnes out of a total of 4.58 million tonnes). However, almost the entire reported amount in 2009 comes from one facility (P Waddington & Co Ltd; National ID E31_111), which might indicate a reporting error.

The E-PRTR codes 1.(c) (Thermal power stations and other combustion installations), 3.(a) (Underground mining and related operations), 5.(a) (Installations for recovery or disposal of hazardous waste) and code 5.(c) (Installations for the disposal of non-hazardous waste) report the largest waste transfers of non-hazardous waste with respectively 52, 47, 51 and 79 million tonnes in 2009.

Table D.10: Amount of waste transfers related to E-PRTR activity code in 2009 and the percentage change compared with 2008 and 2007. The amounts are related to hazardous waste domestic and transboundary transferred and total transfers of hazardous waste

	Hazardous waste 2009								
Actvity Codes	Domestic transfer	Change com-pared to 2008	Change com-pared to 2007	Trans-boundary transfer	Change com-pared to 2008	Change Com-pared to 2007	Total transfer	Change com-pared to 2008	Change com-pared to 2007
	Tonnes	%	%	Tonnes	%	%	Tonnes	%	%
1.(a)	1,610,203	-1%	31%	39,414	-5%	10%	1,649,617	-1%	30%
1.(b)	35,583	7%	23%	0	-100%	-100%	35,583	6%	23%
1.(c)	1,135,924	17%	10%	29,849	-69%	-10%	1,165,773	9%	9%
1.(d)	4,500	-28%	-84%	0	-	-	4,500	-28%	-84%
1.(e)	6,032	-28%	1023%	55	62%	-	6,087	-28%	1033%
1.(f)	1,816	7%	2%	7	-	-	1,823	8%	2%
2.(a)	58,859	-93%	-93%	42	-	-92%	58,902	-93%	-93%
2.(b)	1,310,321	-25%	-29%	264,246	-35%	-30%	1,574,568	-27%	-29%
2.(c)	276,606	-42%	-38%	13,306	-61%	-24%	289,912	-43%	-38%
2.(d)	117,473	-30%	-41%	114	-95%	-65%	117,587	-31%	-41%
2.(e)	3,115,697	13%	-7%	216,408	-27%	-4%	3,332,105	9%	-7%
2.(f)	1,574,432	-12%	11%	27,874	-11%	5%	1,602,306	-12%	11%
3.(a)	60,807	3%	16%	99	-44%	-30%	60,906	3%	15%
3.(b)	22,038	-45%	-46%	82	-66%	-81%	22,121	-45%	-47%
3.(c)	81,452	157%	-35%	529	-63%	-92%	81,982	147%	-38%
3.(e)	77,901	-37%	-12%	3,722	-98%	-60%	81,624	-77%	-16%
3.(f)	19,573	169%	-6%	0	-	-100%	19,573	169%	-6%
3.(g)	43,427	-44%	-73%	334	-77%	-90%	43,761	-44%	-74%
4.(a)	3,586,219	8%	13%	144,666	-22%	-32%	3,730,885	7%	10%
4.(b)	732,859	-18%	-17%	47,703	9%	22%	780,562	-17%	-16%

	Hazardous waste 2009								
Actvity Codes	Domestic transfer Tonnes	Change com-pared to 2008 %	Change com-pared to 2007 %	Trans-boundary transfer Tonnes	Change com-pared to 2008 %	Change Com-pared to 2007 %	Total transfer Tonnes	Change com-pared to 2008 %	Change com-pared to 2007 %
4.(c)	89,951	-8%	-6%	0	-100%	-79%	89,951	-8%	-6%
4.(d)	246,272	0%	8%	4,560	-31%	-27%	250,831	-1%	7%
4.(e)	1,006,558	-13%	-7%	73,278	0%	-16%	1,079,837	-12%	-8%
4.(f)	26,146	121%	282%	42	32%	1540%	26,188	121%	282%
5.(a)	14,771,122	14%	39%	1,337,282	13%	50%	16,108,404	14%	40%
5.(b)	2,120,899	4%	19%	318,086	11%	5%	2,438,985	4%	17%
5.(c)	1,019,084	-18%	-15%	92,632	16%	48%	1,111,716	-16%	-12%
5.(d)	763,934	22%	-8%	7,725	9%	-8%	771,659	22%	-8%
5.(e)	24,170	-50%	-35%	5,258	-28%	-19%	29,428	-47%	-33%
5.(f)	121,243	-32%	-95%	2,013	1258025 %	20129900 %	123,256	-31%	-95%
5.(g)	187,288	13%	-28%	19,257	-22%	-21%	206,544	8%	-27%
6.(a)	28,366	-33%	73%	61	1385%	-53%	28,427	-33%	72%
6.(b)	168,690	-8%	-18%	480	114%	361%	169,170	-8%	-18%
6.(c)	4,371	17%	-33%	53	76%	95%	4,424	18%	-32%
7.(a)	7,000	-82%	-70%	756	-22%	52%	7,755	-80%	-68%
7.(b)	67	1011%	-	0	-	-	67	1011%	-
8.(a)	85,801	11%	24%	22,416	142%	338%	108,217	25%	45%
8.(b)	151,967	16%	-56%	1,892,136	199959 %	193332%	2,044,103	1448%	491%
8.(c)	13,758	-44%	-8%	84	-76%	625%	13,842	-45%	-7%
9.(a)	75,145	168%	219%	192	-52%	-68%	75,337	165%	212%
9.(b)	1,198	81%	-81%	0	-	-	1,198	81%	-81%
9.(c)	836,175	16%	17%	12,646	80%	24%	848,821	17%	17%
9.(d)	7,507	-55%	-40%	659	93%	-81%	8,166	-52%	-49%
9.(e)	133,137	-15%	76%	1	1%	-96%	133,137	-15%	76%
Total	**35,761,573**	**2%**	**2%**	**4,578,065**	**49%**	**91%**	**40,339,638**	**6%**	**8%**

Table D.10 also shows that the amounts of hazardous waste reported under most of the included E-PRTR activities have undergone large percentage changes between 2008 and 2009. Out of the 44 E-PRTR activities included in this review, 27 reported percentage larger than +/-50 % for domestic transfer of hazardous waste or transboundary transfer of hazardous waste or transfer of non-hazardous waste. It has to be remembered that the financial and the economic crisis started in 2008, which might explain the reduction of waste transfers in some countries, whereas increases can not be explained by the crisis.

The changes are less intense in the non-hazardous waste transfers, as shown in Table D.11. Out of the same 44 E-PRTR activities, only five reported a percentage change larger than +/-50 % for transfer of non-hazardous waste. The fact that the number of large changes in the E-PRTR activities is higher in the case of hazardous waste could be explained partially by misinterpretation of the definition of hazardous waste.

Table D.11: Amount of waste transfers related to E-PRTR activity code in 2009 and the percentage change compared with 2008 and 2007. The amounts are related to non-hazardous waste

E-PRTR Activity Codes	Non-Hazardous waste 2009		
	Total transfer	Change compared to 2008	Change compared to 2007
	Tonnes	%	%
1.(a)	965,517	-42%	-14%
1.(b)	12,544	15%	62%
1.(c)	51,691,285	-10%	-11%
1.(d)	79,853	-19%	152%
1.(e)	61,006	-11%	-
1.(f)	162,192	60%	-5%
2.(a)	1,445,623	15%	-28%
2.(b)	16,322,953	-33%	-26%
2.(c)	2,259,998	-52%	-18%
2.(d)	3,489,808	-38%	-32%
2.(e)	10,162,967	18%	45%
2.(f)	2,296,939	-35%	1%
3.(a)	47,253,869	1%	1%
3.(b)	1,696,717	15%	30%
3.(c)	478,609	-49%	-56%
3.(e)	720,500	-18%	-10%
3.(f)	257,028	-24%	-23%
3.(g)	2,157,734	-14%	-16%
4.(a)	2,890,483	-18%	-15%
4.(b)	2,846,897	-31%	-47%
4.(c)	851,403	-10%	3%
4.(d)	63,526	5%	-1%
4.(e)	682,302	-6%	-5%
4.(f)	7,492	0%	-4%
5.(a)	51,367,423	4%	52%
5.(b)	14,096,696	4%	24%
5.(c)	79,068,259	2%	-6%
5.(d)	11,541,274	-17%	-27%
5.(e)	1,179,316	11%	28%
5.(f)	18,322,622	-18%	-35%
5.(g)	303,166	4%	-2%
6.(a)	4,162,670	-20%	-11%
6.(b)	11,261,614	2%	5%
6.(c)	334,139	15%	2%
7.(a)	3,156,923	5%	19%
7.(b)	0	-	-100%
8.(a)	13,497,451	185%	166%
8.(b)	19,463,626	67%	50%
8.(c)	1,761,016	12%	7%
9.(a)	526,389	144%	54%
9.(b)	82,185	-2%	72%

E-PRTR Activity Codes	Non-Hazardous waste 2009		
	Total transfer	Change compared to 2008	Change compared to 2007
	Tonnes	%	%
9.(c)	2,375,569	-12%	-11%
9.(d)	46,265	-26%	109%
9.(e)	607,867	-42%	65%
Total	**382,011,714**	**-2%**	**1%**

	Change more than +/- 25 %
	Change more than +/- 50 %
	Change more than +/- 75 %

D.1.3.4 Outstanding facilities per E-PRTR activity classification

To demonstrate the relationship between the change in the amounts reported under E-PRTR activities and the individual reporting facilities, Table D.12 summarises the most significant changes for each E-PRTR code. Where one of the three different types of waste transfers related to an E-PRTR activity has increase or decrease by more than 50 % from 2008 to 2009, the facilities reporting more than 10 % of the reported amount are stated.

Table D.12: In-depth review of the E-PRTR activities with waste transfer changes of 50 % or higher from 2008 to 2009

Activity	Finding
1.(c)	24 % of the total reported amount for hazardous waste transferred outside the country is covered by a Swedish facility (Jönköping Energi AB), 14 % is covered by one Greek facility (PPC S.A.), 14 % is covered by a Portuguese facility (EDP - Gestão de Produção de Energia, S.A.) and 12 % is covered by one facility in Sweden (Bollnäs Energi AB).
1.(e)	Almost all reported amount for hazardous waste transferred outside the country is covered by two French facilities, with 71 % (Schulman plastics) and 29 % (RECYLUX France).
1.(f)	62 % of the total reported amount for non-hazardous waste is covered by a German facility (RWE Power AG-Fabrik Fortuna Nord) and 36 % is covered by another facility in Germany (RWE Power AG-Fabrik Frechen).
2.(a)	61 % of the total reported amount for hazardous waste transferred inside the country is covered by a Finish facility (Boliden Kokkola Oy, Sinkkitehdas) and 20 % is covered by one facility in Belgium (NYRSTAR BELGIUM).
2.(c)	24 % of the total reported amount for hazardous waste transferred outside the country is covered by a Belgian facility (BEKAERT). 22 % of the total reported amount for non-hazardous waste is covered by a French facility (ARCELORMITTAL SITE DE DUNKERQUE).
2.(d)	51 % of the total reported amount for hazardous waste transferred outside the country is covered by a Danish facility (Vald. Birns Jernstøberi A/S, Frøjkvej 75), 29 % is covered by a Dutch facility (KBM Master Alloys BV (Oss)) and 13 % is covered by one facility in Slovenia (Kovis Livarna d.o.o.).
3.(b)	25 % of the total reported amount for hazardous waste transferred outside the country is covered by a Belgian facility (-CARRIERES LEMAY SA), 18 % is covered by one Irish facility (Roadstone Wood Ltd), 17 % is covered by a Irish facility (Roadstone Provinces Ltd.) and 12 % is covered by one facility in Belgium (CIMENTERIES CBR).
3.(c=	35 % of the total reported amount for hazardous waste transferred inside the country is covered by a UK facility (LAFARGE BUILDING MATERIALS LIMITED) and 22 % is covered by another facility in the UK (CEMEX UK). 82 % of the total reported amount for hazardous waste transferred outside the country is covered by a Swedish facility (AB Svensk Leca).
3.(e)	31 % of the total reported amount for hazardous waste transferred outside the country is covered by

Activity	Finding
	a Irish facility (Waterford Crystal Limited) and 21 % is covered by one facility in the Netherlands (AGC Flatglass Nederland BV).
3.(f)	55 % of the total reported amount for hazardous waste transferred inside the country is covered by two French facilities (SAINT-GOBAIN EUROCOUSTIC with 35 % and Société Européenne de Produits Réfractaires with 20 %)
3.(g)	95 % of the total reported amount for hazardous waste transferred outside the country is covered by a German facility (Saint-Gobain Industrie Keramik Rödental GmbH).
4.(c)	The entire reported amount for hazardous waste transferred outside the country is covered by a Dutch facility (HYDRO AGRI SLUISKIL BV).
4.(f)	60 % of the total reported amount for hazardous waste transferred inside the country is covered by a French facility (EURENCO) and 11 % is covered by one facility in Spain (EXPAL SISTEMAS DE PROPULSIÓN MURCIA).
5.(f)	The entire reported amount for hazardous waste transferred outside the country is covered by a Dutch facility (Hoogheemraadschap Hollands Noorderkwartier).
6.(a)	99 % of the total reported amount for hazardous waste transferred outside the country is covered by a Norwegian facility (BORREGAARD INDUSTRIES LIMITED NORGE SULFITTCELLULOSE).
6.(b)	66 % of the total reported amount for hazardous waste transferred outside the country is covered by a French facility (smurfit kappa) and 16 % is covered by one facility in Luxembourg (Kronospan).
6.(c)	57 % of the total reported amount for hazardous waste transferred outside the country is covered by a Irish facility (P.D.M.) and 29 % is covered by another facility in Ireland (T. & J. Standish (Roscrea) Limited).
7.(a)	15 % of the total reported amount for hazardous waste transferred inside the country is covered by a Spanish facility (COOPERATIVA VALENCIANA DE CRIADORES DE GANADO DE CERDA Y VACUNO (COCERVA)) and 13 % is covered by one facility in Romania (SC CARNIPROD SRL Tulcea).
7.(b)	96 % of the total reported amount for hazardous waste transferred inside the country is covered by a UK facility (Marshall Food Group Ltd)
8.(a)	54 % of the total reported amount for hazardous waste transferred outside the country is covered by a Dutch facility (Van Rooi Meat BV (Helmond)). 44 % of the total reported amount for non-hazardous waste is covered by a Polish facility (National ID: 06K001666) and 23 % is covered by one facility in Finland (HK Ruokatalo Oy, Outokummun tuotantolaitos).
8.(b)	The entire reported amount for hazardous waste transferred outside the country is covered by a UK facility (P Waddington & Co Ltd).
8.(c)	36 % of the total reported amount for hazardous waste transferred outside the country is covered by a French facility (COMPAGNIE DES FROMAGES & RICHESMONTS), 28 % is covered by an Irish facility (Cadbury Ireland Limited) and 14 % is covered by another facility in Ireland (Pfizer Ireland Pharmaceuticals).
9.(a)	53 % of the total reported amount for hazardous waste transferred inside the country is covered by a UK facility (Amcor Flexibles UK), and 30 % is covered by one Czech facility (Toray Textiles Central Europe s.r.o.) and. 58 % of the total reported amount for hazardous waste transferred outside the country is covered by a French facility (SODIMATEX) and 41 % is covered by one facility in Romania (SC CARREMAN ROMANIA SRL). 73 % of the total reported amount for non-hazardous waste is covered by a Czech facility (Toray Textiles Central Europe s.r.o.).
9.(b)	35 % of the total reported amount for hazardous waste transferred inside the country is covered by a Dutch facility (Ecco Tannery Holland BV), and 34 % Is covered by a Danish facility (SCAN-HIDE A.M.B.A)
9.(c)	35 % of the total reported amount for hazardous waste transferred outside the country is covered by an Irish facility (Johnson & Johnson Vision Care (Ireland) Limited trading as Vistakon Ireland), and 24 % is covered by another Irish facility (Intel Ireland Limited)
9.(d)	13 % of the total reported amount for hazardous waste transferred inside the country is covered by a Dutch facility (ALUMINIUM & CHEMIE ROTTERDAM) and 13 % is covered by one facility in Germany (Schunk Kohlenstofftechnik). Almost the entire reported amount for hazardous waste transferred outside the country is covered by two facilities, 77 % by a Dutch one (ALUMINIUM & CHEMIE ROTTERDAM) and 23 % by a facility in Germany (National ID: 06-05-100-0340847).

D.1.3.5 Significant changes in waste treatment distribution

In this check the distribution of a facility's waste transfer between disposal and recovery is compared for 2008 and 2009. A large change in the distribution between disposal and recovery (e.g. the majority of the waste for disposal in 2009 changed to recovered in 2008), might indicate a reporting error for one of the reporting years. If the distribution changes by at least 50 percentage points and the total quantity changes at least 1000 or 5000 tonnes, for hazardous and non-hazardous waste respectively, the change is considered significant. The number of facilities with significant changes per country is shown in Table D.13.

As a part of the stage 2 review process, countries have received the names and the national identity code of the facilities that reported major changes between 2008 and 2009 in the distribution on disposal and recovery of the transferred waste.

Table D.13: Number of facilities, where the distribution of waste transfer for disposal and recovery for non-hazardous waste and hazardous waste respectively has changed significantly in the reporting from 2008 to 2009

Country	Number of facilities, where the distribution of non-hazardous waste on recovery and disposal changes significantly-more than 50 % and 5,000 tonnes	Number of facilities, where the distribution of hazardous waste on recovery and disposal changes significantly-more than 50 % and 1,000 tonnes
Austria	-	-
Belgium	8	7
Bulgaria	1	1
Cyprus	-	-
Czech Republic	6	6
Demark	-	6
Estonia	-	-
Finland	12	3
France	22	13
Germany	23	23
Greece	-	3
Hungary	6	-
Iceland	-	-
Ireland	2	-
Italy	14	6
Latvia	1	-
Liechtenstein	-	-
Lithuania	-	-
Luxembourg	-	1
Malta	-	-
Netherlands	12	11
Norway	-	5
Poland	8	2

Country	Number of facilities, where the distribution of non-hazardous waste on recovery and disposal changes significantly-more than 50 % and 5,000 tonnes	Number of facilities, where the distribution of hazardous waste on recovery and disposal changes significantly-more than 50 % and 1,000 tonnes
Portugal	1	1
Romania	4	1
Slovakia	-	-
Slovenia	-	1
Spain	15	10
Sweden	3	5
Switzerland	-	1
United Kingdom	46	15

E Stage 2 Review – Water – Comparisons with other data on releases to water

The Stage 2 review of the E-PRTR data set for the releases to water contains a description of the methodology used and summarises the results obtained in this part of the informal review.

The Stage 2 review for water covered the following comparisons/evaluations:

- Comparison of E-PRTR data with the Urban Waste Water Treatment Directive[38] (UWWTD) data on facility level.

  The UWWTD database contains data reported by Member States in accordance with reporting obligations under the UWWTD 91/271/EEC[39]. The national reports contain information on UWWTPs in agglomerations with a generated load ≥ 2,000 population equivalents (pe). The reporting of discharged loads (N, P, BOD and COD in tonnes per year) is not an obligatory requirement but can be done on a voluntary basis. This fact also represents the major limitation in terms of comparing the dataset with E-PRTR data because no direct comparison of emissions is possible and the comparison is limited by the number and location of urban wastewater treatment plants (E-PRTR activity 5.(f)) providing voluntary information.

  The analysis is focused on

  - An identification of UWWTPs which are potentially missing from the E-PRTR data set (based on the reported mandatory information under the UWWTP Directive) and
  - a comparison of the release data from both datasets.

- Comparison of the E-PRTR data with the State of Environment (SoE) Emissions data[40] set on country (RBD) level.

  SoE emissions data is submitted annually on a voluntary basis by Member States through the WISE reporting process to the European Environment Agency. The reporting focuses on nutrients, organic parameters and hazardous substances emitted to water from point sources and includes also emissions from diffuse sources.

- Evaluation of pollutants which might be missing for reported E-PRTR facilities focussing on total organic carbon and nutrients releases from urban wastewater treatment plants (main E-PRTR activity 5.(f)).

E.1 Characteristics of the datasets used in the E-PRTR data review

E.1.1 UWWTD database

The UWWTD database contains data from the bi-annual reporting of Member States (MS) as part of the UWWTD implementation. In particular, it contains information on agglomerations with a generated load equal or higher than 2,000 population equivalents (pe). UWWT Plants connected to these agglomerations as well as the size of the UWWTP in terms of entering load and installed treatment capacity in population equivalent. Discharges of nutrients (N, P) and organic matter (BOD and COD)

[38] http://rod.eionet.europa.eu/obligations/613

[39] Council Directive of 21 May 1991 concerning urban waste water treatment (91/271/EEC). Official Journal L 135, 30/05/1991, pp 0040-0052.

[40] http://rod.eionet.europa.eu/obligations/632

(expressed as total annual loads in tonnes per year) from the UWWTP can be reported by Member States (MS) on a voluntary basis.

The dataset used is the latest dataset available for this report and covers the data from 2007 / 2008[41] (Table E.1). The dataset contains reports from all 27 EU MS. No information is available from the UWWTD database on UWWTPs for Switzerland, Norway and Iceland.

Table E.1 Reported year of the UWWT Directive dataset

Reported year	Countries
2007	Cyprus, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Netherlands, Portugal, Romania, Slovenia
2008	Austria, Belgium, Bulgaria, Czech Republic, Germany, Spain, France, Luxembourg, Malta, Poland, Sweden, Slovakia, United Kingdom

The facility ID codes used in E-PRTR and in the UWWTD database are not the same. In order to compare the information provided by the E-PRTR reporting and the information from the UWWTD database an interlinking of the reporting facilities is required as first step.

