Preparation of Country Fact Sheets

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European Topic Centre



Aim of Country Fact Sheets

- The aim of the Country Fact Sheets is to improve Waterbase:
 - ensure that "high priority" determinands are reported;
 - improve the spatial and temporal coverage of data;
 - clean-up and correct errors in the data reporting/processing.
- Results of the country fact sheets will be used for further review of the SoE data and to ask countries / NRCs for corrections, improvements, redeliveries of data.

Development of Country Fact Sheets

- Country fact sheets will be prepared for all EEA countries
- Examples in preparation of EIONET workshop: CY, DE, DK, ES, PT, SE
- Idea: two versions of country fiches:
 - First version: give an overview on problems and gaps in reporting, problems in data handling, to contact countries / NRCs with questions for corrections, improvements, redeliveries of data etc. (clean up of data base);
 - Second version: display results for countries to illustrate what has been reported; Could be carried out as webpage and contain data products (see e.g. Bathing Water directive reporting <u>http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water/bathing-water-data-viewer</u>).
- In case of a second version a more automated process has to be developed.



Content of Country Fact Sheets

- Reporting obligations from European Water Directives
- Overview on WFD reporting
- EIONET priority data flows SoE data (Waterbase) (statistics and maps)
- Rivers and Lakes
 - Rivers Nutrients, organic matter and physico-chemical determinands
 - Rivers Hazardous substances
 - Rivers Biology
 - Lakes Nutrients, organic matter and physico-chemical determinands
 - Lakes Hazardous Substances
 - Lakes Biology
- Groundwater
 - Groundwater Nutrients, organic matter and physico-chemical determinands
 - Groundwater Hazardous substances
- Emissions

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- Water Quantity
- Matching of stations/water bodies

European Topic Centre Inland, coastal, marine waters

Water quality data

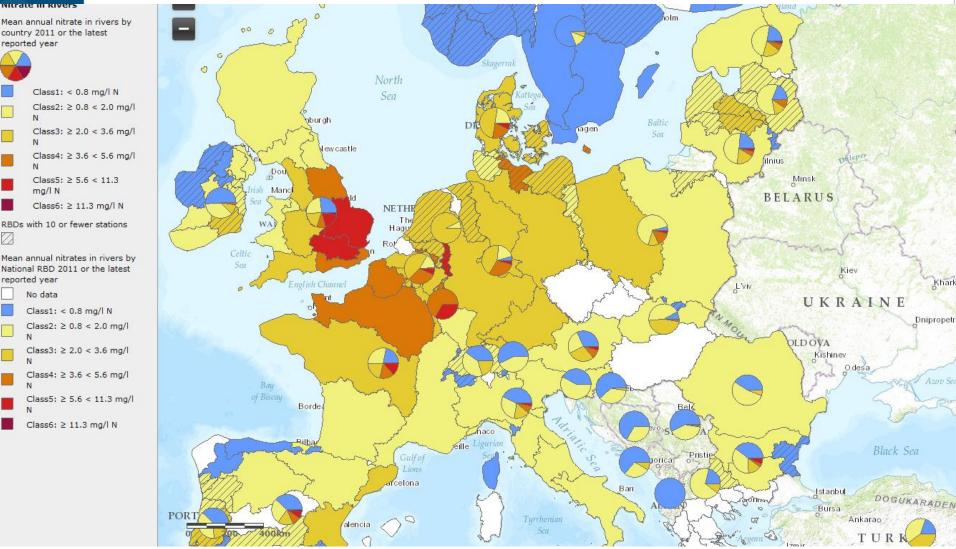


Water quality data

- Overview of concentration levels in different RBDs and countries
- Trend in water quality (1992-2012) time series



Nitrate in rivers



Latest year (2009-2011): No data since 2008 by Hungary, Czech Rep., Greece / ES Tajo RBD, Galicia RBD and IT Sardinia

