

Reuse of EEA Waterbase
data for SDG 6.3.2 Water
Quality indicator



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Reuse of EEA Waterbase data for SDG 6.3.2 Water Quality indicator

Part I (UNEPs presentation)

1. Integrated Monitoring and Reporting of SDG 6
2. Introduction to SDG Indicator 6.3.2
3. Reporting process and governance

Part II (EEA presentation)

1. EEA Waterbase water quality data availability
2. EEA simple statistical indicator
3. Next steps

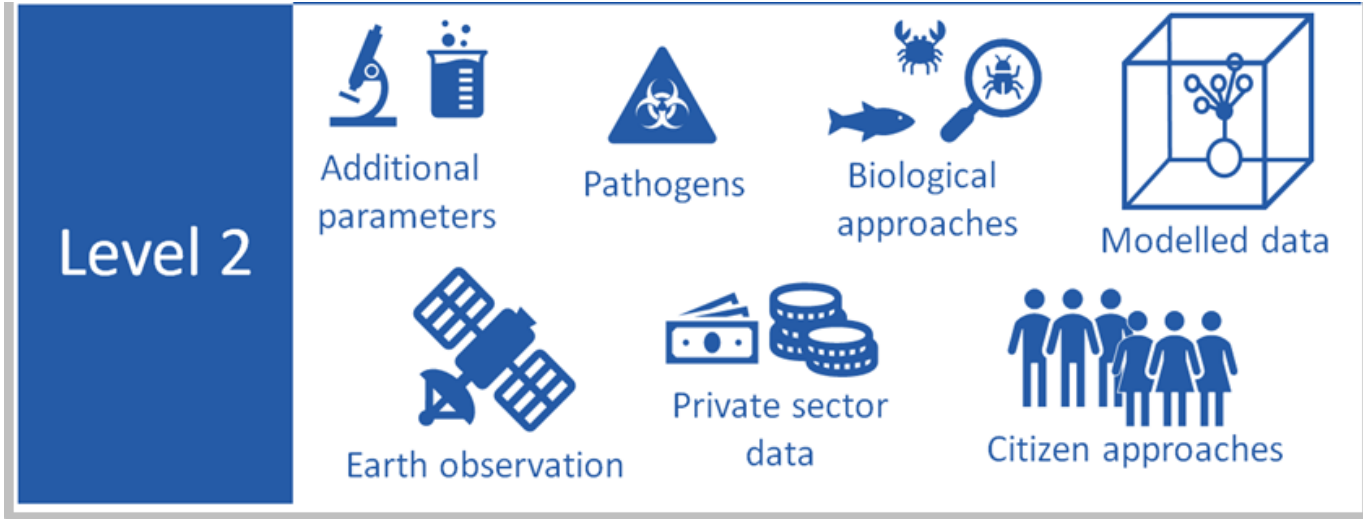
**UNEP SDG 6.3.2 water quality indicator
(see also UNEPs presentation)**