E.1.2 SoE Emissions

State of Environment (SoE) emission data are collected annually on a voluntary basis through the Water Information System for Europe (WISE)-SoE reporting process. The content of SoE emission data are emitted annual loads of nutrients (total nitrogen total phosphorus), organic matter (BOD, COD) and hazardous substances[42]. Emission data are differentiated according their pathways, which are point source emissions and diffuse source emissions. The aggregation levels are the national part of River Basin Districts (RBD). In comparison to E-PRTR there are no thresholds defined according the load values for reporting.

For the comparison of E-PRTR data with SoE data the point source categories are relevant. The three main categories are industrial, urban (municipal) and other wastewater discharges with further detailed subcategories (see Figure E.1 SoE-Emission source discharges scheme for point sources (modified)). This assessment was done for the substances Total Organic Carbon (TOC), Total Nitrogen and Total Phosphorus. In case TOC was not reported COD/3 was used for the assessment. According to the availability of data, the E-PRTR/SoE comparison was done aggregated on country level

The SoE reference year for the comparison with 2009-E-PRTR data was 2009 or if not available than 2008.

For the years 2008 and/or 2009, emission data from fourteen countries (Belgium, Bulgaria, Czech Republic, Estonia, Finland, France, Iceland, Latvia, Lithuania, Romania, Slovakia, Slovenia, Sweden and Switzerland) have been reported.

If data are already reported under other reporting obligations, it is possible according the SoE data dictionary[43] to indicate this and not report the same numbers twice. “Report once use many” is one of the WISE reporting principles. For E-PRTR this indicator in the emission data field is “-3” and was flagged for 2008/2009 only from Switzerland.

Under SoE for the reported emission data it is also possible to flag if the values are generated from E-PRTR facilities (YES), non-E-PRTR facilities (NO) or from both types of facilities (BOTH). This indicator was applied by eight countries. For the other countries this parameter were allocated by the ETC/ICM.

[41] http://www.eea.europa.eu/data-and-maps/data#c5=all&c11=&c17=&c0=5

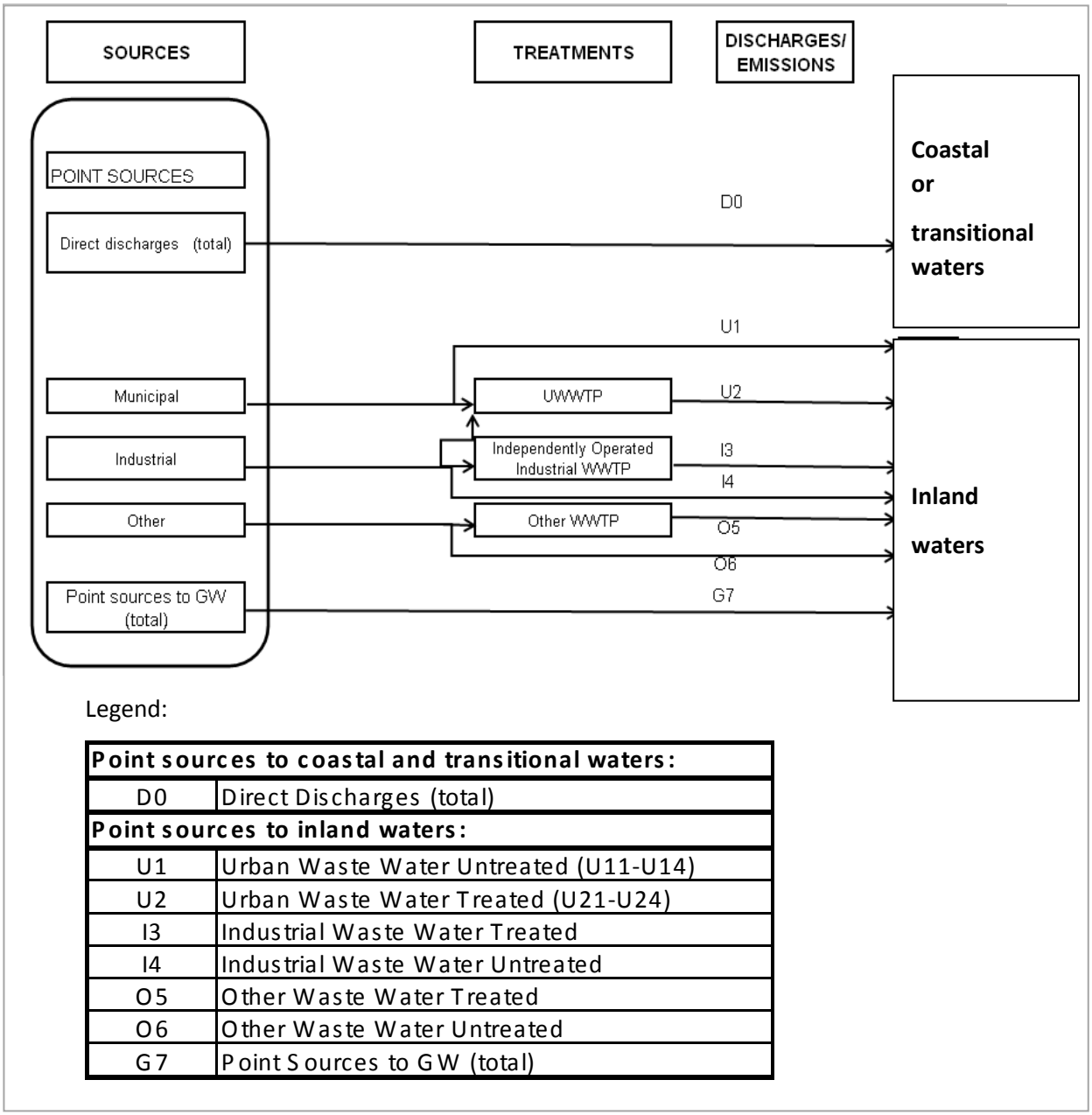
[42] http://dd.eionet.europa.eu/

[43] http://dd.eionet.europa.eu/GetPrintout?format=PDF&obj_type=DST&obj_id=2873&out_type=GDLN

The aggregation of the pathways (industrial, urban and others) for reporting the emissions is very heterogeneous throughout the countries.

The SoE data were quality checked by the ETC/ICM and the results published in the document "Quality control documentation"[44].

Figure E.1 SoE-Emission source discharges scheme for point sources (modified)[45]



Legend:

Point sources to coastal and transitional waters:	
D0	Direct Discharges (total)
Point sources to inland waters:	
U1	Urban Waste Water Untreated (U11-U14)
U2	Urban Waste Water Treated (U21-U24)
I3	Industrial Waste Water Treated
I4	Industrial Waste Water Untreated
O5	Other Waste Water Treated
O6	Other Waste Water Untreated
G7	Point Sources to GW (total)

[44] http://www.eea.europa.eu/data-and-maps/data/waterbase-emissions-1/quality-assessment-documents/qa-flags/at_download/file

[45] Source of information http://eea.eionet.europa.eu/Public/irc/eionet-circle/water/library?l=/wise_reporting_2009/emissions_reporting/sourcedischargesscheme/_EN_2.0_&a=i)

E.2 Comparison of E-PRTR data with the Urban Waste Water Treatment Directive data on facility level

The UWWTD database contains information on agglomerations with a generated load ≥ 2,000 pe. The database contains data on the installed treatment capacity, which represents a connecting link to the E-PRTR database. Besides the information on installed treatment capacity the database may also provide data on incoming and discharged loads (voluntary reporting). Data comparability is limited by the fact that the most recent UWWTD database available at the time of the review contains data referring to the reporting years 2007 or 2008. Nevertheless, since the main comparison covers the linking of UWWTP (rather than comparing specific discharged loads) it can be assumed that the 2007 UWWTD dataset can be used for comparison with the 2009 E-PRTR data as only very few changes are to be expected in the actual presence of UWWTPs in a time span of two years.

The comparison of the E-PRTR data with the UWWTD data is subdivided into two blocks:

1. Geographical evaluation of occurrence of UWWTP under E-PRTR
    a. interlinking of E-PRTR facilities reporting under activity 5.(f) with UWWTPs with the aim to identify potentially missing facilities/inconsistencies.
    b. check for E-PRTR 5.(f) facilities in cities with at least 500,000 inhabitants
2. Comparison of reported emissions, for those facilities, where the respective information is available in both databases with the aim of identifying potential inconsistencies.

E.2.1 Data selection criteria for UWWT Directive and E-PRTR datasets

For the comparison between the E-PRTR and UWWTD , the specific selection criteria were used for both data sets:

- For the **E-PRTR** data selection the following criteria were applied:
    - Category A - facilities with E-PRTR main industrial activity 5.(f)
    - Category B - facilities with E-PRTR activity 5.(f) as sub-activity[46]
    - Category C - facilities without an E-PRTR activity 5.(f), but with NACE-codes (economic activity) 36.00 (Water collection, treatment and supply) or 37.00 (Sewerage)

- **All UWWTPs** from the UWWTD database were used for the geographical interlinking, without any restrictions concerning the installed treatment capacities or incoming loads.
  Some countries (Sweden, Bulgaria) have not provided any data on treatment capacities and/or incoming loads. In these cases, all data has been used.

The E-PRTR data were not divided into categories according to size (no information about the exact size is available under E-PRTR), instead the criteria reflect the probability of the facility serving as UWWTP.

Summary table of number of E-PRTR facilities and UWWTPs from UWWTD dataset is in Appendix I.

E.2.2 Analytical procedure used

As mentioned previously, two main assessments were performed:

1. Geographical evaluation of occurrence of UWWTP under E-PRTR
2. Comparison of the reporting of discharges

[46] Secondary activity refers to the fact that the E-PRTR activity was reported as an activity taking place at the site of the facility but that the activity was not reported as the main activity of the facility

E.2.2.1 Geographical interlinking of E-PRTR facilities reporting with UWWTD database

Two checks were included in the geographical analysis:

Check A - Linking of E-PRTR 5.(f) facilities with UWWTD dataset

E-PRTR facilities reporting for activity 5.(f) (UWWTPs with a capacity of more than 100,000 p.e.) are interlinked with the UWWTD database by geographical analysis. Starting dataset are the E-PRTR facilities with main activity 5.(f) and the entire UWWTD database (regardless the incoming load or treatment capacity).

Based on the geographical interlinking, potential inconsistencies between the UWWTD and the E-PRTR reporting (such as potentially missing facilities and/or inconsistencies in the reported coordinates) can be identified. Potential inconsistencies are present:

- if it is not possible to link an E-PRTR facility reporting for activity 5.(f) to an UWWTP from the UWWTD database
- if the UWWTD database includes UWWTPs with a treatment capacity of more than 100,000 pe, which are not included in the E-PRTR database.

The evaluation was performed in three steps:

Step 1: Automated geographical linking

Based on the work performed by the European Topic Centre on Inland, Coastal and Marine Waters (ETC/ICM) in former reviews the geographical buffer for the linking of plants from both geographical datasets is set to 5 km. This geographical analysis can result in:

- an unequivocal assignment of E-PRTR facilities to UWWTPs
- a multiple assignment of UWWTPs to one specific E-PRTR facility
- no possible assignment

Step 2: Evaluation and manual adjustments to the automated linking

If the assignment through the automated geographical linking is not clear then a manual check of the facility name or other available data regarding the location are considered in order to interlink the facilities/plants.

Also, if the geographical linking results in a clear and unique result the linking has to be evaluated manually. Potential inconsistencies in the reporting of the coordinates could result in a clear assignment.

Step 3: Presentation of results

The result of the interlinking are presented in detail in the country-specific feedback reports covering the stage 1 and stage 2 review and the accompanying Excel sheets.

Check B - E-PRTR 5.(f) facilities in cities with at least 500,000 inhabitants

It is assumed that cities with more than 500,000 inhabitants should be served by at least one wastewater treatment plant with a capacity greater than 100,000 pe and this facility should report under both E-PRTR activity 5.(f) and the UWWTD. In the case that no E-PRTR 5.(f) facility (or UWWTD plant) has been reported for such cities, an error might have occurred in the reporting. From the statistical data[47], European cities with more than 500,000 inhabitants are extracted.

[47] http://www.urbanaudit.org/

As the number of cities with more than 500,000 inhabitants is limited, the interlinking with the data reported under E-PRTR and under the UWWTD is done manually by name and considering also the results obtained under check A.

E.2.2.2 Comparison of the reporting of discharges for the identified corresponding UWWTPs

The UWWTD database might include information on discharges for TOC, total N and total P as those data can be reported on a voluntary basis. For those Member States which provided this information under the UWWTD and for those facilities/plants which could be linked across both reporting schemes a comparison of the discharges is performed with the releases to water reported under E-PRTR.

According to the UWWTD database, eleven countries reported discharges for COD, total nitrogen or total phosphorus. These 11 countries were Belgium, Czech Republic, Germany, Denmark, Estonia, Spain, Italy, Luxembourg, Latvia, Poland and Romania.

The data from the two sources is compared and potential inconsistencies are highlighted. The reported discharges will vary between E-PRTR and UWWTD database due to the fact, that the UWWTD database includes data from the year 2007, whereas the E-PRTR data refers to the year 2010. As the discharged loads depend on the operation of an UWWTP and to a large extend on the treated wastewater amount, which itself depends on meteorological conditions in the respective years differences are expected to be observed. Further, uncertainties linked to the measurements of flows and concentrations may result in differences. Therefore, only those UWWTPs are flagged for potential inconsistencies for which the difference between the reported discharges in E-PRTR compared with the UWWTD database amounts to more than 25 %.

E.2.3 Results of analysis

E.2.3.1 Geographical analyses

Table E.2 Summary results of the comparative analysis of E-PRTR facilities and UWWTPs from the UWWTD dataset

Country	All positively intersected plants	E-PRTR facilities in category A or B without link to UWWTD	E-PRTR facilities in category C without link to UWWTD	Expected E-PRTR plants according UWWTD	Existing facilities in E-PRTR	% of existing facilities in E-PRTR
Austria	24	0	0	32	22	69
Belgium	19	0	3	17	16	94
Bulgaria	14	1	0	no data	no data	NA
Cyprus	1	0	0	3	1	33
Czech Republic	29	0	1	25	21	84
Denmark	26	0	6	27	21	78
Estonia	6	0	0	7	6	86
Finland	18	0	24	14	12	86
France	118	1	33	141	112	79
Germany	221	0	11	240	218	91
Greece	3	0	0	12	3	25
Hungary	19	0	2	27	19	70
Iceland	no data in the UWWTD database					
Ireland	6	0	0	7	5	71
Italy	74	3	6	169	56	33
Latvia	1	1	0	6	1	17

Country	All positively intersected plants	E-PRTR facilities in category A or B without link to UWWTD	E-PRTR facilities in category C without link to UWWTD	Expected E-PRTR plants according UWWTD	Existing facilities in E-PRTR	% of existing facilities in E-PRTR
Lithuania	7	0	0	9	7	78
Luxenbourg	2	0	0	1	1	100
Malta	0	0	0	1	0	0
Netherlands	74	0	0	61	54	89
Norway	no data in the UWWTD database					
Poland	77	2	2	109	73	67
Portugal	24	0	0	35	24	69
Romania	23	0	3	36	22	61
Slovakia	5	0	0	16	5	31
Slovenia	5	0	0	4	4	100
Spain	116	1	1	188	112	60
Sweden	15	0	0	no data	no data	NA
Switzerland	no data in the UWWTD database					
United Kingdom	139	5	9	157	137	87
All countries	**1066**	**14**	**101**	**1344**	**952**	**71**

Legend:

All positively intersected plants	*E-PRTR facilities (categories A, B or C) linked to UWWTPs from the UWWTD database*
E-PRTR facilities in category A or B without link to UWWRD	*E-PRTR facilities (categories A or B) not linked to UWWTPs from the UWWTD database. It can indicate a potential inconsistency in the reporting between E-PRTR and UWWTD*
E-PRTR facilities in category C without link to UWWRD	*E-PRTR facilities (categories C) not linked to UWWTPs from the UWWTD database. It does not indicate a potential inconsistency in the reporting between E-PRTR and UWWTD*
Expected E-PRTR plants according UWWTD	*Number of UWWTPs from the UWWTD database with an incoming load or a treatment capacity of more than 100,000 pe*
Existing facilities in E-PRTR	*Number of E-PRTR facilities linked to UWWTPs with an incoming load or a treatment capacity of more than 100,000 pe*
% of existing facilities in E-PRTR	*Ratio of number of E-PRTR facilities linked to UWWTPs with an incoming load or a treatment capacity of more than 100,000 pe to total number of UWWTPs in the UWWTD database with an incoming load or a treatment capacity of more than 100,000 pe. Less than 100 % can indicate a potential inconsistency in the reporting between E-PRTR and UWWTD*

The numbers of categories of E-PRTR facilities and UWWTPs together with analysis results are given in Table E.2, Figure E.2 and Figure E.3. For detailed results see the country sheets[48]. Besides the E-PRTR facilities reporting for main or sub-activity 5.(f) (categories A and B), Table E.2 also contains the category C E-PRTR facilities results (facilities without an E-PRTR activity 5.(f), but with NACE-codes (economic activity) 36.00 (Water collection, treatment and supply) or 37.00 (Sewerage)), which are included in country data sheets (Excel files) but not in the country findings.

[48] http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country_feedback&vm=detailed&sb=Title

Figure E.2 **Number of corresponding facilities and count of E-PRTR facilities (category A and B or C) without link to UWWT Directive dataset**

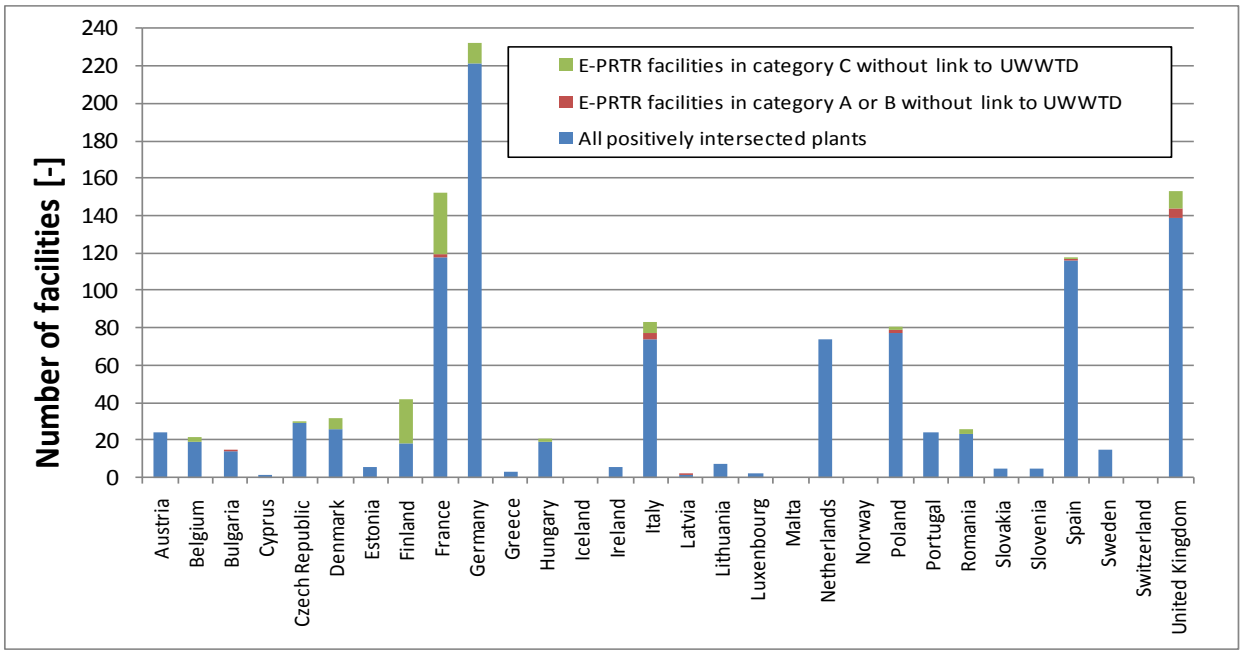
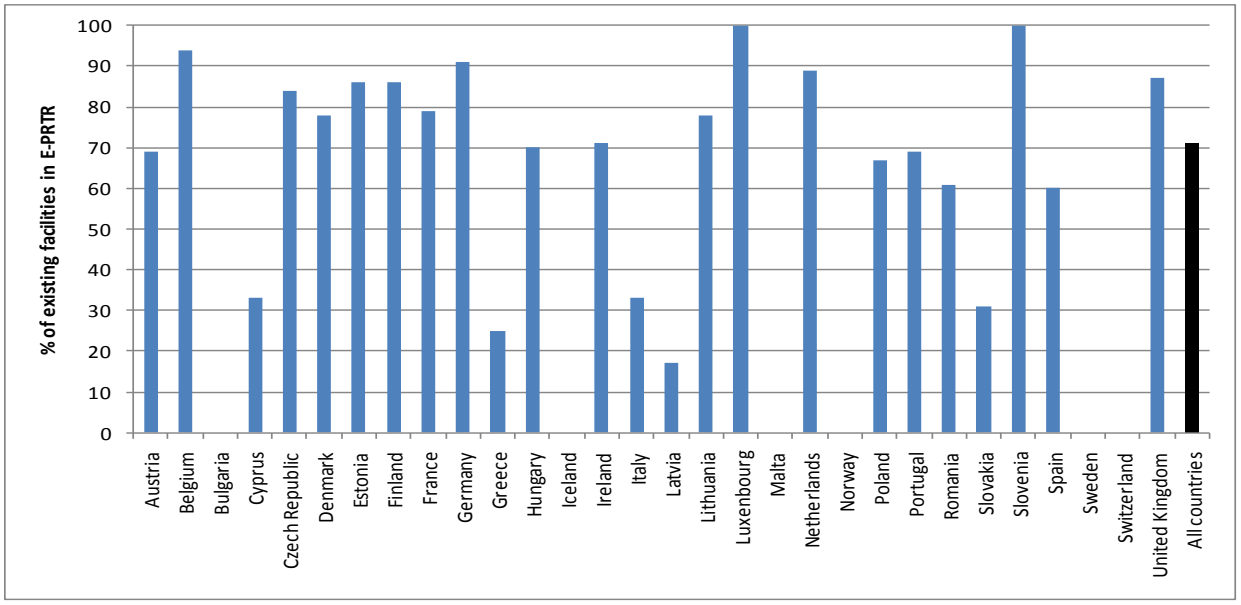