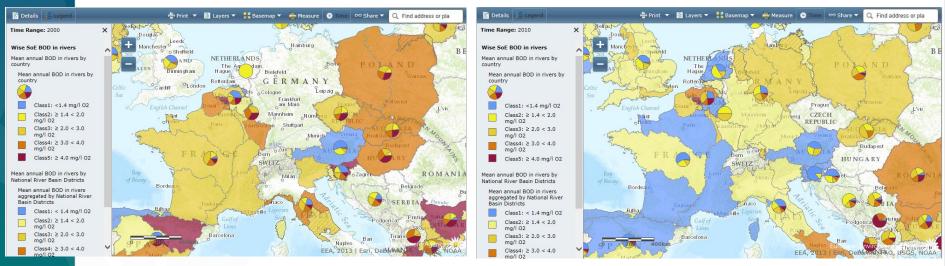
River Basin Districts with less than 10 stations (Median concentration) (Other RBDs mean of 95% lowest stations)



Improvement BOD5 2000-2011

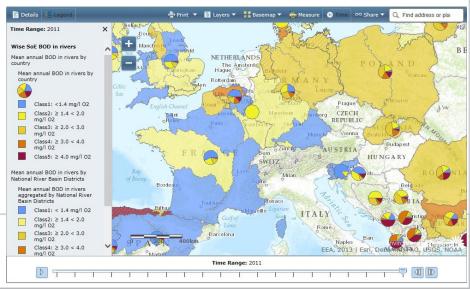
BOD - 2000

BOD - 2010

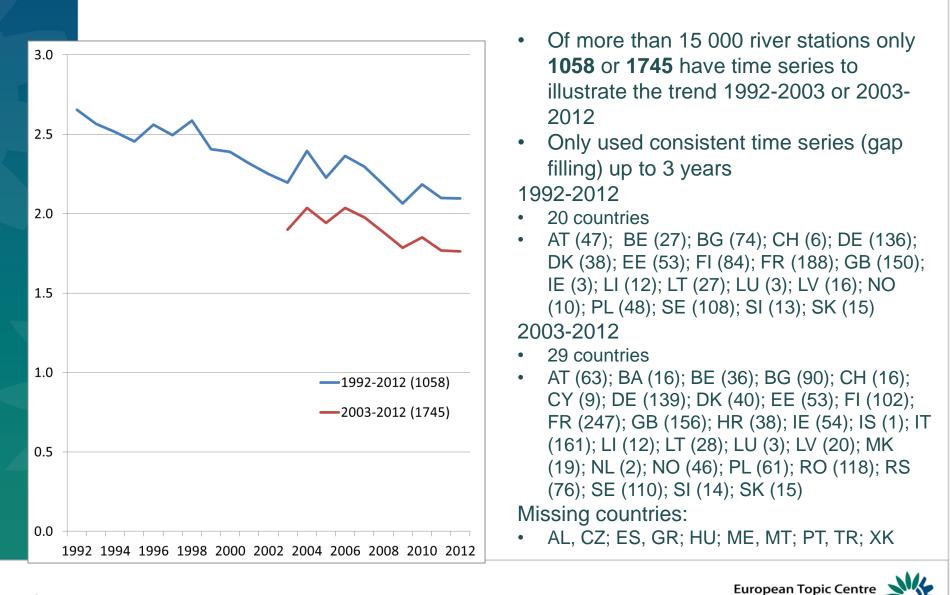


BOD - 2011

- Better data coverage (more countries in 2010/11 than in 2000)
- Improvement in quality from brown to blue

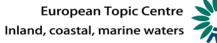


Nitrate in rivers



"Problems" in SoE reporting

- Reporting of some high priority / preferred determinands sometimes stopped;
- There has been a change in some of the determinands in the databases;
- There have been some changes in stations coding;
- "Missing time series";
- Not all RBDs are covered with reporting;
- Low density of monitoring stations in some RBDs, countries (not representative)
- Data on groundwater nutrients sometimes reported aggregated on groundwater body level, sometimes on stations level;
- Often it is not possible to link SoE stations with WFD water body or stations.



SoE Nutrients, organic matter, physicochemical determinands in rivers and lakes

Examples of country fact sheets

Have data been reported consistent over the years?

Denmark: No of river stations per determinand/year (nutrients of highest EEA priority)

Determinand_Nutrients	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total oxidised nitrogen	37	39	39	39	40	40	39	39	40	40	40	40	41	41	41	42	41	40	41	40	40
Total nitrogen	38	41	41	41	40	40	41	41	42	42	42	42	42	42	42	42	41	41	41	40	40
Orthophosphates	36	41	41	41	40	40	41	41	42	41	42	42	42	42	42	42	41	41	41	40	40
Total phosphorus	38	41	41	41	41	41	41	41	42	42	42	42	42	42	42	42	41	41	41	40	40
BOD5	14	34	33	33	36	36	38	38	39	39	39	39	42	42	42	42	41	41	41	2	4
CODCr	25	13	2	2	0	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Total ammonium	37	32	34	30	32	33	37	37	38	38	38	38	42	0	0	0	0	0	0	0	0

Total ammonium stopped in 2005, BOD5 in 2011/2012, only few values for CODCr; ...

Sweden: Number of river stations per determinand/year (nutrients of highest EEA priority)

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Determinand_Nutrients	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
Total oxidised nitrogen	113	113	113	113	113	113	113	113	113	114	114	115	113	115	115	119	119	117	118	117	117
Total nitrogen	114	114	114	114	114	114	113	113	113	114	114	115	113	115	115	95	78	75	120	118	118
Orthophosphates	113	113	113	113	113	113	113	113	113	114	114	115	112	114	115	117	116	117	118	116	117
Total phosphorus	114	114	114	114	114	114	113	113	113	114	114	115	113	115	115	119	119	117	120	118	118
BOD7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	3	1	1	1
Tetal organic carbon (TOC)	72	76	76	76	88	88	89	89	91	112	112	115	112	115	115	118	117	116	118	116	118
CODMn	0	0	0	0	0	0	0	0	0	0	0	0	96	96	96	97	94	91	93	92	90
CODCr	113	113	113	113	113	113	112	112	112	101	101	96	0	0	0	0	0	0	0	0	0
Total ammonium	113	113	113	113	113	113	113	113	113	114	114	115	113	115	115	118	117	117	119	117	117



Sweden: few BOD7 values, "change" in reporting CODMn/

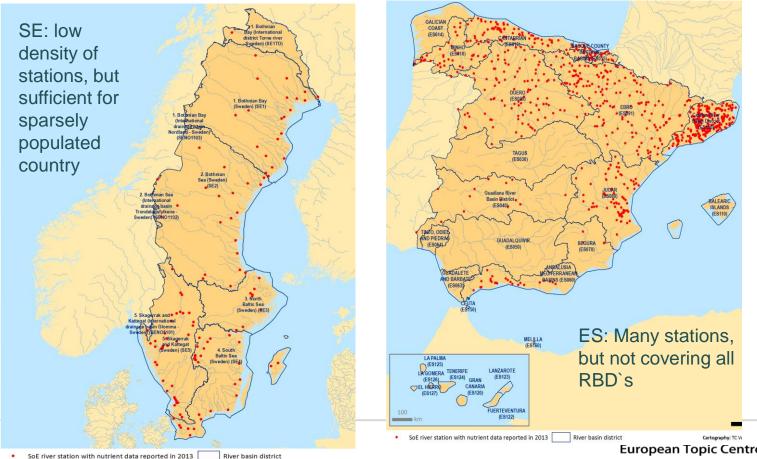
CODCr (error in Waterbase)

SoE Nutrients, organic matter, physicochemical determinands in rivers and lakes

Examples of country fact sheets

Are stations with monitoring covering all RBDs?