Figure E.3 **Ratio of number of E-PRTR facilities linked to UWWTPs with an incoming load or a treatment capacity of more than 100,000 pe to total number of UWWTPs in the UWWTD database with an incoming load or a treatment capacity of more than 100,000 pe**

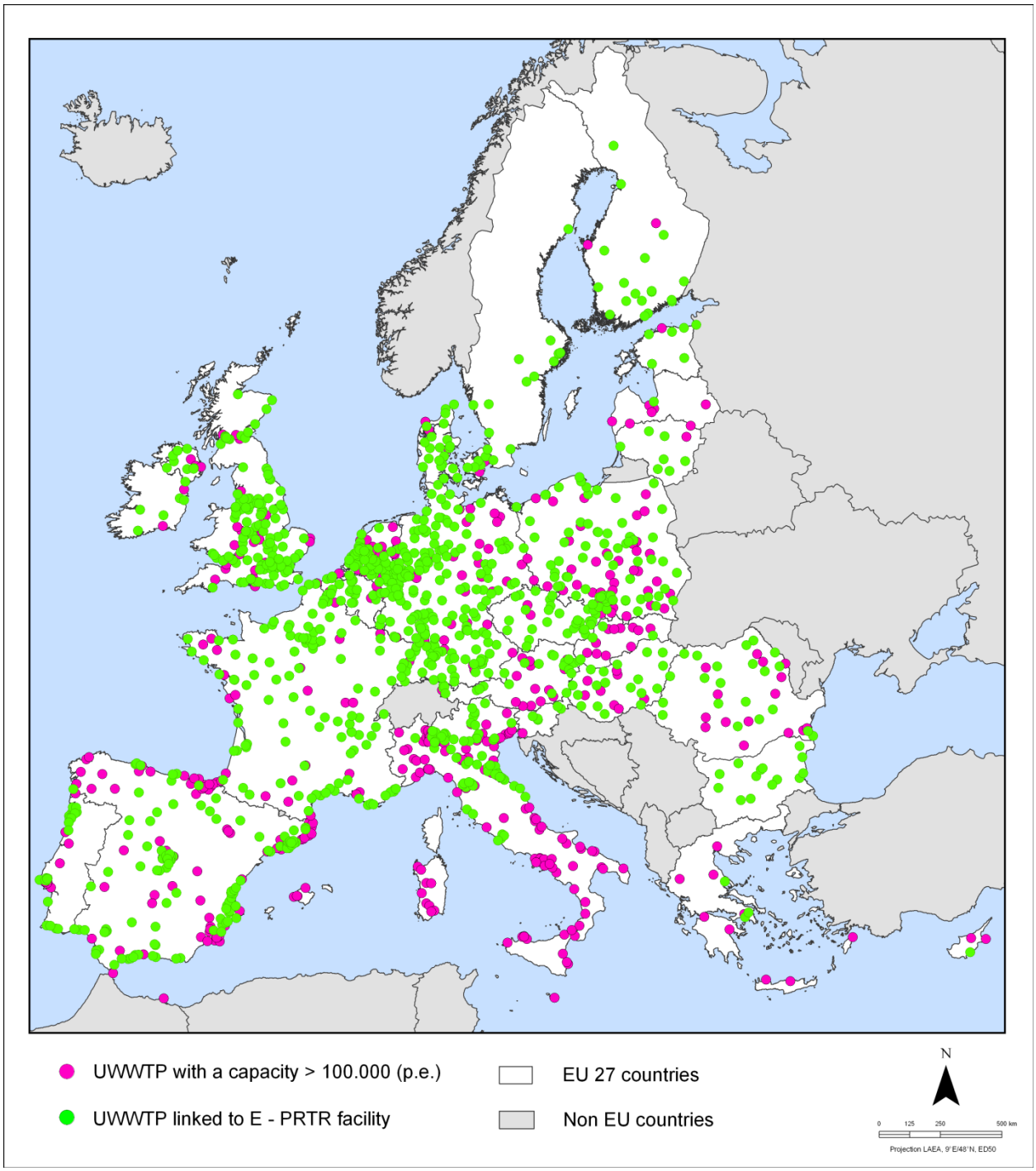


Note: *Bulgaria and Sweden did not report capacities or incoming loads of UWWTPs in the UWWTD dataset; Iceland, Norway and Switzerland did not report under the UWWTD.*

The geographical analysis does not include Iceland, Norway and Switzerland which do not report under the UWWTD. For the identification of potentially missing E-PRTR facilities only UWWTPs from the UWWTD database with an incoming load or a treatment capacity of more than 100,000 pe were used. Data completeness could not be assessed for Bulgaria and Sweden, which provided incomplete data to the UWWTD database (information on capacity is missing). The numbers and percentage values of

potentially missing E-PRTR facilities indicate potential inconsistencies between the UWWTD and the E-PRTR datasets.

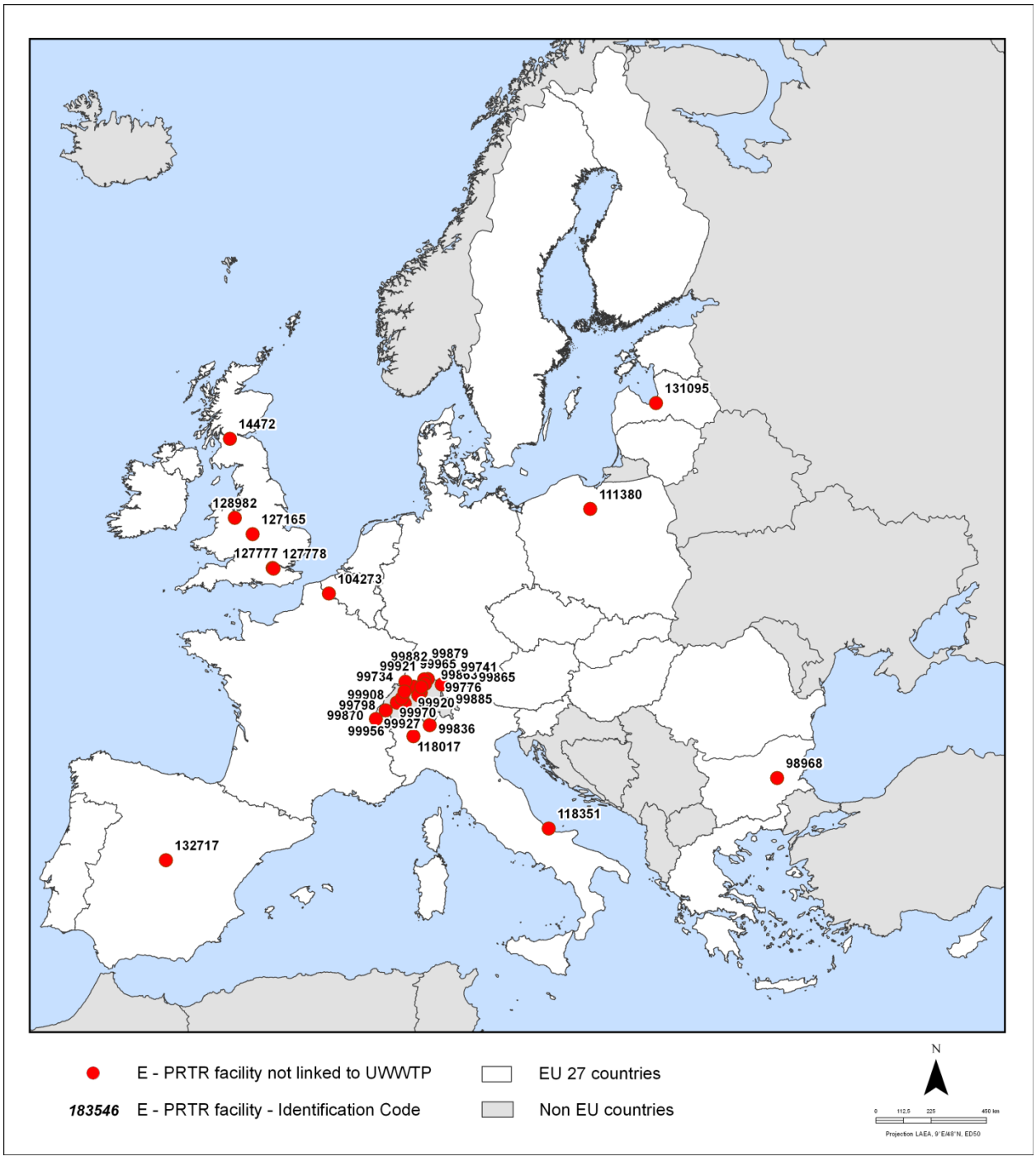
Figure E.4 **E-PRTR facilities with main E-PRTR activity 5.(f) linked to UWWTPs from the UWWTD database and UWWTPs from the UWWTD database with a capacity or an incoming load of more than 100,000 pe not linked to E-PRTR facilities reporting for E-PRTR activity 5.(f)**



Generally, UWWTPs with the treatment capacity or entering load of more than 100,000 pe are more commonly reported under the UWWTD reporting than under the E-PRTR reporting. Only Slovenia and Luxembourg reached coverage of 100 %. Italy and the United Kingdom reported more then two (and less than five) E-PRTR facilities with main or secondary activity 5.(f) for which there was no corresponding facility found in the UWWTD dataset. Data completeness could not be evaluated for

Bulgaria and Sweden, which provided incomplete data to the UWWTD database (information on capacity is missing).

Figure E.5 E-PRTR reported facilities with main E-PRTR activity 5.(f) not linked to UWWTPs from the UWWTD database



E.2.3.2 Detailed analysis of UWWTPs in big cities

Fifty-nine cities with more than 500,000 inhabitants are identified. For fifty cities E-PRTR facilities reporting for main activity 5.(f) could be linked, whereas for nine big cities, no UWWTPs have been found in the E-PRTR data set. As a result of the analysis, the total of 132 corresponding UWWTPs could

be found in both databases, while in the UWWTD dataset twenty-four additional UWWTPs with a capacity or an incoming load of more than 100.000 pe have been identified for the same cities. In some cases the UWWTD data was missing completely (CH, IS, NO) or the data on capacities or entering loads (from the UWWTD database) was missing (BG, SE).

In general, more UWWTPs with a treatment capacity and/or an incoming load of more than 100,000 pe have been reported under the UWWTD reporting than under the E-PRTR Regulation. The difference in the number of UWWTPs therefore suggests potential inconsistencies and missing facilities. For the evaluation below, the UWWTPs from the UWWTD database, which could not be linked to E-PRTR facilities were evaluated to be "potentially missing" in the E-PRTR reporting:

- Number of big cities, to which UWWTPs could be linked 50
- Number of big cities with no UWWTP found 9
- Number of potentially missing UWWTPs in the E-PRTR dataset (compared to the UWWTD dataset) 24
- Number of interconnected UWWTPs in both E-PRTR and UWWTD datasets 132

Table E.3 Detailed analysis of UWWTPs in big cities - summary results

Country	number facilities from E-PRTR	number UWWTPs from UWWTD
Austria	0	1
Belgium	2	2
Bulgaria	1	1
Czech Republic	1	1
Denmark	0	2
Finland	2	2
France	19	19
Germany	32	37
Greece	2	2
Hungary	0	2
Ireland	1	1
Italy	6	18
Latvia	2	1
Lithuania	1	1
Netherlands	3	6
Norway	0	NA
Poland	8	8
Portugal	5	5
Romania	0	0
Spain	29	29
Sweden	2	2
United Kingdom	16	16

Note: NA: data was not available Countries not included in the table have no cities > 500.000 inhabitants according to the Urban Audit and in the Large City Audit project[49]

Table E.3 summarises the number of UWWTPs from the E-PRTR dataset and the UWWTD database which could be linked to cities with more than 500,000 inhabitants. Discrepancies between the two reportings highlight potentially missing reports. There is an indication that a number of UWWTPs could

[49] http://www.urbanaudit.org/

be missing in the E-PRTR dataset. Other countries either have no cities with more than 500,000 inhabitants according to the Urban Audit in the Large City Audit project (e.g. Cyprus or Slovenia) or did not report under the UWWTD at all (e.g. Norway).

Detailed information was provided to the countries in the country-specific feedback reports covering the stage 1 and stage 2 review and the accompanying Excel sheets.

E.2.3.3 Comparison on released emission data

Released emissions data in the UWWTD data set was reported by the following eleven countries:

- Belgium (BE)
- Czech Republic (CZ)
- Germany (DE)
- Denmark (DK)
- Estonia (EE)
- Spain (ES)
- Italy (IT)
- Luxembourg (LU)
- Latvia (LV)
- Poland (PL)
- Romania (RO)

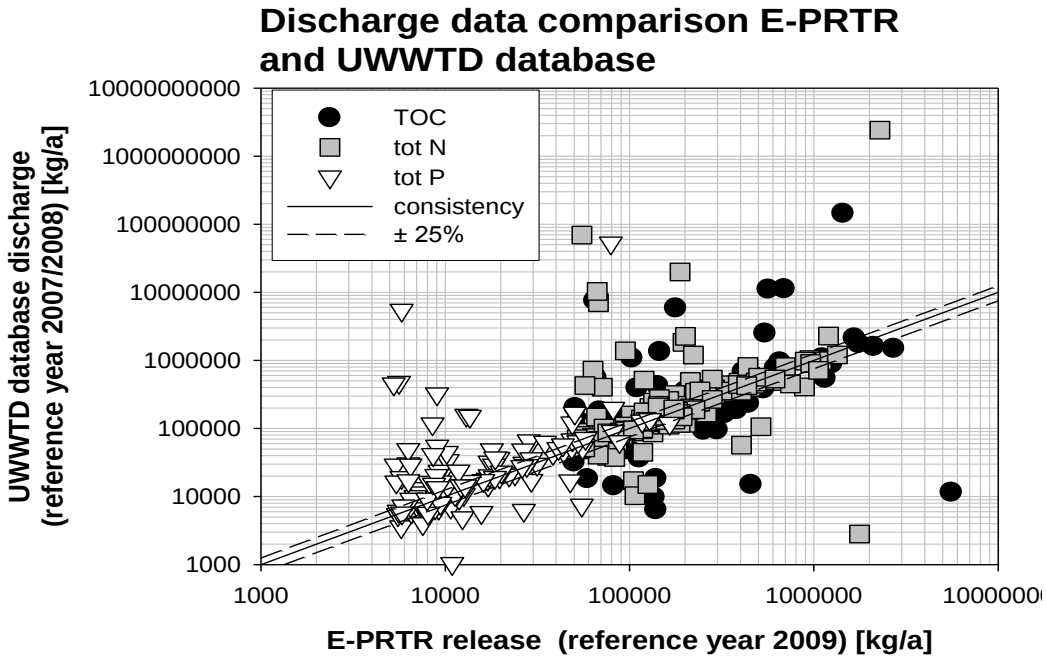
In some cases, the data was probably reported in other units then required: Romania, it seems, reported practically for all UWWTPs in kg/year instead of tonnes/year, so for the comparison the values were adjusted. It is likely the Czech Republic also reported releases that are out by an order of magnitude, but it was not a systematic error as with Romania since some values differed by one or two orders of magnitude, but often for one pollutant only so the values were not adjusted in this case.

Generally, most of the release values show potential inconsistencies. The results of the comparison are represented in Figure E.6. Generally, most of the release values show potential inconsistencies.

Figure E.7 Figure E.8 and Figure E.9 summarise the distribution of the ratios between the discharges reported in E-PRTR and in the UWWTD database. For all E-PRTR main activity 5.(f) facilities and the corresponding UWWTPs from the UWWTD database these ratios were determined in cases the information was available from both databases. In the UWWTD database TOC is not included, therefore the TOC was calculated from the COD.

For those countries for which enough data (at least three data points) were available the results are presented as box-plots. This evaluation was possible for Estonia, Denmark, Romania, Italy, Czech Republic, Germany (excluding TOC), Spain and Poland. The grey boxes present the 25-75-percentiles, meaning that 25-75% of the calculated ratios between the emissions reported in E-PRTR and those from the UWWTD database are within the indicated range. The line in the boxes gives the respective median values. The error bars indicate the 5-95 percentiles and the dotted points indicate extreme values. Very stretched boxes indicate a strong variation of the values (e.g. Czech Republic), whereas very slender boxes indicate a low variability of the data (Germany, Denmark). If boxes without error bars are provided in the figures, this indicates that not enough data for the calculation of the 5 and 95-percentiles were available.

Figure E.6 **Comparison of reported discharges for TOC, total nitrogen and total phosphorus for E-PRTR main activity 5.(f) facilities which could be linked to UWWTPs from the UWWTD database and for which discharge data is available in the UWWTD database**



For those countries for which less than three data points were available (e.g. BE, LU, LV) then each UWWTP is shown (triangles).

The ratios between the discharges reported in E-PRTR and in the UWWTD database should be around one, indicating consistency between the E-PRTR reporting and the UWWTD reporting.

Figure E.7 **Distribution of the ratios between the reported TOC emissions from E-PRTR 5.(f) facilities and the TOC discharges (calculated from COD) reported in the UWWTD database for UWWTPs where data are available**

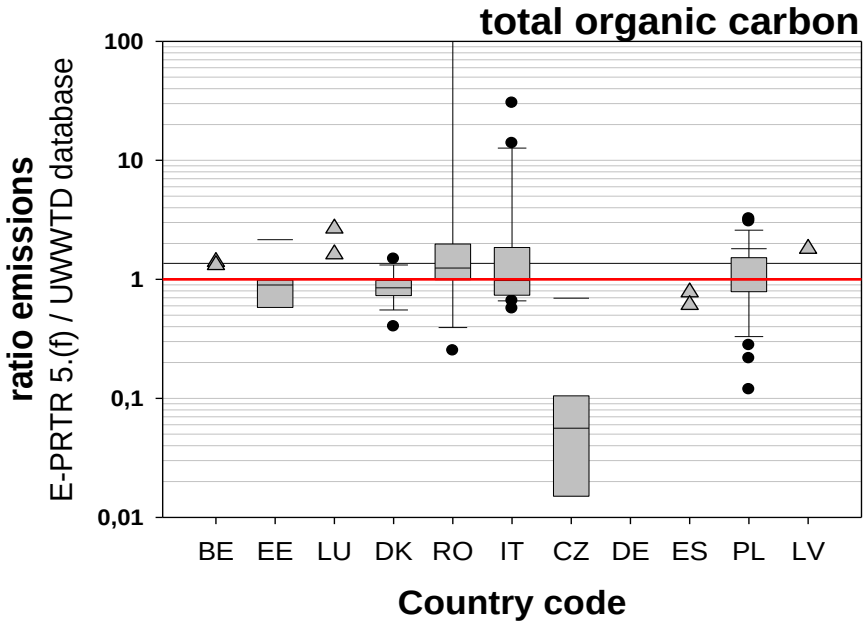


Figure E.8 **Distribution of the ratios between the reported total nitrogen emissions from E-PRTR 5.(f) facilities and the total nitrogen discharges reported in the UWWTD database for UWWTPs where data are available**

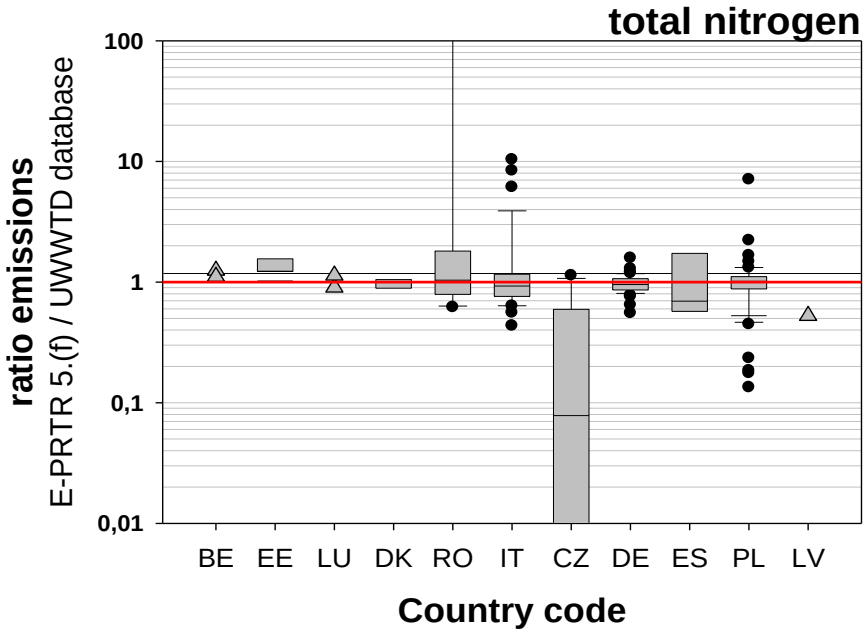
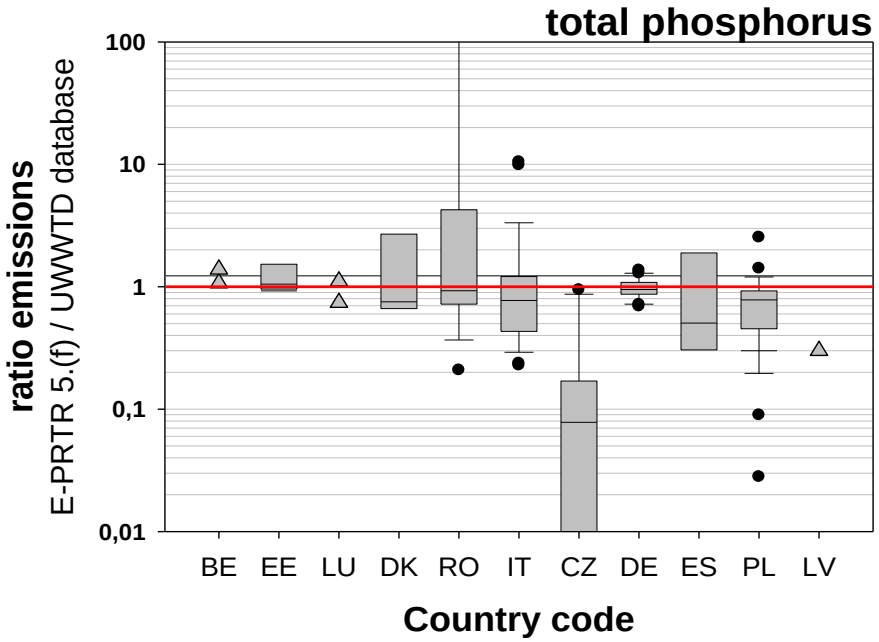


Figure E.9 **Distribution of the ratios between the reported total phosphorus emissions from E-PRTR 5.(f) facilities and the total phosphorus discharges reported in the UWWTD database for UWWTPs where data are available**



E.3 SoE emissions and E-PRTR datasets analysis

The aim of the comparison of E-PRTR data with SoE-emissions data is to check if there are possibly inconsistencies between these two data sets. Due to the thresholds for reporting facilities and releases

in E-PRTR and the definition of SoE-data to report all emissions there can be differences between the reported pollutant loads.