SoE river stations with nutrient data reported in 2013 in the RBD's





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SoE Nutrients, organic matter, physicochemical determinands in rivers and lakes

Examples of country fact sheets

4. Are stations codes consistent? - Example Spain; RBD ES010; river stations

Number of nutrients measurements per station/year

RBDname	RiverName	WaterBodyID	WaterBodyNa	NationalStationID	NationalStationName	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
NORTHERN SPAIN	MIÑO	12649		ES110243	OURENSE (SAICA)	10	10	11	12	12	11	9	11	0	0	0	0	0
NORTHERN SPAIN	MIÑO	13312		ES110292	SALVATIERRA (SAICA)	11	12	12	12	12	11	12	10	0	0	0	0	0
NORTHERN SPAIN	QUIROGA	20041	SAN ESTEBAN	ES110253	QUIROGA	4	4	4	5	4	6	5	9	0	0	0	0	0
NORTHERN SPAIN	SAN MARTIN	12526		ES110164	MOURENZE	6	6	5	5	7	6	7	8	0	0	0	0	0
NORTHERN SPAIN	SELMO	12615		ES110229	FRIERA	7	6	6	8	7	7	5	0	0	0	0	0	0
NORTHERN SPAIN	SIL			ES01709	EMBALSE DE BARCENA	9	7	8	11	11	10	0	0	0	0	0	0	0
NORTHERN SPAIN	SIL			ES01769	EMBALSE DE SAN PEDRO	7	7	8	8	10	9	0	0	0	0	0	0	0
NORTHERN SPAIN	SIL	12729		ES110228	REQUEJO-VALIÑA (SAICA)	8	9	8	9	10	10	10	9	0	0	0	0	0
NORTHERN SPAIN	TEA	12669		ES110274	FREIXA	7	8	8	7	7	10	8	10	0	0	0	0	0
NORTHERN SPAIN	TEA	12732		ES110291	FILLABOA	7	7	10	9	5	9	5	9	0	0	0	0	0
	ARENTEIRO	NP		ESNO01870001	A GRANXA	0	0	0	0	0	0	0	0	0	0	16	10	15
	ARNOYA	ES010MSPFES4	RÍO ARNOIA II	ESNO02260001	ABUIN	0	0	0	0	0	0	0	0	0	0	16	10	15
	BARBAÑA	ES010MSPFES4	RÍO BARBAÑA	ESNO01870003	OURENSE	0	0	0	0	0	0	0	0	0	0	13	0	10
	BARBAÑA	ES010MSPFES4	RÍO BARBAÑA	ESNO02250008	AGUAS ABAJO ESTACION	0	0	0	0	0	0	0	0	0	0	9	0	11
	BIBEY	ES010MSPFES4	RÍO BIBEI III	ESNO02660002	EMBALSE DE SAN AGUSTÍN	0	0	0	0	0	0	0	0	0	0	11	9	13
	CABE	ES010MSPFES4	RÍO CABE II	ESNO01560002	EST. AFOROS RIBASALTAS	0	0	0	0	0	0	0	0	0	0	12	8	12
	CABRERA	ES010MSPFES4	RÍO CABRERA II	ESNO01910006	EST. AFOROS P.D. FLOREZ	0	0	0	0	0	0	0	0	0	0	12	7	9
	CADONES	ES010MSPFES5	RÍO CADONES	ESNO02630003	IGLESIA CALVOS	0	0	0	0	0	0	0	0	0	0	11	9	13
	CARVALLO	ES010MSPFES5	RIO CARBALLO	ESNO02990001	EL ROSAL	0	0	0	0	0	0	0	0	0	0	13	9	13
	CASELAS	ES010MSPFES5	RÍO CASELAS	ESNO02610016	MI155	0	0	0	0	0	0	0	0	0	0	11	7	12
	CONSETO	ES010MSPFES4	RÍO CONSELO	ESNO02610013	O MARCO LONGO	0	0	0	0	0	0	0	0	0	0	9	7	8

Change in reporting between 2007/2010:

in 2008 to 2010 about twice the number of stations have been reported, but change in stations coding after 2009 – interrupted time series

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SoE Hazardous substances in rivers and lakes

Issues specific for hazardous substances reporting:

- Reporting of hazardous substances in rivers/lakes most often started after 2000; Most of the substances have been reported for 10 years throughout Europe;
- Some countries / some RBDs don`t report hazardous substances
- Since 2010 some countries reported metals sometimes as total, sometimes as dissolved (*same with groundwater*); may be because of change in Data Dictionary;
- Correct identification of substances is sometimes not possible (missing codelist) (from Hazardous substances report);
- Several of the substances were measured at concentrations below LOD or LOQ (*from Hazardous substances report*).



SoE Hazardous substances in rivers and lakes

Examples of country fact sheets

Have data for all SoE preferred hazardous substances which are monitored in the country been reported consistent over the years (if available)?

Portugal: SoE preferred hazardous substances (only metals as example) in lakes by number of stations and year

Determinand_HazSubs	2006	2007	2008	2009	2010	2011	2012
Cadmium	28	15	0	4	0	4	0
Cadmium dissolved	0	0	0	0	0	2	2
Lead	29	14	1	8	0	4	5
Lead dissolved	0	0	0	0	0	2	0
Mercury	26	9	7	3	0	0	7
Mercury dissolved	0	0	0	0	0	2	0
Nickel dissolved	0	0	0	0	0	2	2
Arsenic	24	10	7	0	8	10	5
Arsenic dissolved	0	0	0	0	0	2	0
Copper	29	16	10	1	13	10	0
Copper dissolved	0	0	0	0	13	8	1
Chromium	28	22	3	10	13	10	6
Chromium dissolved	0	0	0	0	0	2	0

Portugal: Reporting of metals as total and/or dissolved.

Are stations with monitoring of SoE preferred hazardous substances covering all RBDs?

Spain: Number of stations by River Basin Districts for preferred hazardous substances

RBDcode	2009	2010	2011	2012		
ES010	<mark>0</mark>	32	30	30		
ES014	5	27	<mark>0</mark>	<mark>0</mark>		
ES015	<mark>0</mark>	39	29	27		
ES016	5	76	69	25		
ES020	12	78	100	94		
ES030	<mark>9</mark>	260	<mark>0</mark>	<mark>0</mark>		
ES040	<mark>0</mark>	7	7	15		
ES050	6	33	<mark>0</mark>	<mark>0</mark>		
ES060	<mark>0</mark>	9	20	24		
ES063	<mark>0</mark>	23	<mark>0</mark>	<mark>0</mark>		
ES064	<mark>0</mark>	23	<mark>0</mark>	<mark>0</mark>		
ES070	<mark>0</mark>	60	<mark>2</mark>	<mark>4</mark>		
ES080	<mark>0</mark>	107	92	77		
ES091	24	87	77	56		
ES100	143	157	119	93		

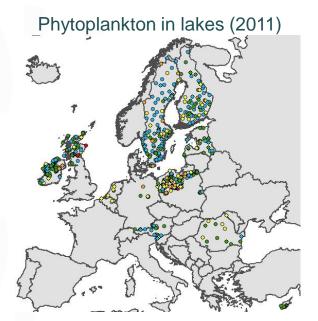
Some smaller RBDs in Spain are not covered with reporting; in some years no reporting of hazardous substances/or reporting of < LOQ/LOD?