E.3.1 Data selection criteria and process

SoE emissions

The reporting of WISE-SoE-Emissions was established to produce water pollution indicators on a river basin level and on a regional /country level of Europe associated with the EEA's Core Set Indicators. The data flow is embedded in the WISE-SoE Reporting regime and on voluntary basis. Data for the WISE-SoE Reporting should be derived from existing national or regional sources within each EEA Member Country. For SoE-Reporting there is the possibility to indicate if data are from E-PRTR Facilities or from non-E-PRTR Facilities or from both together[50].

Table E.4 SoE Emissions code list for point emission sources from SoE-Emissions data dictionary (modified)

Value	Definition
D0	Direct Discharges to Coastal and Transitional Water total
G7	Point Sources to Groundwater total
I	Industrial Waste Water Discharges total.
I3	Industrial Waste Water Treated Discharges
I4	Industrial Waste Water Untreated Discharges
O	Other Waste Water Discharges total
O5	Other Waste Water Treated Discharges
O6	Other Waste Water Untreated Discharges
PT	Point Sources to Inland Surface Water total
R	Riverine Input to Coastal Water.
U	Urban Waste Water Discharges total
U1	Urban Waste Water Untreated Discharges total
U11	U11 Urban Waste Water Untreated Discharges < 2,000 p.e.
U12	U12 Urban Waste Water Untreated Discharges 2,000 p.e. < 10,000 p.e.
U13	U13 Urban Waste Water Untreated Discharges 10,000 p.e. - 100,000 p.e.
U14	U14 Urban Waste Water Untreated Discharges > 100,000 p.e.
U2	Urban Waste Water Treated Discharges total
U21	U11 Urban Waste Water Treated Discharges < 2,000 p.e.
U22	U12 Urban Waste Water Treated Discharges 2,000 p.e. < 10,000 p.e.
U23	U13 Urban Waste Water Treated Discharges 10,000 p.e. - 100,000 p.e.
U24	U14 Urban Waste Water Treated Discharges > 100,000 p.e.

This comparative assessment is based on the available data from both data sets at the country level. The reported SoE data are heterogeneous in structure (e.g. urban wastewater discharges and/or industrial discharges) and aggregation level (e.g. detailed data on sublevel of Urban waste water (U24, U23,..) and/or industrial discharges (I3, I4) or e.g. aggregated as data of point sources to inland surface water total .

For the comparison with urban wastewater from SoE-data the categories U14 (Urban wastewater untreated discharges > 100,000 pe) and U24 (Urban wastewater treated discharges > 100,000 pe) were considered. Data from categories U13 (Urban wastewater untreated discharges 10,000 to 100,000 pe)

[50] Data dictionary WISE-SoE Emissions

and U23 (Urban wastewater treated discharges 10,000 to 100,000 pe) were included if according to the SoE data dictionary they are flagged in the category E-PRTR_Facilities with “yes” or “both”. For the assessment of the ratio E-PRTR to SoE for industry SoE_data under category I (I3 and I4) are included.

The SoE Emission code list for point sources from the respective data dictionary (modified) can be seen in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

E-PRTR

All E-PRTR data on releases to water on national level was used. For the comparison with SoE data the following the categories were used:

- Releases from Urban wastewater treatment plants (main activity 5.(f))
- Releases from industrial facilities (all activities but without 5.(f))
- Releases from all facilities

E.3.2 Data analyses and results

The comparative analysis was performed where data in SoE-reporting was available for the years 2008 and/or 2009. The results were ratios of E-PRTR releases to water to SoE emission loads in the three categories:

Urban wastewater emissions ratio E-PRTR to SoE

E-PRTR data considered:

Facilities with E-PRTR main activity 5.(f) (UWWTP)

***SoE data considered**:*
U24...Urban Waste Water Treated Discharges of UWWTP > 100,000 pe,
U14...Urban Waste Water Untreated Discharges of UWWTP > 100,000 pe,
U23...Urban Waste Water Treated Discharges of UWWTP 10,000 to 100,000 pe; if in category E-PRTR_facilities flagged with "yes" or "both"
U13...Urban Waste Water Untreated Discharges of UWWTP 10,000 to 100,000 pe; if in category E-PRTR_facilities flagged with "yes" or "both"
U...Urban Waste Water Discharges if in category E-PRTR_facilities flagged with "yes"

Industrial emissions ratio E-PRTR to SoE

E-PRTR data considered:

E-PRTR industry = All E-PRTR facilities except the facilities with main activity 5.(f)

***SoE data considered**:*
I...Industrial waste water discharges total
(including I3...Industrial Waste Water Treated Discharges and I4...Industrial Waste Water Untreated Discharges)

Total emissions ratio E-PRTR to SoE

E-PRTR data considered:
Total E-PRTR data

***SoE data considered**:*
Total SoE data

For different reasons (e.g. the methodology for compiling the load data or the different approaches of interpretation of analytical results) there can be differences in received annual loads in various reporting exercises. Differences are also possible due to different reporting years.

The criteria for potential inconsistencies from urban wastewater where the data should be well known from the UWWTD-reporting are if the ratio E-PRTR to SoE is < 80% of > 120%. For industrial emissions were the knowledge of discharged emissions is usually lower on national level the criteria are < 30% and > 120% and for the comparison of the total emissions there can be sum up effects were the differences

are accumulating and therefore the criteria for potential inconsistencies are < 10% and > 120 % (see Table E.5).

Table E.5 E-PRTR - SoE data comparison -- criteria for consistency check

Ratio	Assessment	Thresholds
N, P or TOC Urban wastewater ratio EPRTR to SoE [>100,000 p.e.]	Potentially inconsistent	Ratio > 120% or < 80%
N, P or TOC industry ratio EPRTR to SoE	Potentially inconsistent	Ratio > 120 % or < 30%
N, P or TOC total ratio EPRTR to SoE	Potentially inconsistent	Ratio > 120 % or < 10%

The results of the E-PRTR - SoE comparison are provided for each country in the MS-Excel Country files. InTable E.6 below, an example of the country result table and the accompanying explanatory notes can be seen.

Table E.6 E-PRTR - SoE data comparison -- Country result table and explanatory notes

Total Nitrogen [kg/year]											
Country	**period SoE data (1)**	**SoE UWW > 100,000 p.e. (2)**	**SoE UWW tot**	**E-PRTR UWW(3)**	**UWW ratio E-PRTR to SoE (>100,000 p.e.)**	**SoE Industry (I) (4)**	**E-PRTR Industry (5)**	**Industry ratio E-PRTR to SoE**	**SoE total emissions**	**E-PRTR total emissions**	**Total emissions ratio E-PRTR to SoE**
Country name	2008	4.412.700	7.799.200	3.233.400	73%	1.579.500	946.800	60%	9.378.700	4.180.200	45%
Total Phosphorus [kg/year]											
Country	**period SoE data (1)**	**SoE UWW > 100,000 p.e. (2)**	**SoE UWW tot**	**E-PRTR UWW(3)**	**UWW ratio E-PRTR to SoE (>100,000 p.e.)**	**SoE Industry (I) (4)**	**E-PRTR Industry (5)**	**Industry ratio E-PRTR to SoE**	**SoE total emissions**	**E-PRTR total emissions**	**Total emissions ratio E-PRTR to SoE**
Country name	2008	461.100	926.800	407.290	88%	217.700	304.740	140%	1.144.500	712.030	62%
TOC(6) [kg/year]											
Country	**period SoE data (1)**	**SoE UWW > 100,000 p.e. (2)**	**SoE UWW tot**	**E-PRTR UWW(3)**	**UWW ratio E-PRTR to SoE (>100,000 p.e.)**	**SoE Industry (I) (4)**	**E-PRTR Industry (5)**	**Industry ratio E-PRTR to SoE**	**SoE total emissions**	**E-PRTR total emissions**	**Total emissions ratio E-PRTR to SoE**
Country name	2008	7.123.000	13.332.167	6.165.300	87%	4.569.567	4.208.900	92%	17.901.733	10.374.200	58%

Notes:

(1)	*SoE data - reporting year: Only 2009 or 2008 data are used for the comparison*
(2)	*SoE codes:* *U24...Urban Waste Water Treated Discharges of UWWTP > 100,000 pe,* *U14...Urban Waste Water Untreated Discharges of UWWTP > 100,000 pe,* *U23...Urban Waste Water Treated Discharges of UWWTP 10,000 to 100,000 pe; if in category E-PRTR_facilities flagged with "yes" or "both"* *U13...Urban Waste Water Untreated Discharges of UWWTP 10,000 to 100,000 pe; if in category E-PRTR_facilities flagged with "yes" or "both"* *U...Urban Waste Water Discharges if in category E-PRTR_facilities flagged with "yes"*
(3)	*E-PRTR: Facilities with E-PRTR main activity 5.(f) (UWWTP)*

(4)	*SoE code: I...Industrial waste water discharges total (including I3...Industrial Waste Water Treated Discharges and I4...Industrial Waste Water Untreated Discharges*
(5)	*E-PRTR industry = All E-PRTR facilities except the facilities with main activity 5.(f)*
(6)	*Total organic carbon (TOC) (as total C or COD/3)*
NA	*not available*

Switzerland indicated at the SoE reporting at the parameter "Emissions" with the indicator "-3" that data are submitted under E-PRTR-Reporting and therefore not reported again under SoE.
The SoE-Parameter "EPRTR Facilities" was applied for the years 2008 and/or 2009 from eight countries (Belgium, Bulgaria, Czech Republic, France, Lithuania, Latvia, Sweden, Switzerland), but in different ways (see table Table E.7).

Table E.7 SoE data --- application of the parameter "E-PRTR Facilities"

country	year	Categories of point sources of emissions		
		E-PRTR Facilities "YES"	E-PRTR Facilities "BOTH"	E-PRTR Facilities "NO"
Belgium	2008	U24	I3, I4, U23	U21, U22, U23
Bulgaria	2009	-	PT	-
Czech Republic	2009	-	PT	-
France	2008	I, I3, I4	-	-
Lithuenia	2009	U24	I3, I4	I3, I4, O5, O6, U11, U21, U22, U23
Latvia	2008/2009	D0, PT, U; only in Subunit Daugava	-	D0, I, O, PT, U
Sweden	2008/2009	-	D0, I, U2	-
Switzerland	2008	I3, U2	-	-

The Table E.8 shows a summary of the results of the E-PRTR - SoE comparison. The detailed results can be seen in the country files.

Table E.8 E-PRTR - SoE data comparison -- Summary table results

Country	Year	Pollutant	UWWTD ratio E-PRTR to SoE (>100,000 pe)	Industry ratio E-PRTR to SoE	Total emissions ratio E-PRTR to SoE
Belgium	2008	Total Nitrogen	73%	60%	45%
		Total Phosphorus	88%	140%	62%
		TOC	87%	92%	58%
Bulgaria	2009	Total Nitrogen	NA	NA	91%
		Total Phosphorus	NA	NA	89%
		TOC	NA	NA	215%
Czech Republic	2009	Total Nitrogen	NA	NA	NA
		Total Phosphorus	NA	NA	18%
		TOC	NA	NA	45%
Estonia	2009	Total Nitrogen	NA	NA	27%
		Total Phosphorus	NA	NA	24%
		TOC	NA	NA	21%
Finland	2008	Total Nitrogen	NA	51%	44%
		Total Phosphorus	NA	27%	27%
		TOC	NA	63%	59%

Country	Year	Pollutant	UWWTD ratio E-PRTR to SoE (>100,000 pe)	Industry ratio E-PRTR to SoE	Total emissions ratio E-PRTR to SoE
France	2008	Total Nitrogen	NA	50%	NA
		Total Phosphorus	NA	28%	NA
		TOC	NA	53%	NA
Iceland	2009	Total Nitrogen	NA	46%	21%
		Total Phosphorus	NA	29%	12%
		TOC	NA	NA	NA
Lithuania	2009	Total Nitrogen	95%	84%	55%
		Total Phosphorus	86%	NA	28%
		TOC	7%	NA	4%
Latvia	2009	Total Nitrogen	75%	55%	33%
		Total Phosphorus	48%	NA	18%
		TOC	211%	NA	76%
Romania	2009	Total Nitrogen	38%	43%	35%
		Total Phosphorus	30%	23%	24%
		TOC	19%	13%	15%
Sweden	2009	Total Nitrogen	NA	58%	64%
		Total Phosphorus	NA	68%	72%
		TOC	NA	100%	NA
Slovenia	2009	Total Nitrogen	NA	NA	NA
		Total Phosphorus	99%	NA	53%
		TOC	65%	NA	35%

48%	*Potentially inconsistent*
NA	*Not available*

E.4 Identification of pollutants which might be missing for reported E-PRTR facilities

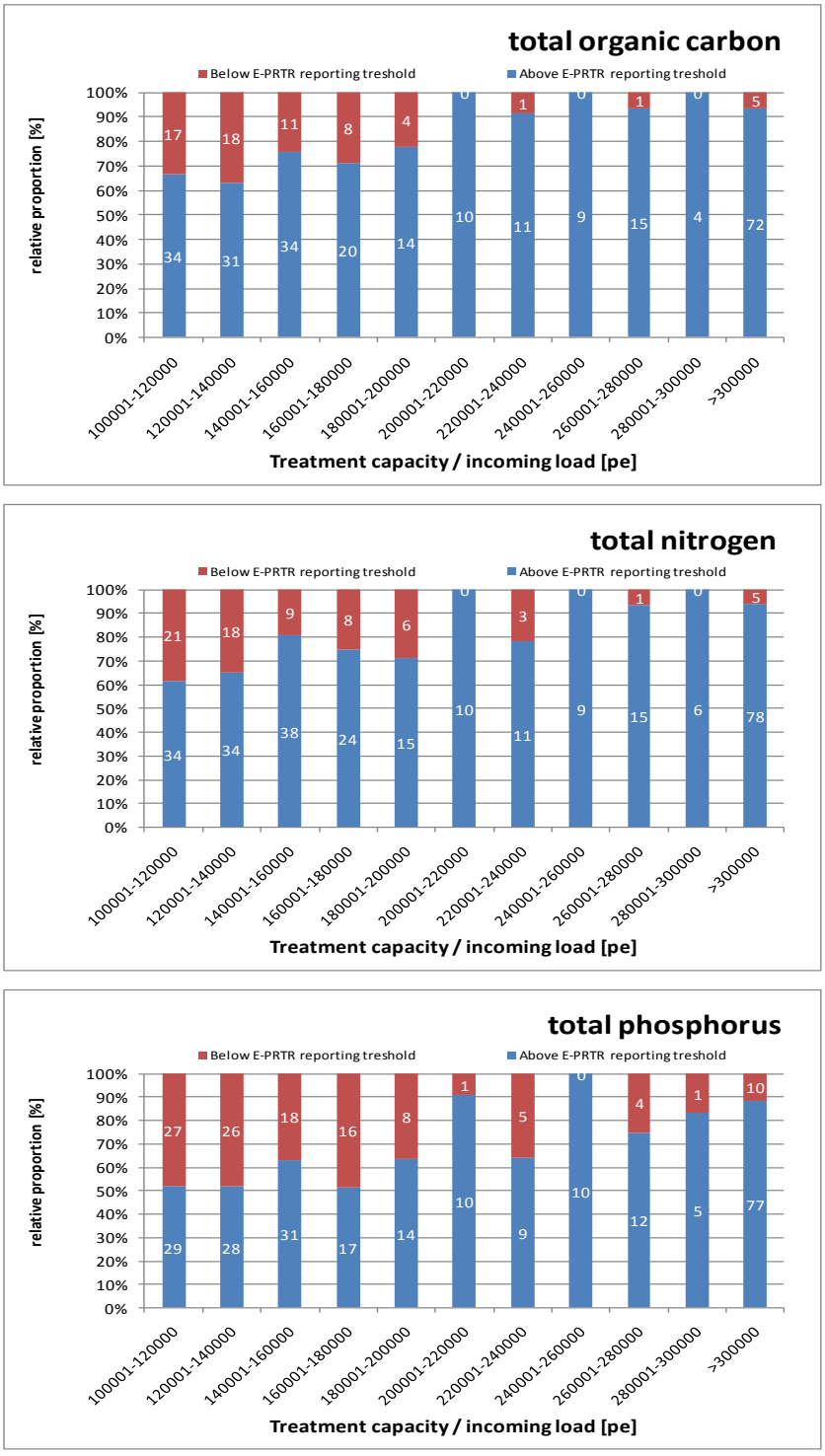
The analysis is done for E-PRTR main activity 5.(f) and focusing on the pollutants TOC, total nitrogen and total phosphorus. No other pollutants or E-PRTR activities were assessed.

E.4.1 Analytical procedure used to draw conclusions from the data

The main objective is to identify whether for certain facilities some pollutants have not been reported. This check is done for E-PRTR Regulation Annex I activity 5.(f) and focuses on the Annex II pollutants TOC, total nitrogen and total phosphorus. The other Annex II pollutants have not been addressed in the 2011 review.

Theoretical discharges using specific influent loads and assumed treatment efficiencies suggest all UWWTPs with an incoming load of 100,000 pe or more may be expected to exceed the E-PRTR reporting thresholds. However, clearly shows that numerous UWWTPs with a treatment capacity or an incoming load of more than 100,000 pe do not exceed the E-PRTR thresholds for TOC, total nitrogen and total phosphorus. This could be explained by the fact that UWWTPs with an installed treatment capacity of more than 100,000 pe might have an incoming load below this value and therefore would not necessarily be above the E-PRTR thresholds.

Figure E.10 **Relative proportion of number of UWWTPs above or below the E-PRTR reporting threshold in total number of UWWTPs reporting discharges of a certain pollutant dependent on the treatment capacity**



In order to perform a useful evaluation of E-PRTR data and avoid most "false" negatives, a pragmatic approach is applied based on the evaluation of the available data:

⇒ **All facilities reporting under activity 5.(f) with a treatment capacity of more than 200,000 pe which do not report emissions of TOC, total nitrogen and total phosphorus are flagged for potential misreporting**

⇒ **Facilities reporting under activity 5.(f) with a treatment capacity below 200,000 pe have to be assessed individually by taking into consideration country specific requirements, actual loading conditions and installed treatment.**

A more detailed justification and the presentation of the data on which the approach is based, is presented in Appendix IX.

E.4.2 Results of analysis

Table E.9 summarises the results of the evaluation, provides information on total number of facilities reporting for E-PRTR main activity 5.(f). and UWWTPs with a treatment capacity of more than 200,000 pe. Those UWWTPs are supposed to report releases for TOC, total nitrogen and total phosphorus. If there are UWWTPS with a treatment capacity of more than 200,000 pe not reporting for TOC, total nitrogen and/or total phosphorus those are facilities are highlighted as potentially missing.

Figure E.11, Figure E.12 and Figure E.13 show the potentially missing release reports for TOC, total nitrogen and total phosphorus from facilities with main E-PRTR activity 5.(f).

Table E.9 Summary table with potentially missing TOC, total nitrogen, and total phosphorus reports in E-PRTR release reports from facilities with main E-PRTR activity 5.(f)

Country code	UWWTPs		Potentially missing E-PRTR release reports					
			TOC		total nitrogen		total phosphorus	
	E-PRTR	UWWTD >200,000 pe	n	%	n	%	n	%
Austria	21	5	0	0.0	0	0.0	0	0.0
Belgium	19	7	0	0.0	0	0.0	1	5.3
Cyprus	1	1	1	100.0	1	100.0	0	0.0
Czech Republic	29	9	5	17.2	3	10.3	5	17.2
Germany	218	119	14	6.4	19	8.7	51	23.4
Denmark	26	5	0	0.0	1	3.8	3	11.5
Estonia	6	2	0	0.0	1	16.7	1	16.7
France	116	51	2	1.7	8	6.9	6	5.2
Greece	3	2	0	0.0	0	0.0	0	0.0
Spain	116	67	37	31.9	23	19.8	11	9.5
Finland	18	8	3	16.7	0	0.0	3	16.7
Hungary	19	10	1	5.3	1	5.3	2	10.5
Ireland	6	2	0	0.0	0	0.0	0	0.0
Italy	64	33	11	17.2	4	6.3	8	12.5
Lithuania	7	5	5	71.4	1	14.3	2	28.6
Luxembourg	2	1	0	0.0	0	0.0	0	0.0
Latvia	2	1	0	0.0	0	0.0	0	0.0
Netherlands	49	16	5	10.2	0	0.0	0	0.0
Poland	73	36	16	21.9	3	4.1	12	16.4
Portugal	24	12	1	4.2	0	0.0	0	0.0
Romania	21	10	5	23.8	4	19.0	2	9.5
Slovenia	5	2	0	0.0	0	0.0	0	0.0
Slovakia	5	4	0	0.0	0	0.0	0	0.0
United Kingdom	143	63	4	2.8	20	14.0	7	4.9
All countries*	**993**	**471**	**110**	**11.1**	**89**	**9.0**	**114**	**11.5**

*…not included Bulgaria (15 facilities), Sweden (15 facilities) and Switzerland (18 facilities) as no data on treatment capacity or incoming loads available from the UWWTD database

Figure E.11 Number of potentially missing total nitrogen discharges from E-PRTR facilities with main E-PRTR activity 5.(f)

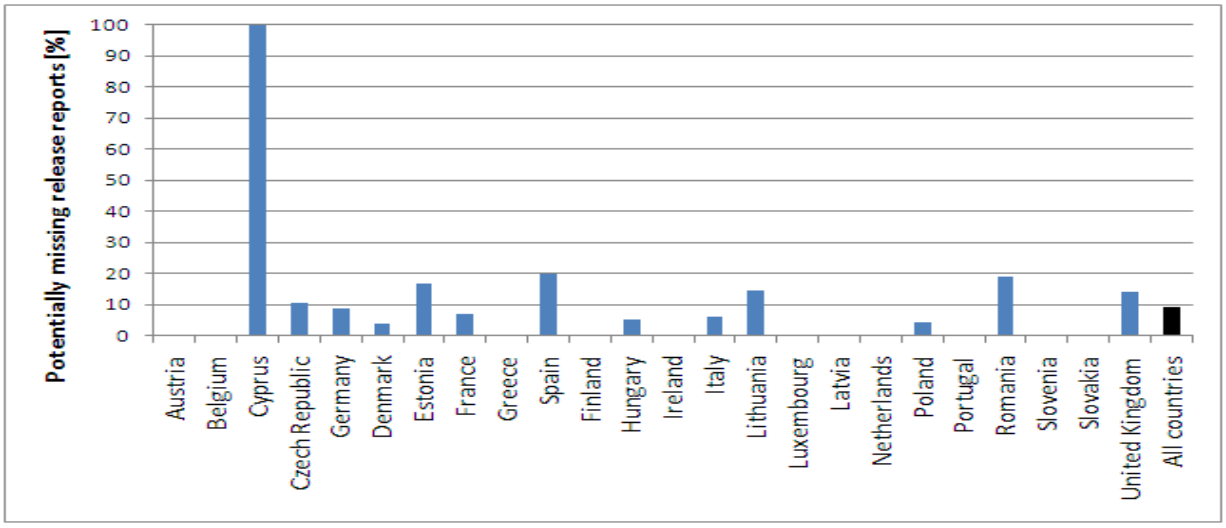


Figure E.12 Number of potentially missing total phosphorus discharges from E-PRTR facilities with main E-PRTR activity 5.(f)

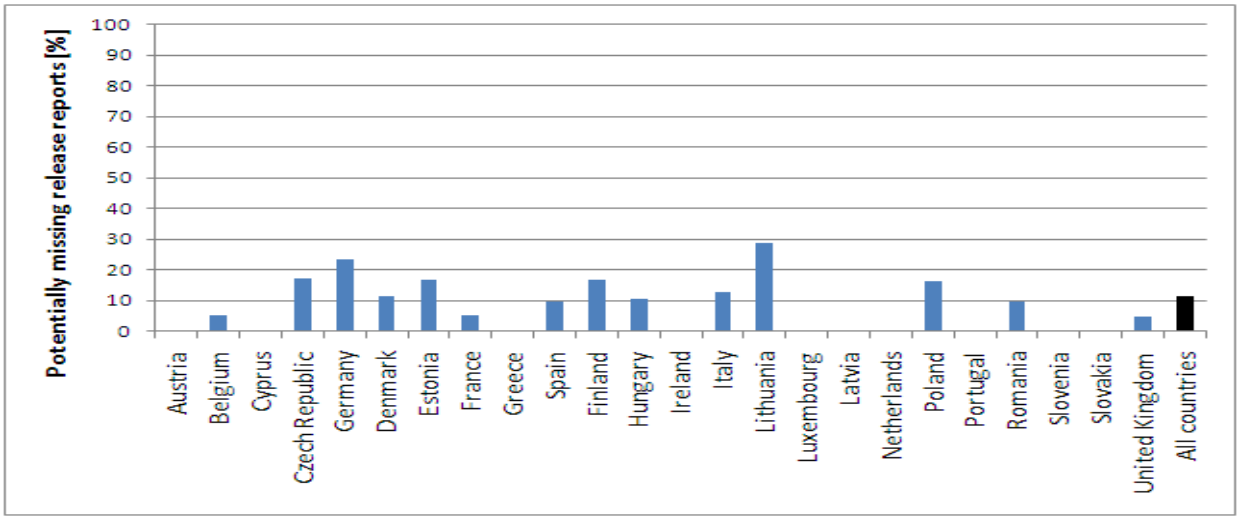
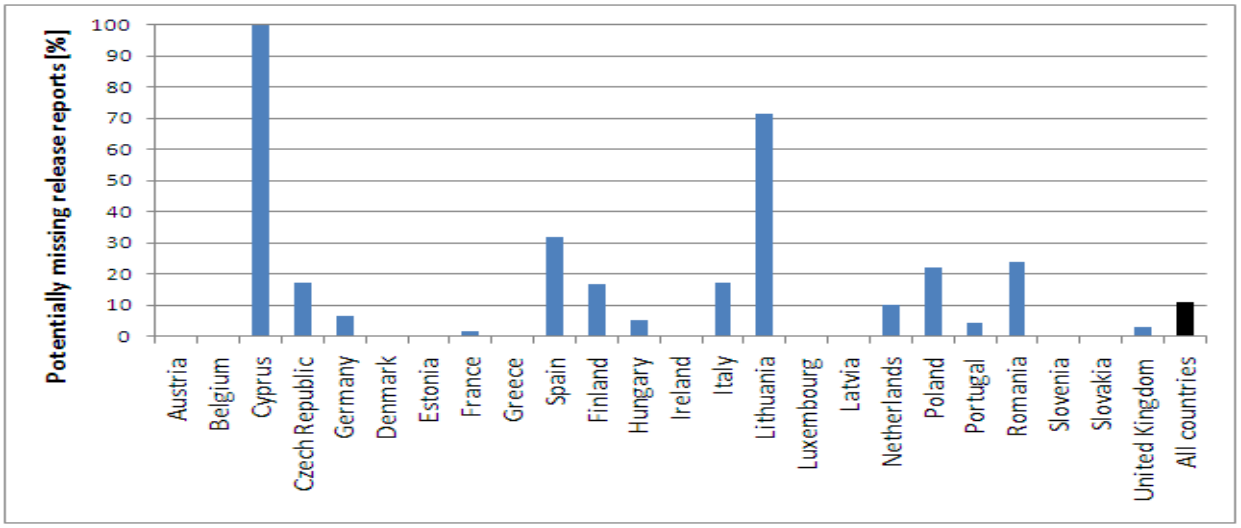


Figure E.13 Number of potentially missing total organic carbon discharges from E-PRTR facilities with main E-PRTR activity 5.(f)



Higher numbers (more than 10%) of facilities with missing release reports have been identified for the following countries:

- **TOC**: Cyprus, Czech Republic, Spain, Finland, Italy, Lithuania, Netherlands, Poland, Romania
- **Total nitrogen**: Czech Republic, Estonia, Spain, Lithuania, Romania
- **Total phosphorus**: Czech Republic, Germany, Denmark, Estonia, Finland, Hungary, Italy, Lithuania, Poland

One possible reason for countries to have potentially missing release reports is they might require more rigorous treatment efficiencies. In order to assess the results of the potentially missing E-PRTR a comparison was done for those E-PRTR facilities which could be linked to the UWWTD database and for which the release data is available for UWWTP with a treatment capacity of more than 200,000 pe. The results are as follows:

Belgium: only one E-PRTR main activity 5.(f) facility did not report a release for total phosphorus. No information for this UWWTP is available from the UWWTD database.

Czech Republic: nine E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe are included in E-PRTR and eight of them have release data in the UWWTD database. According to these data all eight facilities should have reported discharges for TOC, total nitrogen and total phosphorus under E-PRTR as the E-PRTR thresholds were exceeded. Four facilities reported releases under E-PRTR of TOC, six facilities reported releases of total nitrogen and four facilities report releases of total phosphorus. However, it is worth remembering that there are inconsistencies between the data in E-PRTR and in the UWWTD database.

Germany: One hundred and nineteen E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe are included in E-PRTR. Fourteen of them did not report releases for TOC, nineteen did not report releases for total nitrogen and fifty-one did not report releases for total phosphorus. The UWWTD database does not contain data on COD or TOC releases for Germany. Concerning total nitrogen, only for two of the nineteen facilities have data available and for one facility the reported discharge is below the E-PRTR threshold whereas the second facility provided UWWTD data that exceeds the E-PRTR threshold. Concerning total phosphorus, ten of the fifty-one facilities have data available and for all of them the reported releases in the UWWTD database are clearly below the E-PRTR threshold.

Denmark: Five E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe are included in E-PRTR and for all of them information on releases for COD, total nitrogen and total phosphorus is available from the UWWTD database. Four of five facilities report releases of total nitrogen. According to the UWWTD database the 5th facility also slightly exceeds the E-PRTR threshold. Two of five facilities report releases for total phosphorus. According to the UWWTD database one of the missing facilities exceeds the E-PRTR threshold.

Estonia: According to the UWWTD database both E-PRTR reporting facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe should have reported releases of TOC, total nitrogen and total phosphorus due to exceedances of the respective E-PRTR thresholds.

Spain: Of the sixty-seven E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe, thirty-seven of them did not report releases for TOC, twenty-three did not report releases for total nitrogen and eleven did not report releases for total phosphorus. The UWWTD database contains release TOC data (calculated from COD) for fourteen of the thirty-seven UWWTPs and all reported TOC releases are above the E-PRTR threshold. Concerning total nitrogen, for nine of the twenty-three facilities data is available and for all nine facilities, the reported total nitrogen discharges are above the E-PRTR threshold. Concerning total phosphorus, data is available for nine of the eleven facilities not reporting under E-PRTR and all nine facilities reported total phosphorus discharges above the E-PRTR threshold.

Italy: Of the thirty-three E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe, eleven of them did not report releases for TOC, four did not report releases for total nitrogen and eight did not report releases for total phosphorus. The UWWTD database contains TOC data (calculated from COD) for ten of the eleven UWWTPs not reporting under E-PRTR and seven UWWTPs reported TOC releases above the E-PRTR threshold. Concerning total nitrogen, for one of the four facilities data is available and for that facility the reported total nitrogen discharge is below the E-PRTR threshold. Concerning total phosphorus, data is available for six of the eight facilities not reporting under E-PRTR and for two of those facilities the reported total phosphorus discharges are above the E-PRTR threshold.

Luxembourg: No potentially missing pollutants identified.

Latvia: No potentially missing pollutants identified.

Poland: Of the thirty-six 36 E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe, sixteen of them did not report releases for TOC, three did not report releases for total nitrogen and twelve did not report releases for total phosphorus. The UWWTD database contains release TOC data (calculated from COD) for all sixteen UWWTPs not reporting under E-PRTR and all sixteen UWWTPs reported TOC releases to the UWWTD database above the E-PRTR threshold. Concerning total nitrogen for all three facilities not reporting under E-PRTR data is available from the UWWTD database and for all three facilities the reported total nitrogen discharges are below the E-PRTR threshold. Concerning total phosphorus data is available from the UWWTD database for all twelve facilities not reporting under E-PRTR and for nine of them the reported total phosphorus discharges are above the E-PRTR threshold.

Romania: Of the ten E-PRTR facilities with main activity 5.(f) and a treatment capacity of more than 200,000 pe, five of them did not report releases for TOC, four did not report releases for total nitrogen and two did not report releases for total phosphorus. The UWWTD database contains release TOC data (calculated from COD) for all five UWWTPs not reporting under E-PRTR and all five UWWTPs reported TOC releases above the E-PRTR threshold. Concerning total nitrogen for one of the four facilities not reporting under E-PRTR data is available from the UWWTD database and the reported total nitrogen discharge is above the E-PRTR threshold. Concerning total phosphorus data is available from the UWWTD database for both facilities not reporting under E-PRTR and for both facilities the reported total phosphorus discharges are above the E-PRTR threshold.

E.5 Specific review of activity 7(b) – intensive aquaculture

E.5.1 Assessment of reported water emissions in activity 7(b) and NACE-category 3.21 Marine aquaculture

Intensive marine aquaculture is in some countries or regions of Europe an important social-economic industry. It is mainly concentrated in the northern and western part of Europe. Two EFTA countries Norway and Iceland together produced more than 60 % of the total 2007 aquaculture production of EU-27 countries. The candidate countries (Croatia, Former Yugoslav Republic of Macedonia and Turkey) produced less then 200.000 tonnes[51] (Figure E.14 Aquaculture production in EU-27, 1996-2007 (tonnes live weight) Figure E.14).

Based on the reported E-PRTR data under activity 7.(b) (*Intensive aquaculture)* an assessment at facility level and on NACE-category 03.21 Marine aquaculture (Table 9)at the country level was carried out.

[51] EUROSTAT 2007 Aquaculture Statistics

Figure E.14 Aquaculture production in EU-27, 1996-2007 (tonnes live weight) [52]

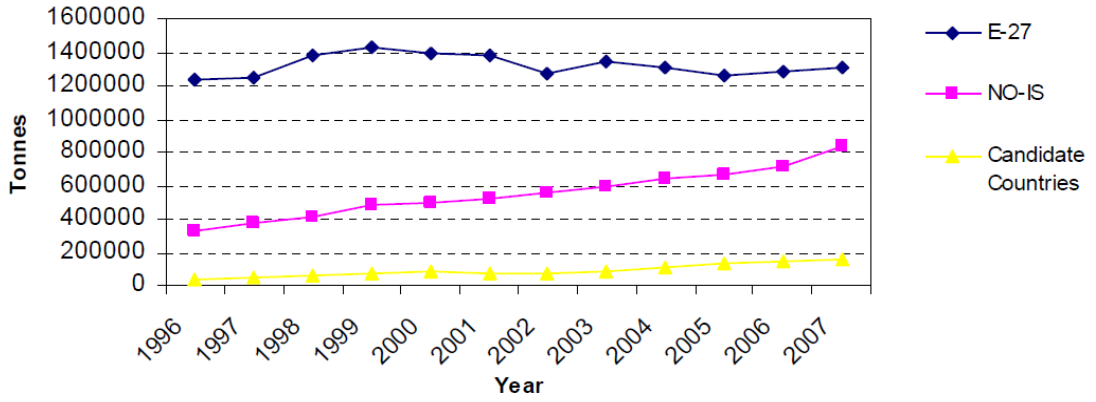


Table E.10: NACE Rev.2[53] **categories for division 3 Fishing and aquaculture**

Division	Group	Class	
03			**Fishing and aquaculture**
	03.1		Fishing
		03.11	Marine fishing
		03.12	Freshwater fishing
	03.2		**Aquaculture**
		03.21	**Marine aquaculture**
		03.22	Freshwater aquaculture

Table E.11 provides a breakdown of the marine aquaculture production in Europe from FAO-statistics[54] . The countries which reported E-PRTR releases to water under activity 7.(b) are marked in blue. For Cyprus no data are available from the FAO-Statistics. The countries which have production figures in Table E.11 but have no E-PRTR reporting facilities should perform a completeness check.

The total marine aquaculture production divided by the E-PRTR capacitiy threshold value (1,000 tonnes of fish or shellfish per year) results that e.g. in France at least 192 facilities, in Greece 119 facilities or in Italy 86 facilities below the threshold must be in place.

According to FAO data in France in 2003 there were 3,700 farms at the marine aquaculture sector[55]. In Greece in 2008 almost 1,000 farms were producing at the marine sector[56].

E-PRTR-Data for 2007, 2008 and/or 2009 under activity 7(b) and NACE class 03.21 are available for the countries Cyprus, Iceland, Malta, Norway, Spain and United Kingdom. Under this activity, no accidental releases were reported for the years 2007 to 2009.

[52] EUROSTAT 2007 Aquaculture Statistics

[53] http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/NACE%20Rev%202%20structure%20+%20explanatory%20notes%20-%20EN.pdf

[54] *source: FAO:* *http://www.fao.org/figis/servlet/TabLandArea?tb_ds=Aquaculture&tb_mode=TABLE&tb_act=SELECT&tb_grp=COUNTRY*

[55] http://www.fao.org/fishery/countrysector/naso_france/en

[56] http://www.fao.org/fishery/countrysector/naso_greece/en

The pollutants with reported releases to water within activity 7.(b) are TOC, total nitrogen, total phosphorus, copper and zinc. In the E-PRTR guidance document in the indicative list for water there are also the pollutants PCDD + PCDF (dioxins + furans) dedicated to activity 7.(b), but not releases were reported.

Based on the reported data an evaluation of pollutants and released loads for the years 2007 to 2009 at country level was done. The results are presented in a summary table (Table E.12) containing the pollutants, the years, the number of facilities with releases of the respective pollutant and the sum of the releases to water in kg. The table also contains the aquaculture production

Table E.11 Marine aquaculture production [tonnes] for Europe in 2007, 2008 and 2009[57] (sorted by 2009)

Country	2007	2008	2009
Norway	841,475	848,269	961,757
Spain	250,504	222,893	244,247
France	196,247	194,969	191,962
United Kingdom	160,671	168,622	168,449
Greece	108,873	109,915	118,067
Italy	67,585	75,733	85,116
Netherlands	47,121	38,151	47,629
Ireland	56,296	44,030	46,253
Denmark	8,594	12,329	12,680
Sweden	2,648	3,579	4,556
Germany	10,686	6,982	3,686
Portugal	5,924	6,149	3,478
Malta	2,548	1,692	2,547
Iceland	2,471	1,602	1,971
Bulgaria	288	595	807
Slovenia	316	274	377
Bosnia and Herzegovina	260	260	260
Montenegro	200	200	210
Total Europe	**1,762,507**	**1,736,044**	**1,893,842**

Note: *Only E-PRTR countries are lisited in this table*

.

[57] *source: FAO:* *http://www.fao.org/figis/servlet/TabLandArea?tb_ds=Aquaculture&tb_mode=TABLE&tb_act=SELECT&tb_grp=COUNTRY*

Table E.12: E-PRTR data reported under activity 7.(b) and NACE 03.21 and production data for the years 2007, 2008 and 2009

	Aquaculture Production[58] [59]	Total organic carbon (TOC) (as total C or COD/3)		Total nitrogen		Total phosphorus		Copper and compounds (as Cu)		Zinc and compounds (as Zn)	
	(tonnes live weight)	sum of total quantity (kg)	number of facilities reported this parameter	sum of total quantity (kg)	number of facilities reported this parameter	sum of total quantity (kg)	number of facilities reported this parameter	sum of total quantity (kg)	number of facilities reported this parameter	sum of total quantity (kg)	number of facilities reported this parameter
2007											
Spain	250,504	-		114,000	1	112,100	2	-	-	-	-
Malta	2,548	945,000	3	337,900	3	65,760	4	-	-	854	2
Norway	841,475	95,250,000	217	22,036,500	217	4,669,700	217	379	7	84,171	217
United Kingdom	160,671	20,011,700	88	5,491,900	66	812,460	76	46,170	48	2369	19
2008											
Cyprus	3,776	-		54,400	1	14,800	2	-	-	-	-
Spain	222,893	-		336,900	3	45,190	3	-	-	-	-
Iceland	1,602	-		-	-	5,000	1	-	-	-	-
Malta	1,692	682,900	3	276,700	2	52,730	3	-	-	290	2
Norway	848,269	45,179,300	153	8,094,300	78	2,113,850	130	346	6	37,359	123
United Kingdom	168,622	16,555,000	81	4,354,400	55	661,630	66	53,705	44	13,528	66
2009											
Spain	244,247	-		92,300	1	13,000	1	-	-	-	-
Iceland	1,971	-		-	-	5,980	1	-	-	-	-
Malta	2,547	751,000	3	325,000	2	61,550	3	-	-	209	1
Norway	961,757	52,937,800	136	11,420,100	103	2,574,220	122	503	8	46,380	120
United Kingdom	168,449	22,688,600	86	6,390,200	67	942,790	77	74,329	50	19,376	78

[58] *source: FAO* *http://www.fao.org/figis/servlet/TabLandArea?tb_ds=Aquaculture&tb_mode=TABLE&tb_act=SELECT&tb_grp=COUNTRY*

[59] *Cyprus source: Eurostat* *http://epp.eurostat.ec.europa.eu/portal/page/portal/fisheries/data/database*

E.5.2 TOC cross pollutant assessment for the activity 7.(b) intensive aquaculture

An assessment of ratios of released loads to the Total Organic Carbon (TOC) load was calculated using available data. TOC is an important wastewater sum parameter, which indicates together with the Chemical Oxygen Demand (COD) the pollution of a surface water with organic compounds. And the TOC is the most reported pollutant under the activity 7.(b).