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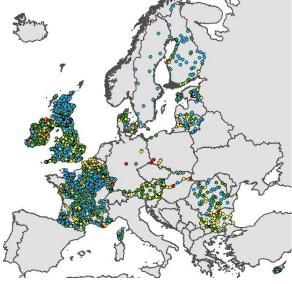


SoE Biology in rivers and lakes - overview

Determinands	No. of countries (2012)	No. of stations (2012, approx.)
Phytoplankton in lakes	17	600
Macrophytes in lakes	9	600
TP in lakes (for comparison)	30	1400
Phytobenthos in rivers	17	4000
Macroinvertebrates in rivers	20	4000
NO ₃ in rivers (for comparison)	30	6000







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SoE Biology in rivers and lakes - examples

Main outcomes of Country Fact Sheets examples:

- Most data are from 2010-2012 (request started in 2011); some longer time series;
- Not all RBDs are covered with reporting;
- Number of stations with biology data is lower than for nutrients (ca. 40-60%);
- Most countries report EQR values; some report only status classes (e.g. Germany);
- Reported aggregation period is not always consistent from year to year; should preferably be annual (also for nutrients).



SoE Groundwater quality

Issues specific for reporting on groundwater quality:

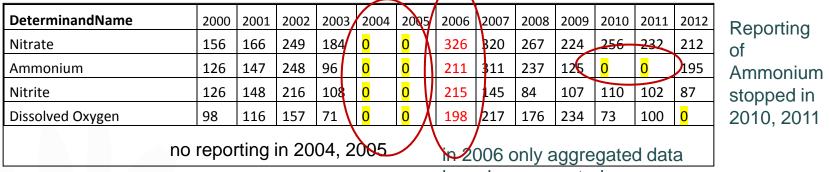
- Nutrient data sometimes are reported aggregated on water body level, sometimes disaggregated;
- Sometimes reporting of relevant parameters was stopped or some years are missing in reporting;
- Some countries report metals sometimes as total or as dissolved;
- Some countries / RBDs don`t report data on hazardous substances in groundwater.



SoE Groundwater quality

Examples of country fact sheets

Portugal: Highest priority nutrients in groundwater disaggregated/aggregated



have been reported

Denmark: Number of groundwater stations per determinand (examples for preferred hazardous substances)/year

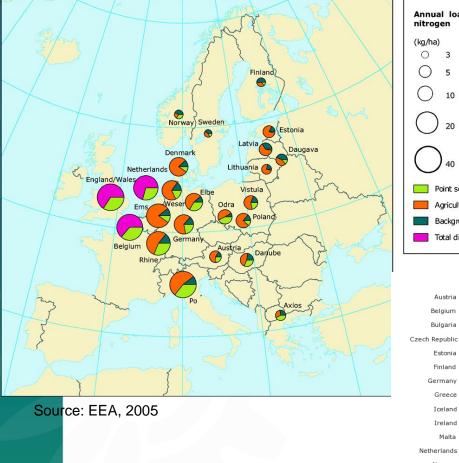
DeterminandName	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Arsenic	537	564	586	556	7	696	<mark>38</mark>	726	367	672	428	421	97	
Copper	537	563	566	555	<mark>0</mark>	597	<mark>26</mark>	726	367	672	205	420	97	
Copper dissolved	448	475	480	466	<mark>0</mark>	507	<mark>11</mark>	629	309	548	175	<mark>0</mark>	<mark>0</mark>	
Cadmium	537	563	565	554	<mark>0</mark>	597	<mark>26</mark>	726	367	672	205	420	97	Mercury
Chromium	357	224	199	234	<mark>0</mark>	695	<mark>27</mark>	0	0	0	0	<mark>0</mark>	0	reporting
Nickel	537	564	585	556	<mark>21</mark>	708	<mark>38</mark>	726	367	672	428	421	97	stopped in
Nickel dissolved	448	476	499	467	7	583	<mark>23</mark>	629	309	548	353	<mark>0</mark>	0	2004
Lead	536	563	564	555	0	597	<mark>26</mark>	726	367	672	205	420	97	
Mercury	231	<mark>57</mark>	<mark>59</mark>	98	0	0	0	0	0	0	0	1	0	🚽 🗧 European Topic Centre

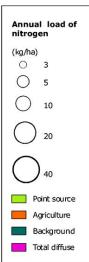


Emissions – what are the sources and the

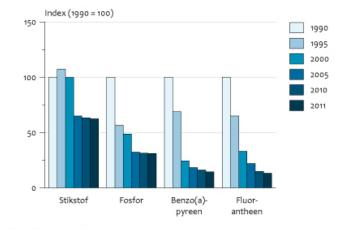
trend?