This assessment was done for the period 2007-2009 with all available pairs of values on facility level. The ratios of TOC/Total nitrogen, TOC/Total phosphorus, TOC/Zinc and TOC/Copper were calculated for the countries Malta, Norway and United Kingdom.

An overview of the results can be seen in Table E.13. The detailed country results are available in the country word files.

Table E.13: Release ratios of TOC to Total nitrogen, Total phosphorus, zinc and copper of intensive aquacultures for the period 2007 to 2009; NACE category 3.21, marine aquaculture

Pollutant ratio	Country	Time period	Number of values	Mean value	Minimum ratio	Maximum ratio
TOC/Total nitrogen	Malta	2007-2009	4	2.7	2.5	3.2
	Norway	2007-2009	398	4.3	4.1	5.1
	United Kingdom	2007-2009	188	3.2	2.1	3.2
TOC/Total phosphors	Malta	2007-2009	7	16.5	15.4	17.2
	Norway	2007-2009	469	20.3	19.4	24.5
	United Kingdom	2007-2009	219	23.2	23.1	23.3
TOC/Zinc	Malta	2007-2009	5	676	377	754
	Norway	2007-2009	460	1128	1060	1447
	United Kingdom	2007-2009	163	1379	1127	3235
TOC/Copper	Norway	2007-2009	21	15378	15277	16332
	United Kingdom	2007-2009	133	423	44.8	2894

For TOC/Total nitrogen and TOC/Total phosphorus the results are comparable for the three countries. For TOC/Zinc the ratio of Malta is about half compared to the results of Norway and United Kingdom. This difference should be checked by Malta. The ratio of TOC/Copper shows a big variance between Norway and United Kingdom. In United Kingdom, the TOC/Copper values are within a wide range between minimum and maximum value. For Malta no Copper emissions were reported.

E.5.3 Production specific emissions for activity 7.(b) intensive aquaculture

Production specific loads can be derived from the discharged load of a pollutant related to the amount of production for the same period on country level. The assessment was done for the years 2007, 2008 and 2009. The annual production data are available from FAO[60] or EUROSTAT[61]. The restriction of this data is, that country wide production is covered and for reporting under E-PRTR the threshold is a production capacity of 1,000 t/a. The results can give a rough indication about the completeness of reported releases respectively facilities or about the structure of the branch (many small installations or less big ones) within a country.

The results of the assessment of production specific emissions are summarized inTable E.14.

[60] FAO: http://www.fao.org/figis/servlet/TabLandArea?tb_ds=Aquaculture&tb_mode=TABLE&tb_act=SELECT&tb_grp=COUNTRY

[61] EUROSTAT: http://epp.eurostat.ec.europa.eu/portal/page/portal/fisheries/data/database

The result of Copper again shows big differences between Norway and United Kingdom. The production specific emissions for Malta calculated with maximum four facilities shows much higher values compared to Norway and United Kingdom.

Table E.14: Production specific emissions in kg of Pollutant / tonne produced for activity 7.(b) intensive aquacultures for the period 2007 to 2009; NACE category 3.21, marine aquaculture

	total marine aquaculture production [tonnes]	kg Copper / tonne produced	kg Total nitrogen / tonne produced	kg TOC / tonne produced	kg Total phosphorus / tonne produced	kg Zinc / tonne produced
2007						
Malta	2,548		132.61	370.88	25.81	0.34
Norway	841,475	0.0004	26.19	113.19	5.55	0.10
United Kingdom	160,671	0.2874	34.18	124.55	5.06	0.01
2008						
Malta	1,692		163.53	403.61	31.16	0.17
Norway	848,269	0.0004	9.54	53.26	2.49	0.04
United Kingdom	168,622	0.3185	25.82	98.18	3.92	0.08
2009						
Malta	2,547		127.60	294.86	24.17	0.08
Norway	961,757	0.0005	11.87	55.04	2.68	0.05
United Kingdom	168,449	0.4413	37.94	134.69	5.60	0.12

E.5.4 Comparison of reporting under NACE Class 03.21 Marine aquaculture and E-PRTR activity 7.(b) Intensive aquaculture

The assessement of the NACE Class 03.21 Marine aquaculture showed that the number of reported facilities is decreasing from 315 in 2007 to 246 in 2009. The main E-PRTR activity is 7.(b) Intensive aquaculture. In 2008 and 2009 two facilities were reported under the E-PRTR Activity 8.(b).

Table E.15: Comparison of NACE Class 03.21 Marine aquaculture with E-PRTR activities

NACE Class 03.21 Marine aquaculture		**Number of reported facilities**		
E-PRTR Activity code	**E-PRTR Activity name**	**2007**	**2008**	**2009**
7.(b)	Intensive aquaculture	315	282	244
8.(b)	Treatment and processing intended for the production of food and beverage products		2	2
Total		**315**	**284**	**246**

Facilities reported under E-PRTR activity 7.(b) Intensive aquaculture are allocated to nine different NACE-categories (4-digit). In total the number of facilities is decreasing from 354 in 2007 to 274 in 2009.

The main NACE-categorie of the activity 7.(b) is NACE-code 03.21 Marine aquaculture followed by NACE-code 10.20 Processing and preserving of fish, crustaceans and molluscs.

Table E.16: Comparison of E-PRTR activity 7.(b) Intensive aquaculture with NACE Classes

E-PRTR activity 7.(b) Intensive aquaculture		Number of reported facilities		
NACE class - code	**NACE class – name**	**2007**	**2008**	**2009**
01.19	Growing of other non-perennial crops			1
01.47	Raising of poultry			1
01.50	Mixed farming		1	
03.11	Marine fishing	1	1	1
03.21	Marine aquaculture	315	282	244
03.22	Freshwater aquaculture	7	6	7
10.20	Processing and preserving of fish, crustaceans and molluscs	31	30	18
10.91	Manufacture of prepared feeds for farm animals			1
11.07	Manufacture of soft drinks; production of mineral waters and other bottled waters			1
Total		**354**	**320**	**274**

F Lessons learned/ Next steps

F.1 Lessons learned

The increase of 1 % in the number of facilities between E-PRTR 2008 and E-PRTR 2009 indicates that reporting of data in 2011 has improved in most of the countries. The increase in the number of facilities was mainly based on more facilities reporting under sector 5 *Waste and wastewater management*. On the other hand, the number of release reports to air, water and pollutant transfers in water and the number of facilities reporting releases/transfers reports to air and water fell between 2008 and 2009. The reasons for this could either be the economic crisis in the year 2009 or incomplete reporting. We assume that data completeness will improve after the review in the course of the resubmissions as was the case in previous years.

According to the E-PRTR submission 2009 a small number of facilities often make a large overall contribution to the total release/transfer of a certain pollutant in a specific media. For instance, five large combustion plants were collectively responsible for about 20 % of all E-PRTR SO_2 emissions to air, another two facilities were responsible for 44 % of total CH_4 emissions to air. Within the group of heavy metals the top five facilities contributed between 19 % and 67 % to total E-PRTR emissions.

A number of pollutants were reported by one single facility or by one single country in Europe. For other pollutants individual facilities seem to produce more than 50 % of total emissions in Europe (e.g. 53 % of HCB emissions by a facility in Italy). Such findings have to be further investigated by Parties since they might indicate that a) the concerning E-PRTR thresholds are too high, b) reporting in other countries is not complete c) there are errors in reported data (e.g. wrong units) and/or d) emissions are not reported under the correct activity and/or media.

The review has some constraints concerning the comparability with emissions reported under CLRTAP and UNFCCC due to the differing structure of the reported data. The assessment of the comparison of EU-ETS and E-PRTR is also limited by the different definition of sectors (EU ETS) and activities (E-PRTR).

Based on the lessons learned, the stage 1 review in 2011 was improved by adding two additional checks on the reasons for confidentiality and the quantities of confidential releases/transfers. In addition some improvements were implemented concerning the stage 1 checks on waste data.

The 2010 review highlighted a number of anomalies which could be corrected and as follow-up a number of countries resubmitted more consistent 2008 E-PRTR data. However, the Stage 1 review in 2011 again revealed a number of data anomalies that were communicated to E-PRTR countries giving them the opportunity to improve their 2009 E-PRTR data until the resubmission deadline in autumn 2011. The stage 2 review highlighted potential inconsistencies in reporting under different also have to be checked by countries.

With the current structure of reporting the review can easily identify outliers. Gaps in reporting are, however, difficult to detect. Information on production, fuel consumption and thermal capacity of single facilities could significantly improve the possibility to assess the quality and completeness of reporting under E-PRTR.

F.2 Next steps

The stage 1 and 2 review of E-PRTR data is planned also for upcoming years. The way the results will be presented might however change in the future. For future reports it could be considered to also include information on emissions per capita or area.

The informal review is expected to start in 2012 on 1st of May after the publication of the E-PRTR data (the latest by 30 April 2012).

Units and Abbreviations

kg ..... 1 kilogram = 10^3 g (gram)
t..... 1 tonne (metric) = 1 megagram (Mg) = 10^6 g
Mg..... 1 megagram = 10^6 g = 1 tonne (t)
g.....1 gram
Gg..... 1 gigagram = 10^9 g = 1 kilotonne (kt)
Tg ..... 1 teragram = 10^{12} g = 1 megatonne (Mt)
TJ..... 1 terajoule

As ..... arsenic
Cd..... cadmium
BOD..... Biochemical Oxygen Demand
CAS..... Chemical Abstract Service
CDR ..... central data repository of EEA's Eionet Reportnet
CEIP..... EMEP Centre on Emission Inventories and Projections
CH_4 ..... methane
CLRTAP..... LRTAP Convention
CO ..... carbon monoxide
CO_2 ..... carbon dioxide
COD..... Chemical Oxygen Demand
Cr ..... chromium
CRF..... UNFCCC common reporting format for greenhouse gases
Cu..... copper
DDT dichlorodiphenyltrichloroethane
EEA..... European Environment Agency
EEA..... European Economic Area
EFTA..... European Fair Trade Association
Eionet European Environment Information and Observation Network
EPER European Pollutant Emission Register
EMEP..... Co-operative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe
E-PRTR..... European Pollutant Release and Transfer Register
ETC/ACM..... European Topic Centre on Air and Climate Change Mitigation
EU ..... European Union
ETS.....Emissions Trading System
EWL..... European Waste List
GHG ..... greenhouse gas
HCB ..... hexachloro-benzene
HCFCs..... hydrochlorofluorocarbons
HCH 1,2,3,4,5,6-hexachlorocyclohexane
HFCs ..... hydrofluorocarbons
HW..... hazardous waste

HWIC ..... hazardous waste (transferred) inside the country

HWOC ..... hazardous waste (transferred) outside the country (transboundary waste movement)

Hg ..... mercury

HMs ..... heavy metals

IOWWTP ..... Independently operated waste water treatment plant

KCA ..... key category analysis

LRTAP Convention ..... UNECE Convention on Long-range Transboundary Air Pollution

N_2O ..... nitrous oxide

NACE ..... Nomenclature statistique des activités économiques dans la Communauté européenne - Nomenclature of economic activities

NECD ..... National Emission Ceilings Directive (2001/81/EC)

NFR ..... UNECE nomenclature for reporting of air pollutants

NH_3 ..... ammonia

NHW ..... non hazardous waste

Ni ..... nickel

NMVOCs ..... non-methane volatile organic compounds

No ..... number

NO_2 ..... nitrogen dioxide

NO_x ..... nitrogen oxides

NP ..... nonylphenol

NPEs ..... nonylphenol ethoxylates

PAH ..... polycyclic aromatic hydrocarbons

Pb ..... lead

PCB ..... polychlorinated biphenyl

PCDD ..... polychlorinated dibenzodioxins (PCDDs) - dioxines

PCDF ..... polychlorinated dibenzofurans (PCDF) - furans

PCP ..... pentachlorophenol

p.e. ..... population equivalent

PFCs ..... perfluorocarbons

PM ..... particulate matter

PM_{10} ..... particles measuring 10 µm or less

$PM_{2.5}$ ..... particles measuring 2.5 µm or less

POPs ..... persistent organic pollutants

PRT ..... pollutant release and transfer (release into air, water, land and transfer in water)

PR ..... pollutant release

PT ..... polutant transfer

RBD ..... river basin district

Se ..... selenium

SF_6 ..... sulphur hexafluoride

SO_2 ..... sulphur dioxide

SO_x ..... sulphur oxides

SoE ..... State of the Environment

TOC ..... total organic carbon
UNECE..... United Nations Economic Commission for Europe
UNFCCC..... United Nations Framework Convention on Climate Change
UWWTD..... Urban Waste Water Treatment Directive
UWWTP ..... urban waste water treatment plant
VOCs ..... volatile organic compounds
WFD ..... Water Framework Directive
WT..... waste transfer
w/o..... without
Zn ..... zinc
..... number of

References

ETC/ACC; ETC/SCP, ETC/W; 2010. E-PRTR Review report 2010 covering the 2008 E-PRTR dataset ; Technical Paper 2010/05.

European Commission, 2004. EPER review report. Available at: http://eper.ec.europa.eu/eper/documents/EPER%20Review%20report,%20final.pdf

REGULATION (EC) No 166/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC. Available at: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_033/l_03320060204en00010017.pdf

IPCC, 2000. Good practice guidance and uncertainty management in national greenhouse gas inventories. Intergovernmental Panel on Climate Change. Available at: www.ipcc-nggip.iges.or.jp/public/gp/gpgaum.htm.

EMEP/EEA, 2009. *EMEP/EEA air pollutant emission inventory guidebook*, EEA technical report No 9/2009, European Environment Agency, Copenhagen. Available at: www.eea.europa.eu/publications/emep-eea-emission-inventory-guidebook-2009

ETCA/ ACM, ETC/SCP. Methodology report, Stage 1 an Stage 2 checks for E-PRTR, EEA Working paper. June 2011

APPENDIX I– Pollutants* included in E-PRTR

As published 4.2.2006 in *Official Journal of the European Union.*

No	CAS number[62]	Pollutant (1)	Threshold for releases (column 1)		
			to air (column 1a) kg/year	to water (column 1b) kg/year	to land (column 1c) kg/year
1	74-82-8	Methane (CH_4)	100 000	— (2)	—
2	630-08-0	Carbon monoxide (CO)	500 000	—	—
3	124-38-9	Carbon dioxide (CO_2)	100 million	—	—
4		Hydro-fluorocarbons (HFCs) (3)	100	—	—
5	10024-97-2	Nitrous oxide (N_2O)	10 000	—	—
6	7664-41-7	Ammonia (NH_3)	10 000	—	—
7		Non-methane volatile organic compounds (NMVOC)	100 000	—	—
8		Nitrogen oxides (NO_x/NO_2)	100 000	—	—
9		Perfluorocarbons (PFCs) (4)	100	—	—
10	2551-62-4	Sulphur hexafluoride (SF_6)	50	—	—
11		Sulphur oxides (SO_x/SO_2)	150 000	—	—
12		Total nitrogen	—	50 000	50 000
13		Total phosphorus	—	5 000	5 000
14		Hydrochlorofluorocarbons (HCFCs) (5)	1	—	—
15		Chlorofluorocarbons (CFCs) (6)	1	—	—
16		Halons (7)	1	—	—
17		Arsenic and compounds (as As) (8)	20	5	5
18		Cadmium and compounds (as Cd) (8)	10	5	5
19		Chromium and compounds (as Cr) (8)	100	50	50
20		Copper and compounds (as Cu) (8)	100	50	50
21		Mercury and compounds (as Hg) (8)	10	1	1
22		Nickel and compounds (as Ni) (8)	50	20	20
23		Lead and compounds (as Pb) (8)	200	20	20
24		Zinc and compounds (as Zn) (8)	200	100	100
25	15972-60-8	Alachlor	—	1	1
26	309-00-2	Aldrin	1	1	1
27	1912-24-9	Atrazine	—	1	1
28	57-74-9	Chlordane	1	1	1

**) Releases of pollutants falling into several categories of pollutants shall be reported for each of these categories.*

[62] **CAS Registry Numbers** are unique numerical identifiers assigned by the "Chemical Abstracts Service" to every chemical described in the open scientific literature (currently including those described from at least 1957 through the present) and including elements, isotopes, organic and inorganic compounds, organometallics, metals, alloys, coordination compounds, minerals, and salts; as well as standard mixtures, compounds, polymers; biological sequences including proteins & nucleic acids; nuclear particles, and nonstructurable materials (aka 'UVCB's- i.e., materials of Unknown, Variable Composition, or Biological origin).

No	CAS number	Pollutant (1)	Threshold for releases (column 1)		
			to air (column 1a) kg/year	to water (column 1b) kg/year	to land (column 1c) kg/year
29	143-50-0	Chlordecone	1	1	1
30	470-90-6	Chlorfenvinphos	—	1	1
31	85535-84-8	Chloro-alkanes, C10-C13	—	1	1
32	2921-88-2	Chlorpyrifos	—	1	1
33	50-29-3	DDT	1	1	1
34	107-06-2	1,2-dichloroethane (EDC)	1 000	10	10
35	75-09-2	Dichloromethane (DCM)	1 000	10	10
36	60-57-1	Dieldrin	1	1	1
37	330-54-1	Diuron	—	1	1
38	115-29-7	Endosulphan	—	1	1
39	72-20-8	Endrin	1	1	1
40		Halogenated organic compounds (as AOX) (9)	—	1 000	1 000
41	76-44-8	Heptachlor	1	1	1
42	118-74-1	Hexachlorobenzene (HCB)	10	1	1
43	87-68-3	Hexachlorobutadiene (HCBD)	—	1	1
44	608-73-1	1,2,3,4,5,6-hexachlorocyclohexane(HCH)	10	1	1
45	58-89-9	Lindane	1	1	1
46	2385-85-5	Mirex	1	1	1
47		PCDD + PCDF (dioxins + furans) (as Teq) (10)	0,0001	0,0001	0,0001
48	608-93-5	Pentachlorobenzene	1	1	1
49	87-86-5	Pentachlorophenol (PCP)	10	1	1
50	1336-36-3	Polychlorinated biphenyls (PCBs)	0,1	0,1	0,1
51	122-34-9	Simazine	—	1	1
52	127-18-4	Tetrachloroethylene (PER)	2 000	10	—
53	56-23-5	Tetrachloromethane (TCM)	100	1	—
54	12002-48-1	Trichlorobenzenes (TCBs) (all isomers)	10	1	—
55	71-55-6	1,1,1-trichloroethane	100	—	—
56	79-34-5	1,1,2,2-tetrachloroethane	50	—	—
57	79-01-6	Trichloroethylene	2 000	10	—
58	67-66-3	Trichloromethane	500	10	—
59	8001-35-2	Toxaphene	1	1	1
60	75-01-4	Vinyl chloride	1 000	10	10
61	120-12-7	Anthracene	50	1	1
62	71-43-2	Benzene	1 000	200 (as BTEX) (11)	200 (as BTEX) (11)
63		Brominated diphenylethers (PBDE) (12)	—	1	1

No	CAS number	Pollutant (1)	Threshold for releases (column 1)		
			to air (column 1a) kg/year	to water (column 1b) kg/year	to land (column 1c) kg/year
64		Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	—	1	1
65	100-41-4	Ethyl benzene	—	200 (as BTEX) (11)	200 (as BTEX) (11)
66	75-21-8	Ethylene oxide	1 000	10	10
67	34123-59-6	Isoproturon	—	1	1
68	91-20-3	Naphthalene	100	10	10
69		Organotin compounds(as total Sn)	—	50	50
70	117-81-7	Di-(2-ethyl hexyl) phthalate (DEHP)	10	1	1
71	108-95-2	Phenols (as total C) (13)	—	20	20
72		Polycyclic aromatic hydrocarbons (PAHs) (14)	50	5	5
73	108-88-3	Toluene	—	200 (as BTEX) (11)	200 (as BTEX) (11)
74		Tributyltin and compounds (15)	—	1	1
75		Triphenyltin and compounds (16)	—	1	1
76		Total organic carbon (TOC) (as total C or COD/3)	—	50 000	—
77	1582-09-8	Trifluralin	—	1	1
78	1330-20-7	Xylenes (17)	—	200 (as BTEX) (11)	200 (as BTEX) (11)
79		Chlorides (as total Cl)	—	2 million	2 million
80		Chlorine and inorganic compounds (as HCl)	10 000	—	—
81	1332-21-4	Asbestos	1	1	1
82		Cyanides (as total CN)	—	50	50
83		Fluorides (as total F)	—	2 000	2 000
84		Fluorine and inorganic compounds (as HF)	5 000	—	—
85	74-90-8	Hydrogen cyanide (HCN)	200	—	—
86		Particulate matter (PM10)	50 000	—	—
87	1806-26-4	Octylphenols and Octylphenol ethoxylates	—	1	—
88	206-44-0	Fluoranthene	—	1	—
89	465-73-6	Isodrin	—	1	—
90	36355-1-8	Hexabromobiphenyl	0.1	0.1	0.1
91	191-24-2	Benzo(g,h,i)perylene		1	

(1) *Unless otherwise specified any pollutant specified in Annex II shall be reported as the total mass of that pollutant or, where the pollutant is a group of substances, as the total mass of the group.*

(2) *A hyphen (—) indicates that the parameter and medium in question do not trigger a reporting requirement.*

(3) *Total mass of hydrogen fluorocarbons: sum of HFC23, HFC32, HFC41, HFC4310mee, HFC125, HFC134, HFC134a, HFC152a, HFC143, HFC143a, HFC227ea, HFC236fa, HFC245ca, HFC365mfc.*

(4) *Total mass of perfluorocarbons: sum of CF4, C2F6, C3F8, C4F10, c-C4F8, C5F12, C6F14.*

(5) *Total mass of substances including their isomers listed in Group VIII of Annex I to Regulation (EC) No 2037/2000 of the European Par- liament and of the Council of 29 June 2000 on substances that deplete the ozone layer (OJ L 244, 29.9.2000, p. 1). Regulation as amended by Regulation (EC) No 1804/2003 (OJ L 265, 16.10.2003, p. 1).*

(6) *Total mass of substances including their isomers listed in Group I and II of Annex I to Regulation (EC) No 2037/2000.*

(7) *Total mass of substances including their isomers listed in Group III and VI of Annex I to Regulation (EC) No 2037/2000.*

(8) *All metals shall be reported as the total mass of the element in all chemical forms present in the release.*

(9) *Halogenated organic compounds which can be adsorbed to activated carbon expressed as chloride.*

(10) *Expressed as I-TEQ.*

(11) *Single pollutants are to be reported if the threshold for BTEX (the sum parameter of benzene, toluene, ethyl benzene, xylenes) is exceeded.*

(12) *Total mass of the following brominated diphenylethers: penta-BDE, octa-BDE and deca-BDE.*

(13) *Total mass of phenol and simple substituted phenols expressed as total carbon.*

(14) *Polycyclic aromatic hydrocarbons (PAHs) are to be measured for reporting of releases to air as benzo(a)pyrene (50-32-8), benzo(b)fluo- ranthene (205-99-2), benzo(k)fluoranthene (207-08-9), indeno(1,2,3-cd)pyrene (193-39-5) (derived from Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants (OJ L 229, 29.6.2004, p. 5)).*

(15) *Total mass of tributyltin compounds, expressed as mass of tributyltin.*

(16) *Total mass of triphenyltin compounds, expressed as mass of triphenyltin.*

(17) *Total mass of xylene (ortho-xylene, meta-xylene, para-xylene).*

APPENDIX II- List of E-PRTR ANNEX I Activities

Code	Description
1	**Energy sector**
1.(a)	Mineral oil and gas refineries
1.(b)	Installations for gasification and liquefaction
1.(c)	Thermal power stations and other combustion installations
1.(d)	Coke ovens
1.(e)	Coal rolling mills
1.(f)	Installations for the manufacture of coal products and solid smokeless fuel
2	**Production and processing of metals**
2.(a)	Metal ore (including sulphide ore) roasting or sintering installations
2.(b)	Installations for the production of pig iron or steel (primary or secondary melting) including continuous casting
2.(c)	Installations for the processing of ferrous metals
2.(c).(i)	- Hot-rolling mills
2.(c).(ii)	- Smitheries with hammers
2.(c).(iii)	- Application of protective fused metal coats
2.(d)	Ferrous metal foundries
2.(e)	Installations:
2.(e).(i)	- For the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes
2.(e).(ii)	- For the smelting, including the alloying, of non-ferrous metals, including recovered products (refining, foundry casting, etc.)
2.(f)	Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process
3	**Mineral industry**
3.(a)	Underground mining and related operations
3.(b)	Opencast mining and quarrying
3.(c)	Installations for the production of:
3.(c).(i)	- Cement clinker in rotary kilns
3.(c).(ii)	- Lime in rotary kilns
3.(c).(iii)	- Cement clinker or lime in other furnaces
3.(d)	Installations for the production of asbestos and the manufacture of asbestos-based products
3.(e)	Installations for the manufacture of glass, including glass fibre
3.(f)	Installations for melting mineral substances, including the production of mineral fibres
3.(g)	Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain
4	**Chemical industry**
4.(a)	Chemical installations for the production on an industrial scale of basic organic chemicals, such as:
4.(a).(i)	- Simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)
4.(a).(ii)	- Oxygen-containing hydrocarbons
4.(a).(iii)	- Sulphurous hydrocarbons
4.(a).(iv)	- Nitrogenous hydrocarbons
4.(a).(ix)	- Phosphorus-containing hydrocarbons
4.(a).(v)	- Halogenic hydrocarbons
4.(a).(vi)	- Organometallic compounds
4.(a).(vii)	- Basic plastic materials (polymers, synthetic fibres and cellulose-based fibres)
4.(a).(viii)	- Synthetic rubbers
4.(a).(x)	- Dyes and pigments

Code	Description
4.(a).(xi)	- Surface-active agents and surfactants
4.(b)	Chemical installations for the production on an industrial scale of basic inorganic chemicals, such as:
4.(b).(i)	- Gases
4.(b).(ii)	- Acids
4.(b).(iii)	- Bases
4.(b).(iv)	- Salts
4.(b).(v)	- Non-metals, metal oxides or other inorganic compounds
4.(c)	Chemical installations for the production on an industrial scale of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)
4.(d)	Chemical installations for the production on an industrial scale of basic plant health products and of biocides
4.(e)	Installations using a chemical or biological process for the production on an industrial scale of basic pharmaceutical products
4.(f)	Installations for the production on an industrial scale of explosives and pyrotechnic products
5	**Waste and wastewater management**
5.(a)	Installations for the recovery or disposal of hazardous waste
5.(b)	Installations for the incineration of non-hazardous waste in the scope of Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste
5.(c)	Installations for the disposal of non-hazardous waste
5.(d)	Landfills (see note in Guidance Document)
5.(e)	Installations for the disposal or recycling of animal carcasses and animal waste
5.(f)	Urban waste-water treatment plants
5.(g)	Independently operated industrial waste-water treatment plants which serve one or more activities of this annex
6	**Paper and wood production and processing**
6.(a)	Industrial plants for the production of pulp from timber or similar fibrous materials
6.(b)	Industrial plants for the production of paper and board and other primary wood products
6.(c)	Industrial plants for the preservation of wood and wood products with chemicals
7	**Intensive livestock production and aquaculture**
7.(a)	Installations for the intensive rearing of poultry or pigs
7.(a).(i)	- With 40 000 places for poultry
7.(a).(ii)	- With 2 000 places for production pigs (over 30kg)
7.(a).(iii)	- With 750 places for sows
7.(b)	Intensive aquaculture
8	**Animal and vegetable products from the food and beverage sector**
8.(a)	Slaughterhouses
8.(b)	Treatment and processing intended for the production of food and beverage products from:
8.(b).(i)	- Animal raw materials (other than milk)
8.(b).(ii)	- Vegetable raw materials
8.(c)	Treatme nt and processing of milk
9	**Other activities**
9.(a)	Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles
9.(b)	Plants for the tanning of hides and skins
9.(c)	Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating
9.(d)	Installations for the production of carbon (hard-burnt coal) or electro-graphite by means of incineration or graphitisation
9.(e)	Installations for the building of, and painting or removal of paint from ships

APPENDIX III - Number of facilities per activity and country E-PRTR 2009

Main Activity	Activity	All countries	Austria	Belgium	Bulgaria	Cyprus	Czech r.	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Liechtenstein	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom
1	1.(a)	173	1	5	2		4	2	3	2	14	26	4	3		1	16			1			6	7	10	2	7	1	2		10	3	2	39
	1.(b)	36									5	1													2							1		27
	1.(c)	1713	12	37	26	3	66	25	9	76	137	240	26	33		21	177	7		11	1	2	62	3	202	19	31	17	29	7	137	64	5	228
	1.(d)	21					2				2	4		1			1							2	7						2			
	1.(e)	32									31	1																						
	1.(f)	14						1			8	5																						
2	2.(a)	24		5						1	4		1				1						3		2			1			1	3		2
	2.(b)	241	2	13	3		9	2		5	31	35	5	2			42				3		2	1	8	2	10		2	3	27	10	1	23
	2.(c)	441	5	11	2		20	4	1	3	31	141	2	4			69	1			7		10	1	33	9	8		3	1	47	10	3	15
	2.(d)	425	2	8	1		35	3		9	46	141		2			38						10	8	37	7	5		4	13	43	10	2	1
	2.(e)	834	6	16	11	1	32	4	2	8	87	219	10	14	5	2	116				3		20	29	43	11	13	3	7	11	76	16	8	61
	2.(f)	2307	16	53	4	1	70	21	4	38	486	471	5	34		9	266				1		60	12	107	47	10		20	22	252	63	22	213
3	3.(a)	320			6		9		2	5	2	40	2	65		4	53							3	91	3	10			2	7	1	2	13
	3.(b)	360	1	14	5	5	6		4		66	10	3	3		16	4							1	33	7	3		3		57	2	1	116
	3.(c)	398	2	22	8	2	9	5	1	6	50	53	8	6	1	6	59	2		1	1		2	6	16	10	8	4	10	5	54	10	7	24
	3.(e)	369	3	14	4		19	4	1	3	49	65	1	9		1	49	1		2	2		9	3	28	8	3	1	4	4	49	3	2	28
	3.(f)	56		1			3			6	11	6		2	1		7			1			1	2	3	3			1	2	1	2	1	2
	3.(g)	632	3	11	3		11	10	1	2	42	37	1	11			129			1			24	2	26	51	2	3	5	4	201	2	3	47
4	4.(a)	1667	10	116	2		59	24	2	32	255	351	6	21	1	18	149			2	1	2	80	15	56	18	7	3	10	10	143	37	25	212
	4.(b)	461	2	19	2		12			12	56	87	1	6		4	34						26	8	9	7	9	2	2	5	59	8	2	89
	4.(c)	71		2	2		1		1	1	6	4	1	2			3			2			4	2	7	2	6	1			21	1		2
	4.(d)	88	1	3	1		1	1			23	8		2		2	10						3		4					1	13		5	10
	4.(e)	437	3	13	2		9	13		5	60	31		15		38	78	3				3	8	3	12	2	4		3	3	55	10	30	34
	4.(f)	68		2	1		5		1	1	18	13		1		1	3							1	3			1	1		8	4	2	2
5	5.(a)	2181	16	273	1	1	59	14	25	19	197	754	4	16		12	166	1		8	1	1	48	33	37	21	1		10	5	78	22	8	350
	5.(b)	396	8	10			2	19		2	134	90		1			27				1		12	13	1	3			1	1	9	15	30	17
	5.(c)	2285	7	2	5		5	10		10	44	153	1	1		46	101	2			1	2	41	2	5	1			3		12	5	2	1824
	5.(d)	1423	8	20	22		4	8	8	51	162	220	8	17	2	29	108	1		8	2		29	50	81	41	43		16	38	134	66	1	246
	5.(e)	149	1	3	1	1	6	2	1	2	13	26		10		3	10	1					9	13	6	7	1		1	4	22			6
	5.(f)	1041	21	19	15	1	29	26	6	18	116	218	3	19		6	64	2		7	2		49		73	24	21		5	5	116	15	18	143

Main Activity	Activity	All countries	Austria	Belgium	Bulgaria	Cyprus	Czech r.	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Liechtenstein	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom
	5.(g)	61	5	2			2			1	28	4					2								9		2				1			5
6	6.(a)	149	1	4	1		1	1	1	16	28	2		1			2						1	11	3	5			1		11	41		18
	6.(b)	634	12	11	4		17		4	31	61	146	7	8		4	95			3	1		21	6	32	17	10		6	9	65	12	10	42
	6.(c)	54		8			4	1		4	21	4				2				1			1		2	2				1	2	1		
7	7.(a)	5456		73	48	50	189	99	16	64	724	433	2	387	7	60	490	12		42			99	2	106	160	237		77	21	1591	55		412
	7.(b)	274						1			1				5							4		167							3			93
8	8.(a)	456	6	24		1	7	5	2	6	54	74		10		23	11						12	12	52	9	6		4	7	60	7		64
	8.(b)	1022	3	43			30	7		8	167	103	10	17		12	65		1	4			52	29	59	29	8	2	7	4	137	13	4	208
	8.(c)	475		17			8	17	1	11	115	74	3	4		13	16	1		3	1		36	8	28	9	1		5	2	31	16	5	50
9	9.(a)	214	1	18	2		6	1			25	25		1			25						3			18	3				22		3	61
	9.(b)	18					1	1			2	2					5						1						1		2	1		2
	9.(c)	902	11	32			49	9	5	20	156	236	7	3		6	106			2	2		26		39	25	11		15	5	88	21	14	14
	9.(d)	31	1								7	10					1						1		1		1		1		3		1	4
	9.(e)	101		1	4			7		3	8	23	4									1	26	2	5	2	3				10	1		1

Legend

Top 3 highest amount of facilities per country

Number of releases per activity in all countries is less than 20

APPENDIX IV – E-PRTR 2009 Number of releases to air per pollutant and country

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Chlorinated organic substances																																
1,1,1-trichloroethane		1							2																						19	**22**
1,1,2,2-tetrachloroethane		1							1		1												1								3	**7**
1,2-dichloroethane (DCE)	1	2							6	4					3					1	1	2				1		1	1		4	**27**
Dichloromethane (DCM)		19			2			2	47	2	3	5		2	12	1				9		4				1	1	4	1	7	18	**140**
Hexachlorobenzene (HCB)								1							1																	**2**
PCDD + PCDF (dioxins + furans) (as Teq)	1	12			10	1		3	35	31	1	3		2	23			1		4	5	28	9	1			2	14	6	2	17	**211**
Pentachlorobenzene		1						1																							1	**3**
Pentachlorophenol (PCP)		2													1													1				**4**
Polychlorinated biphenyls (PCBs)		10			1			1	2	3		1			25			1										4		1	11	**60**
Tetrachloroethylene (PER)		3			1				10	1		1			1							2	1					2		1	5	**28**
Tetrachloromethane (TCM)		2							3	2	1				1					3	1										2	**15**
Trichlorobenzenes (TCBs) (all isomers)									3	1					1								1							1	14	**21**
Trichloroethylene		2			1				5						1					1						1			2	1	7	**21**
Trichloromethane		3							12			1				1				1		2	5							1	6	**32**
Vinyl chloride		2							10	10		1			2					3	2	1				1		3	1		7	**43**
Greenhouse gases																																
Carbon dioxide (CO2)	24	65	26	5	65	23	7	74	220	397	35	30	4	19	218	3	5	7	2	89	34	126	41	52		28	5	185	91	32	244	**2,156**
Carbon dioxide (CO2) excluding biomass				1			7	73		385									2	50	34			3			4		89		28	**676**
Greenhouse gases (confidential)			1																													**1**
Hydro-fluorocarbons (HFCs)		18			2	1			60	11	1			5	17					9		14	3				1	12	13	2	55	**224**
Methane (CH4)	10	20	25	4	5	6	5	43	174	195	12	2	6	62	136	1	10	3	2	42	6	87	44	78		9	34	170	21	1	362	**1,575**
Nitrous oxide (N2O)		17	2	2	5	11	1	23	90	138	11	1	1	6	33	3	1			28	3	20	14	12			2	55	38	3	109	**629**
Perfluorocarbons (PFCs)		2							5	7	1		3	1	4					2	7	2		1			1	3	1		7	**47**
Sulphur hexafluoride (SF6)		1							7	4				1	10					1									1	2	6	**33**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Heavy metals																																
Arsenic and compounds (as As)		8	2	4	19	1	3	5	39	36	7	3		1	11			1	2	3	3	20	11	1		6	1	35	3	1	22	**248**
Cadmium and compounds (as Cd)		11	4	2	16		2	5	43	23	6	3		1	9			2	2	5	4	15	16	10		6		38	3	1	18	**245**
Chromium and compounds (as Cr)		16	1		4		3	4	34	17	8			1	15					1	1	18	6	1		2	2	20	4	1	16	**175**
Copper and compounds (as Cu)		7	2	1	5		2	4	24	25	7				17					3	4	25	7			3	1	18	2		21	**178**
Lead and compounds (as Pb)	1	9	4		14		3	2	25	22	4	1			17					6	2	20	6	3		2		24	1	3	23	**192**
Mercury and compounds (as Hg)	3	18	2	2	39	8	2	8	71	103	16	6		1	24	1		1		9	3	24	9	12		6	4	52	6	17	35	**482**
Nickel and compounds (as Ni)	2	16	3	4	15		3	18	63	51	11	1		4	45				2	5	11	26	40	3		4	1	72	20	3	46	**469**
Zinc and compounds (as Zn)	2	16	2	4	9	1	3	13	85	26	9	3		2	53			4	2	8	7	35	26	7		3	1	60	20	10	34	**445**
Inorganic substances																																
Fluorides (as total F)																					15											**15**
Particulate matter (PM10)	2	7	11	5	22	4	3	11	22	49	26	1	3	2	20	2	2	1	2	13	18	117	31	21	10		2	70	18		46	**541**
Total nitrogen																					1											**1**
Other gases																																
Ammonia (NH_3)	3	93	64	50	202	104	14	73	765	491	6	381	5	60	525	11	44			113	8	98	174	###		37	23	1620	79	10	395	**5,691**
Carbon monoxide (CO)	5	19	9	1	15	3	2	10	35	88	18	6	1	1	47		3	4		19	2	53	16	10		13	6	64	17	6	69	**542**
Chlorine and inorganic compounds (as HCl)	2	18			33	9	4	26	32	77	3	4		1	25					1		81	16	1		2	3	57	7	1	39	**442**
Chlorofluorocarbons (CFCs)		3			1				4	17	1			10	3					17								4	3	3	223	**289**
Fluorine and inorganic compounds (as HF)		8			23	15		13	21	34	7	1	3		10		1			15	1	15	4			2	3	82	5		27	**290**
Halons		1							1													1							1	1	9	**14**
Hydrochlorofluorocarbons(HCFCs)	2	34			4	7			102	32	5			12	24				1	78	3	56	6				2	12	4	12	347	**743**
Hydrogen cyanide (HCN)	2	10			3	2			9	12		1			2			1				9				1		10			8	**70**
Nitrogen oxides (NOx/NO2)	18	94	28	5	85	42	8	87	265	431	40	37		26	281	8	8	7	2	84	29	172	55	51	32	37	12	305	72	11	303	**2,635**
Non-methane volatile organic compounds (NMVOC)	6	58	3	1	12	1	2	15	172	108	9	4		2	80	1	2	2		29	11	20	28	10		7	5	104	29	7	149	**877**
Other gases (confidential)			6							1																						**7**
Sulphur oxides (SOx/SO2)	5	46	24	4	77	16	7	51	154	203	26	15	4	12	84	2	4	3	2	26	20	210	39	32	27	18	5	104	28	9	87	**1,344**
Anthracene		1													1					2								2			2	**8**
Benzene	2	11	2		2	1	1	4	42	55	6	3			29		1	1		15		11	6			3	3	30	7	7	38	**280**
Di-(2-ethyl hexyl) phthalate (DEHP)		5			1							1			1							3						16	1		3	**31**
Ethylene oxide		1							2	1										1		2				1		1			3	**12**
Naphthalene		4			1			4	9	10					1			2		4		4	2			1	1	10	1		25	**79**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Phenols (as total C)																					6											**6**
Polycyclic aromatic hydrocarbons (PAHs)		6			7			1	13	7	1	1	3		7	1				1	11	24	4				1	32	1		5	**126**
Total organic carbon (TOC) (as total C or COD/3)																					22											**22**
Pesticides																																
1,2,3,4,5,6-hexa-chlorocyclohexane (HCH)															1																	**1**

Legend

< 6

Top 10 releases in the pollutant group

Note: *Liechtenstein did not report any release reports to air and is thus not included in the table.*

**…no threshold for air included in Annex II of the E-PRTR Regulation for these pollutants*

APPENDIX V – E-PRTR 2009 Number of releases to water per pollutant and per country

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	All
Chlorinated organic substances																															
1,1,1-trichloroethane																					1										**1**
1,2-dichloroethane (DCE)		2			2				7	2		1			10					2		4		1	1		3	1	1	5	**42**
Brominated diphenylethers (PBDE)		2			1				1						1															8	**13**
Chloro-alkanes, C10-C13		1			2				3					5	1												2				**14**
Dichloromethane (DCM)		3			2				16	7					8					1						1	2	2	2	19	**63**
Halogenated organic compounds (as AOX)	2	11			9	1		17	39	51		2			1					15		5	13		5	1	43	28	1	93	**337**
Hexabromobiphenyl					2																										**2**
Hexachlorobenzene (HCB)		1													2							1									**4**
Hexachlorobutadiene (HCBD)		1			3				2						4							4								2	**16**
PCDD + PCDF (dioxins + furans) (as Teq)		1						1	3	3										3		1	1		1		2		1		**17**
Pentachlorobenzene									1						4																**5**
Pentachlorophenol (PCP)		1			1				1						4					1		3	2				3			11	**27**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	All
Polychlorinated biphenyls (PCBs)		1							6	2				3	3								4		2		1			1	**23**
Tetrachloroethylene (PER)		2			1				6	2				3	9							5					2			5	**35**
Tetrachloromethane (TCM)		1			1			1	5						5					1		5		1		1	3	2		7	**33**
Trichlorobenzenes (TCBs) (all isomers)					3				2	1					6							3						2		4	**21**
Trichloroethylene		1							5					1	6							2	1	1	1		1	2		8	**29**
Trichloromethane		4			1			1	9	5					14					3		10	2		2		10	1		29	**91**
Vinyl chloride		1			1				5	1					4						1						3	1		2	**19**
Heavy metals																															
Arsenic and compounds (as As)	3	33	7		15	3		23	51	54	3	1		8	85	1	1	1	2	54	13	35	21	2	5		38	33	2	16 7	**661**
Cadmium and compounds (as Cd)		7	8	1	13			11	33	44		1		4	56	1			1	7	7	46	16	9	3		15	19	3	38	**343**
Chromium and compounds (as Cr)	1	12	11		7	3		12	35	48	4	2		1	63	1	5		1	17	6	32	19	9	2	2	24	18	2	53	**390**
Copper and compounds (as Cu)	9	19	15	1	16	6	1	25	94	14 9	2	2		3	75	1	4	1	1	45	21	46	35	8	3	1	41	41	7	20 7	**879**
Heavy metals (confidential)			1																											**1**
Lead and compounds (as Pb)	4	16	9		9	5		10	50	83	2	2		7	81	1	1	1	1	30	9	69	16	10	2	1	24	26	3	87	**559**
Mercury and compounds (as Hg)	2	12	2	1	18	4		4	44	68	4	2		8	65	1	2			9	3	34	17	3	7		25	16	5	52	**408**
Nickel and compounds (as Ni)	10	42	6	1	19	25		38	12 3	20 4	6	3		9	13 1	1	4	1	2	63	14	76	26	16	3	5	54	59	5	16 0	**1,10 6**
Zinc and compounds (as Zn)	12	53	13		21	29	1	42	14 0	23 4	2	2		10	14 2	1	8	2	2	78	15 3	10 2	37	17	3	5	85	56	6	27 8	**1,53 4**
Inorganic substances																															