Source apportionment



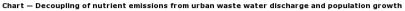


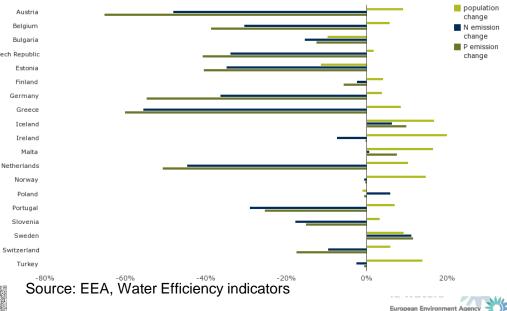
Belasting van oppervlaktewater met stikstof, fosfor en PAK's



Bron: Emissieregistratie.

Source: www.compendiumvoordeleefomgeving.nl





SoE Emissions

Main issues in reporting:

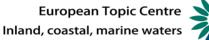
- Many countries do not report directly to SoE emissions (18 countries reported SoE data directly in previous years)
- Not all emission sources are covered;
- Often only rough source apportionment is available.

Main outcomes of Country Fact Sheets examples:

- Only DK and SE reported SoE directly; CY, ES, DE and PT E-PRTR data were aggregated and added by ETC;
- E-PRTR allows only rough apportionment: industrial and urban waste water emissions and includes only limited sources (e.g. UWWTPs above 100,000 p.e.);
- DK and SE: more detailed source apportionment, emission data cover bigger part of total emissions to water.

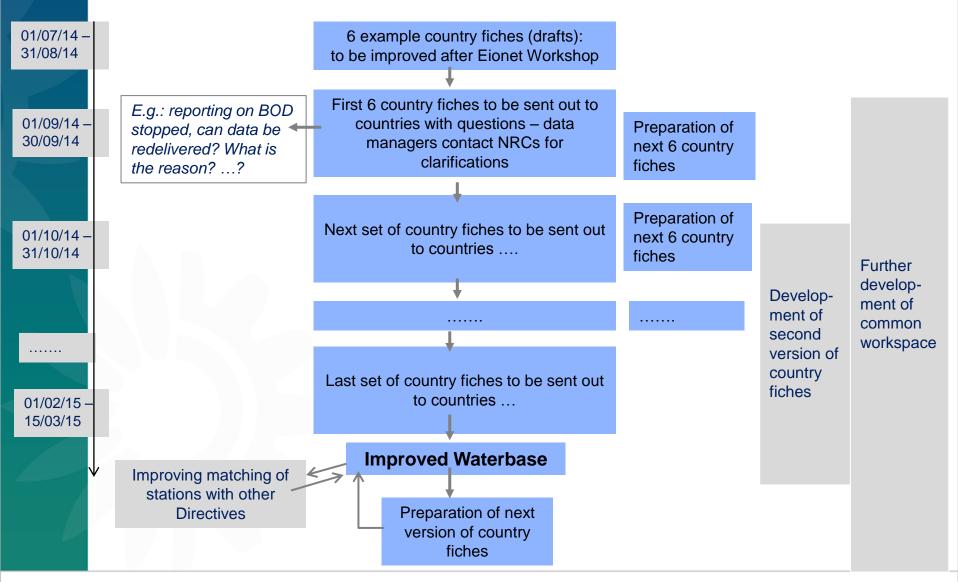
Questions to countries/NRCs

- Are more data (other than E-PRTR) available for reporting of point sources?
- Are (more) data available for diffuse sources?





Development of country fact sheets - process



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