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	All
Asbestos		1								11																				81	**82**
Chlorides (as total Cl)		33			8			9	30	7		1		5	41		3			44		57	13	8	4	1	54	8	9	82	**527**
Cyanides (as total CN)	1	9	3		9			2	13	14	1	1	1	3	20					29	5	6	7	3	1	1	8	3	2	38	**180**
Fluorides (as total F)	5	21	1		12		1	8	33	50		3	3	7	25		2	1	1	36	10	16	4	1	3	1	52	15	3	10 6	**420**
Inorganic substances (confidential)			2																												**2**
Total nitrogen	16	25	15		26	12	3	38	11 5	18 6	4	19	6	6	84	2	6	2	2	68	12 9	69	26	23	11	4	96	42	20	18 3	**1,23 8**
Total phosphorus	12	27	16	1	15	7	3	14	10 8	98	6	16	5	7	77	1	3	2	3	70	15 1	39	34	23	9	4	11 0	25	14	20 9	**1,10 9**
Other gases																															
Ammonia (NH3)																					5										**5**
Sulphur oxides (SOx/SO2)																					1										**1**
Other organic substances																															
Anthracene					2				1					1								1								31	**35**
Benzene					2				4	1					1					1		1						1	1	74	**86**
Benzo(g,h,i)perylene									1	1					4												2	1		10	**19**
Di-(2-ethyl hexyl) phthalate (DEHP)	3	1			3	27		6	14	10				5	4					38		1	12		4	2	5	8		99	**242**
Ethyl benzene									2	1										1							1	1	1	50	**57**
Ethylene oxide					1				1																						**2**
Fluoranthene		1			2				2	2	2			1	2					2		1	2		1		4	2		20	**44**
Naphthalene		1							1					2	2					1		1	1				1			60	**70**
Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	4	1			1	2		4	9	11				3	10							2	9	1	1	3	17	5		10 3	**186**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	All
Octylphenols and Octylphenol ethoxylates					1			2	2	5					2							2				1	13	1		16	**45**
Organotin compounds (as total Sn)									1	1					3																**5**
Phenols (as total C)		10	5		10	2	1	9	44	13	4	2		6	59	1				6	4	51	8	15	4		23	10	2	96	**385**
Polycyclic aromatic hydrocarbons (PAHs)		4			1			1	4	2				4	15						8	3	4		3		13	1	1	7	**71**
Toluene		1			1				4	1					2					1	1	1					1	1	1	67	**82**
Total organic carbon (TOC) (as total C or COD/3)									19	23											15									25	**1,51**
Xylenes	27	41	13		16	23	6	36	8	1	6	24	1	6	91	1	1	3	5	75	9	52	34	19	13	7	83	63	19	7	**0**
									5	1										1		1				1		1	1	63	**74**
Pesticides																															
1,2,3,4,5,6-hexa-chlorocyclohexane (HCH)									3	2												1			1						**7**
Alachlor									1					1	1															1	**4**
Aldrin															5																**5**
Atrazine		1							1					3	3					1							2				**11**
Chlordecone									1																						**1**
Chlorfenvinphos																														1	**1**
Chlorpyrifos					1				2																						**3**
DDT									1					1	1																**3**
Dieldrin														4	5																**9**
Diuron	1	1			1				6	2				4	1							2	1				12			47	**78**
Endosulphan									1	1				1	1																**4**
Endrin															5							1									**6**
Heptachlor															1																**1**
Isodrin					1									3	4																**8**
Isoproturon									3	3					1					3		1					1				**12**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	All
Lindane									1						2							1	1								**5**
Simazine		1													4												2			1	**8**
Toxaphene					2																										**2**
Tributyltin and compounds									1	1					1							1			1		1			1	**7**
Trifluralin															1															1	**2**
Triphenyltin and compounds															1										1						**2**
Total	**112**	**406**	**127**	**5**	**262**	**149**	**16**	**314**	**1294**	**1712**	**46**	**84**	**16**	**135**	**1259**	**13**	**40**	**14**	**21**	**706**	**701**	**793**	**366**	**170**	**97**	**42**	**882**	**495**	**112**	**2940**	**13329**

Legend

< 6

***Note**: Liechtenstein and Serbia did not report any release reports to water and is thus not included in the table.*

**…no threshold for water included in Annex II of the E-PRTR Regulation for these pollutants*

APPENDIX VI – E-PRTR 2009 Number of transfers in water per pollutant and per country

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Finland	France	Germany	Hungary	Ireland	Italy	Lithuania	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Chlorinated organic substances																								
1,2-dichloroethane (DCE)					1			4	1			6		1	1		1					1	3	**19**
Brominated diphenylethers (PBDE)									1														1	**2**
Chloro-alkanes, C10-C13									1			1								4				**6**
Dichloromethane (DCM)					1			5	7		4	5		2	1	1			1	2		7	5	**41**
Halogenated organic compounds (as AOX)	2	1			2			12	26			2		1	3	1			1	4		4	1	**60**
Hexabromobiphenyl																				1				**1**
Hexachlorobenzene (HCB)							1					3											1	**5**
Hexachlorobutadiene (HCBD)												3											1	**4**
PCDD + PCDF (dioxins + furans) (as Teq)							1	2	3															**6**
Pentachlorobenzene												1												**1**
Pentachlorophenol (PCP)									1			1											1	**3**
Polychlorinated biphenyls (PCBs)					1			1				4												**6**
Tetrachloroethylene (PER)					2			3				5											1	**11**
Tetrachloromethane (TCM)					1			2	1			1		1	1								2	**9**
Trichlorobenzenes (TCBs) (all isomers)		1									1	3											1	**6**
Trichloroethylene								1				3		1	2									**7**
Trichloromethane		1			2			5	2			6		1	3					1			5	**26**
Vinyl chloride								1	7			4		1		1				1			2	**17**
Heavy metals																								
Arsenic and compounds (as As)	2	3	1	1	7		2	10	20		1	23		10	7	7			1	17	1		15	**128**
Cadmium and compounds (as Cd)	1	1	1		3			8	5			11		1	6	6	1			12			7	**63**
Chromium and compounds (as Cr)		3	2		7			7	16			24		1	7	7		1		16		2	15	**108**
Copper and compounds (as Cu)	2	4	3		4	1	2	12	41		2	15		9	11	4	1			20	1	5	26	**163**
Lead and compounds (as Pb)	1	2	1		7			12	21			14		2	15	4	1	1		10		2	17	**110**
Mercury and compounds (as Hg)	1				6		2	10	15	1		9		3	8	3			1	17	1	1	9	**87**
Nickel and compounds (as Ni)	4	5		3	8		3	24	59			47		11	19	16	3			46	1	3	43	**295**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Finland	France	Germany	Hungary	Ireland	Italy	Lithuania	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Zinc and compounds (as Zn)	3	6	3		12		4	26	52	2	2	38		10	27	6	2	1	2	33	5	3	37	**274**
Inorganic substances																								
Asbestos															1									**1**
Chlorides (as total Cl)		2			2	1		4	23		1	5		9	9	3				2	2	5	4	**72**
Cyanides (as total CN)	1	3			4		1	3	14	1		6		3	3	3				3			4	**49**
Fluorides (as total F)	3	2	1		5		1	5	17		1	10		2	2	1	1	2		7		4	8	**72**
Inorganic substances (confidential)									1															**1**
Total nitrogen	4	3	3		8	3	9	16	58		1	25		22	16	10	2		3	14	5	7	19	**228**
Total phosphorus	2	5	2		8	6	16	45	76	3	4	12	3	40	25	1	3	2	4	18	13	7	17	**312**
Other organic substances																								
Anthracene		2						1	1			2				1							2	**9**
Benzene	1				1		1	1	6			9		3	1								7	**30**
Benzo(g,h,i)perylene												1				1								**2**
Di-(2-ethyl hexyl) phthalate (DEHP)					1							3				1							1	**6**
Ethyl benzene	1								1			6		1		1								**10**
Ethylene oxide									2					1										**3**
Fluoranthene		1							4			2		2						1			1	**11**
Naphthalene		2			1		1	1	3			3		1	1	1				3		1	3	**21**
Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)									2		1	5			1	1				1	2	1	4	**18**
Octylphenols and Octylphenol ethoxylates									2			1			1					3				**7**
Organotin compounds (as total Sn)									1			2								2				**5**
Other organic substances (confidential)									1															**1**
Phenols (as total C)	7	7	1		9	1	5	28	44		3	25		13	23	18	2		1	36	3	3	25	**254**
Polycyclic aromatic hydrocarbons (PAHs)	1	3			2	1		2	6			3			2	7				8	1		1	**37**
Toluene	1				1			5	13		1	11		3	2	2		1		1	1	10	14	**66**
Total organic carbon (TOC) (as total C or COD/3)	17	31	4		15	20	33	168	303	16	5	70		70	32	25	6	9	7	56	25	21	146	**1,079**
Xylenes	2						1	1	5			9		2	1	1						6	5	**33**

Country/pollutant	Austria	Belgium	Bulgaria	Cyprus	Czech Rep.	Denmark	Finland	France	Germany	Hungary	Ireland	Italy	Lithuania	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	UK	All
Pesticides																								
Alachlor												1												**1**
Aldrin												4								1				**5**
Atrazine												2												**2**
Chlordane												1												**1**
Chlorfenvinphos																							1	**1**
DDT												3												**3**
Dieldrin												4												**4**
Diuron												1											1	**2**
Endosulphan												2												**2**
Endrin												4												**4**
Heptachlor												2												**2**
Isodrin												3												**3**
Lindane												1												**1**
Simazine												2												**2**
Total	**56**	**88**	**22**	**4**	**121**	**33**	**83**	**425**	**862**	**23**	**27**	**469**	**3**	**227**	**231**	**133**	**23**	**17**	**21**	**340**	**61**	**93**	**456**	**3818**

Legend < 6

Note: *Estonia, Iceland, Latvia, Luxembourg,* Liechtenstein,Malta, Norway, Serbia, did not report any transfer reports in water and is thus not included in the table.

APPENDIX VII– Summary table of the number of E-PRTR facilities attributed to the categories A, B or C and the UWWTPs included in the UWWTD database

Country	E-PRTR			UWWTD database	
	Category A	Category B	Category C	all UWWTPs	WWTPs with an incoming load and/or a treatment capacity of more than 100,000 pe
Austria	21	0	3	650	32
Belgium	19	0	3	567	17
Bulgaria	15	0	0	852	No data
Cyprus	1	0	0	13	3
Czech Republic	29	0	1	1080	25
Denmark	26	0	6	426	27
Estonia	6	0	0	44	7
Finland	18	0	24	220	14
France	116	0	36	3280	141
Germany	218	2	12	4322	240
Greece	3	0	0	239	12
Hungary	19	0	2	648	27
Iceland	0	0	0	No data	No data
Ireland	6	0	0	451	7
Italy	64	3	16	5726	169
Latvia	2	0	0	134	6
Lithuania	7	0	0	97	9
Luxenbourg	2	0	0	34	1
Malta	0	0	0	8	1
Netherlands	49	5	20	415	61
Norway	0	0	1	No data	No data
Poland	73	1	7	1364	109
Portugal	24	0	0	461	35
Romania	21	0	5	583	36
Slovakia	5	0	0	293	16
Slovenia	5	0	0	144	4
Spain	116	0	2	2426	188
Sweden	15	0	0	353	No data
Switzerland	18	0	0	No data	No data
United Kingdom	143	1	9	1901	157
All countries	**1041**	**12**	**147**	**26731**	**1344**

APPENDIX VIII– Summary table of analysis of UWWTPs linked to big cities

Country	city with more than 500,000 inhabitants	number facilities from E-PRTR	number UWWTPs from UWWTD
Austria	Wien	0	1
Belgium	Bruxelles / Brussel	2	2
Bulgaria	Sofia	1	1
Cyprus	-	-	-
Czech Republic	Praha	1	1
Denmark	København	0	2
Estonia			
Finland	Helsinki	2	2
France	Bordeaux	3	3
	Lyon	2	2
	Marseille	1	1
	Nantes	2	2
	Paris	10	10
	Toulouse	1	1
Germany	Berlin	4	6
	Bremen	2	2
	Dortmund	2	2
	Dresden	1	2
	Duisburg	4	4
	Düsseldorf	2	2
	Essen	1	2
	Frankfurt am Main	2	2
	Hamburg	1	1
	Hannover	2	2
	Köln	2	3
	Leipzig	1	1
	München	2	2
	Nürnberg	2	2
	Stuttgart	4	4
Greece	Athina	2	2
Hungary	Budapest	0	2
Iceland	-	-	-
Ireland	Dublin	1	1
Italy	Genove	0	4
	Milano	2	2
	Napoli	0	3
	Palermo	0	3
	Rome	4	4
	Torino	0	2
Latvia	Riga	2	1

Country	city with more than 500,000 inhabitants	number facilities from E-PRTR	number UWWTPs from UWWTD
Lithuania	Vilnius	1	1
Luxenbourg	-	-	-
Malta	-	-	-
Netherlands	Amsterdam	2	5
Netherlands	Rotterdam	1	1
Norway	Oslo	0	-
Poland	Krakow	2	2
	Lodz	1	1
	Poznan	1	1
	Warszava	2	2
	Wroclaw	2	2
Portugal	Lisboa	5	5
Romania	Bucaresti	0	0
Slovakia	-	-	-
Slovenia	-	-	-
Spain	Barcelona	2	2
	Madrid	11	11
	Málaga	3	3
	Sevilla	5	5
	Valencia	6	6
	Zaragoza	2	2
Sweden	Stockholm	2	2
Switzerland	-	-	-
United Kingdom	Birmingham	3	3
	Glasgow	3	3
	London	8	8
	Sheffield	2	2

APPENDIX IX– Identification of potentially missing pollutant release reports for nutrients and total organic carbon from urban wastewater treatment plants

Theoretical discharges can be calculated for UWWTPs by applying specific influent loads and treatment efficiencies depending on the applied treatment (primary, secondary or tertiary treatment). Such a theoretical calculation is done for a fictitious UWWTP with a treatment capacity of 100,000 pe (the E-PRTR capacity threshold for UWWTPs). A "worst case" scenario of using the minimum requirements of tertiary treatment according to UWWTD 91/271/EEC are applied. Tertiary treatment is not a general requirement, but UWWTPs applying secondary treatment only are supposed to discharge higher loads than UWWTPs with the same loading conditions and applying tertiary treatment.

Table 17 Estimation of theoretical discharge loads for TOC, total nitrogen and total phosphorus and comparison with E-PRTR reporting threshold

	specific influent load [g/pe/d]*	Removal efficiency [%]	Discharged Load [kg/a]	E-PRTR reporting threshold [kg/a]
TOC (COD/3)	40	75	365,000	50,000
Total nitrogen	11	70	120,450	50,000
Total phosphorus	1.8	80	13,140	5,000

*...specific influent loads according to ATV-DVWK A131[63].

According to this calculation, all UWWTPs clearly exceed the PRTR threshold for all three pollutants TOC, total nitrogen and total phosphorus is clearly exceeded. The same conclusion was also reached in the 2010 summary review report review by the ETC/ICM.

In order to assess this conclusion the available data from the UWWTD reporting is analysed. In the UWWTD reporting BOD, COD, total nitrogen and total phosphorus discharges are reported on a voluntary basis. For 291 UWWTPs from eleven Member States (Belgium, Czech Republic, Denmark, Estonia, Germany, Spain, Italy, Luxembourg, Latvia, Poland and Romania) with a treatment capacity or with an incoming load of more than 100,000 pe data on COD, total nitrogen or total phosphorus is available (see Table 18). Germany provided data on nutrients but not on COD. For those UWWTPs a rough check is done on which facilities with a treatment capacity or with an incoming load of more than 100,000 pe report discharges exceeding the E-PRTR reporting thresholds.

Table 18 Number of UWWTPs with treatment capacities or incoming loads > 100,000 pe, reporting COD, total nitrogen and/or total phosphorus discharges (from UWWTD database, reference year 2007)

Country	UWWTPs with treatment capacity or incoming load > 100,000 pe	UWWTPs reporting discharges for		
		COD	tot N	tot P
BE	2	2	2	2
CZ	24	24	22	24
DE	56	-	56	56
DK	27	27	27	27

[63] ATV-DVWK Standard A 131E. Dimensioning of Single-Stage Activated Sludge Plants. – 2000. GFA-Gesellschaft zur Förderung der Abwassertechnik e.V (Publishing Company of ATV-DVWK, Water, Wastewater, Waste), Hennef, Germany, 2000. ISBN 3-935669-96-8.

Country	UWWTPs with treatment capacity or incoming load > 100,000 pe	UWWTPs reporting discharges for		
		COD	tot N	tot P
EE	7	7	6	6
ES	38	38	30	30
IT	72	71	67	68
LU	1	1	1	1
LV	6	6	6	6
PL	107	107	106	106
RO	36	36	22	32
Total	**376**	**319**	**345**	**358**

The COD data (UWWTD data) is used for the TOC assessment by setting the TOC equal to COD/3. The reported discharges for TOC, total nitrogen and total phosphorus are compared to the E-PRTR reporting thresholds. The result are summarised in Table 19.

Table 19 Assessment of UWWTPs, for which discharge data is available from UWWTD reporting with reference to the E-PRTR reporting thresholds for TOC (CSB/3), total nitrogen and total phosphorus.

	Total number facilities	Number facilities exceeding E-PRTR reporting threshold	Number facilities not exceeding E-PRTR reporting threshold
TOC (COD/3)	319	254 (80%)	65 (20%)
Total nitrogen	345	274 (79%)	71 (21%)
Total phosphorus	358	242 (68%)	116 (32%)

This assessment is based on measured values and highlights that UWWTPs with treatment capacities of more than 100,000 pe do not necessarily have to exceed the reporting thresholds for E-PRTR. The theoretical estimation of discharges based on specific loads and minimum removal efficiencies does not enable a reliable flagging of facilities supposed to report TOC, total nitrogen or total phosphorus discharges and a high percentage of false negatives would be marked.

For a more detailed evaluation the UWWTPs providing release data for TOC, total nitrogen and/or total phosphorus are grouped according their treatment capacities [pe] (data from the UWWTD database) into classes with a class size of 20,000 pe. For each class the number of facilities exceeding the E-PRTR reporting thresholds for TOC, total nitrogen and total phosphorus and the number of facilities reporting discharges below the E-PRTR reporting threshold are counted and referred to the total number of facilities in the respective classes. The results of this evaluation are summarised in Table 20 and presented in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Table 20 Relative proportion [%] (number of UWWTPs above or below the E-PRTR reporting threshold to total number of UWWTPs reporting discharges for TOC, total nitrogen and/or total phosphorus) for the various treatment capacity [pe] classes (class size 20,000 pe)

	TOC (n=319)		Total nitrogen (n=345)		Total phosphorus (n=358)	
Treatment capacity (classes)	**> E-PRTR treshold**	**< E-PRTR treshold**	**> E-PRTR treshold**	**< E-PRTR treshold**	**> E-PRTR treshold**	**< E-PRTR treshold**
100000-120000 pe	67	33	58	42	57	43
120001-140000 pe	65	35	57	43	59	41
140001-160000 pe	78	22	83	17	67	33

	TOC (n=319)		Total nitrogen (n=345)		Total phosphorus (n=358)	
Treatment capacity (classes)	**> E-PRTR treshold**	**< E-PRTR treshold**	**> E-PRTR treshold**	**< E-PRTR treshold**	**> E-PRTR treshold**	**< E-PRTR treshold**
160001-180000 pe	74	26	77	23	55	45
180001-200000 pe	77	22	65	35	72	28
200001-220000 pe	100	-	100	-	100	-
220001-240000 pe	91	9	80	20	80	20
>240001 pe	94	6	94	6	90	10

For all UWWTP with a treatment capacity or an incoming load of more than 200,000 pe, less than 20 % of the facilities in the respective categories are below the E-PRTR reporting threshold. Therefore, in order to perform a useful evaluation of E-PRTR data and avoid most "false" negatives, a pragmatic approach is applied based on the evaluation of the available data:

⇒ All facilities reporting under activity 5.(f) with a treatment capacity of more than 200,000 pe which do not report emissions of TOC, total nitrogen and total phosphorus are flagged for potential misreporting in the country feedback sheets[64].

⇒ Facilities reporting under activity 5.(f) with a treatment capacity below 200,000 pe have to be assessed individually by taking into consideration country specific requirements, actual loading conditions and installed treatment.

[64] http://eea.eionet.europa.eu/Members/irc/eionet-circle/e-prtr/library?l=/e-prtr/country_feedback/2011_2009_dataset/country_feedback&vm=detailed&sb=Title

List of Annexes

Annexes A-D Statistical data. Total releases and number of facilities, releases and transfers per pollutant, activity, country and media.

(See separate excel file)

Annex E Correlation of the Eurostat and E-PRTR economic activities' classification

(See separate word file)