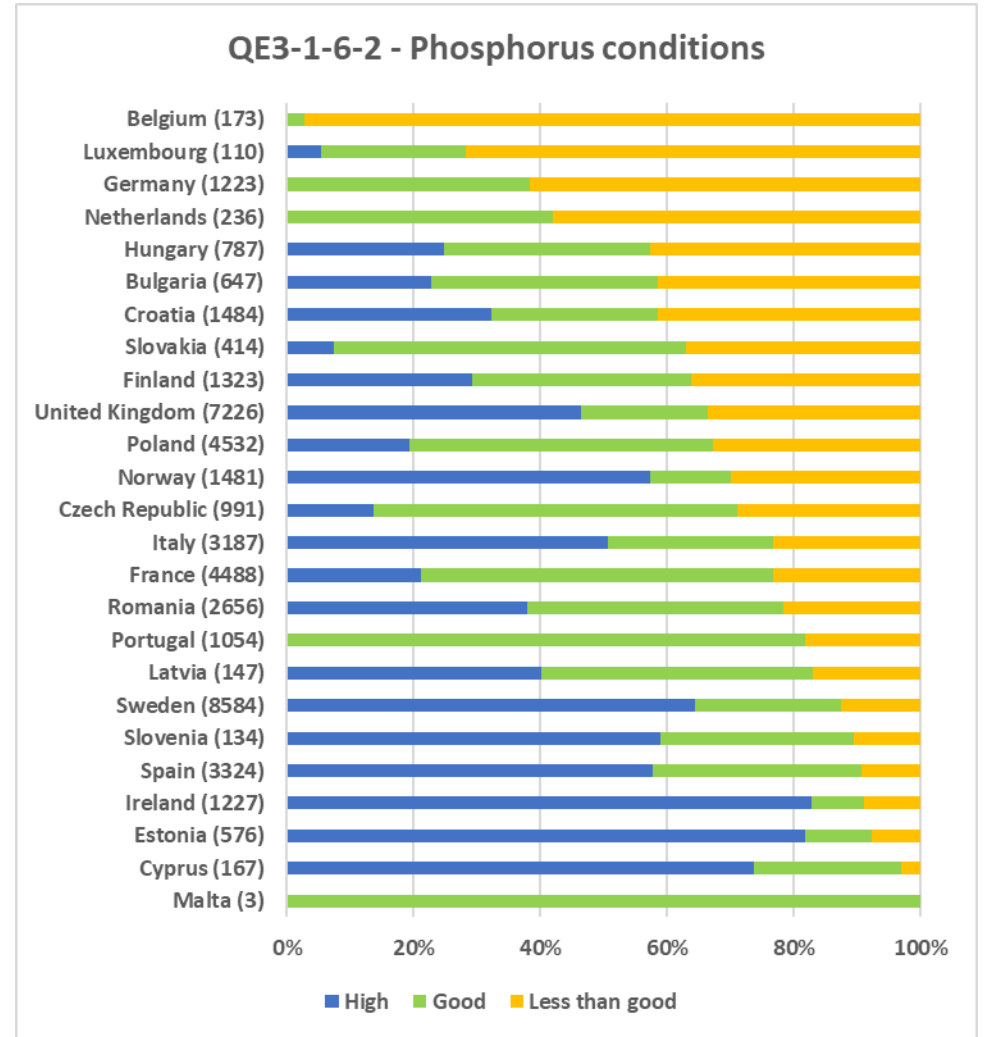
SDG 6.3.2 Water quality – Level 1

Parameter group	Parameter	River	Lake	Ground-water
Oxygen	Dissolved oxygen	•	•	
	<i>Biological oxygen demand, Chemical oxygen demand</i>	•		
Salinity	Electrical conductivity <i>Salinity, Total dissolved solids</i>	•	•	•
Nitrogen*	Total oxidised nitrogen <i>Total nitrogen, Nitrite, Ammoniacal nitrogen</i>	•	•	
	Nitrate**			•
Phosphorus*	Orthophosphate <i>Total phosphorus</i>	•	•	
Acidification	pH	•	•	•
* Countries should include the fractions of N and P which are most relevant in the national context				
** Nitrate is suggested for groundwater due to associated human health risks				

SDG 6.3.2 Water quality – Level 2

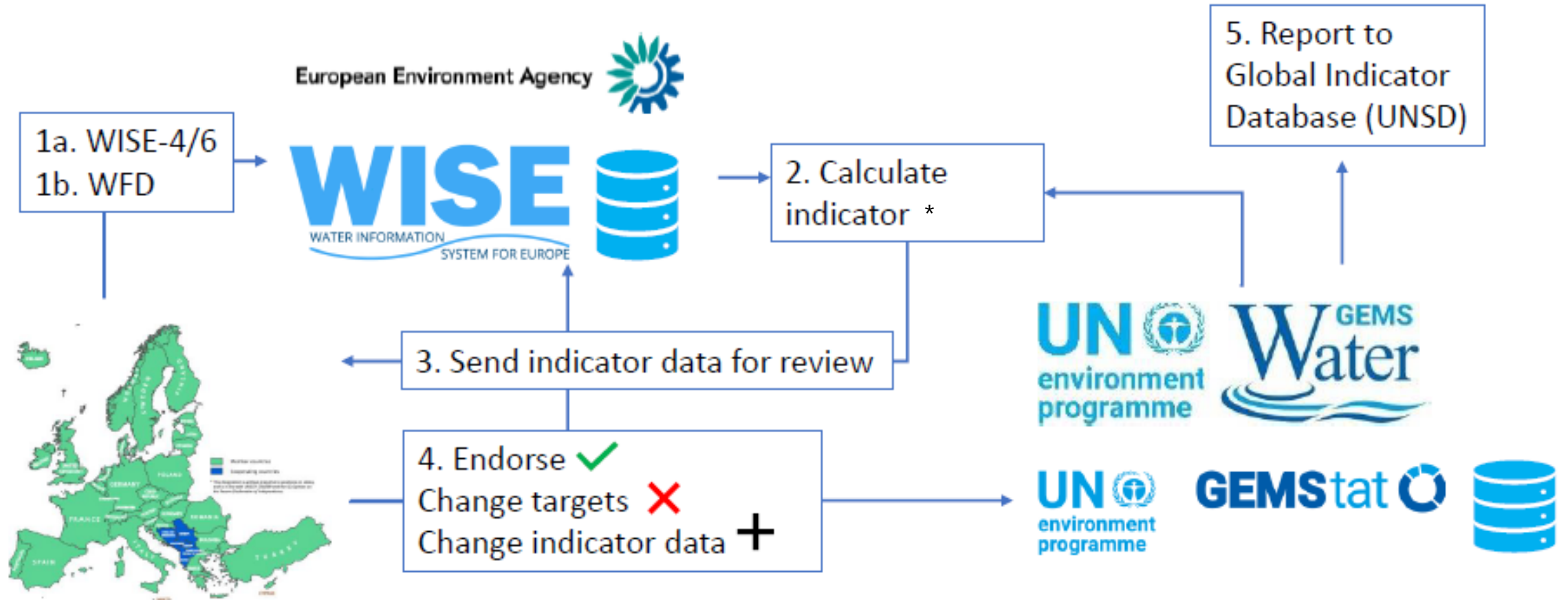


WFD physico-chemical Quality Elements (QEs);
or ecological status, biological quality elements etc.



High
 Good
 Less than good

Reporting process



*2a Extract to UNEP->calculate indicator

*2b EEA Dashboards Member State results

See later in presentation

European countries reporting of data to SDG 6.3.2

Option 1: Countries report available information from national water quality databases or indicators. *1b) Alternatively countries report draft results from 3rd RBMPs on physico-chemical quality elements.*

Option 2: Data reported by countries to EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator (parameter group, parameters)

- 2a) Data are extracted from Waterbase by UNEP and UNEP calculates the SDG 6.3.2 indicator.
- 2b) EEA produce a dashboard with harmonised results of the SDG 6.3.2 indicator, countries accept (or do not accept) the country information as the delivery and UNEP reuse the dashboard results for the SDG 6.3.2 indicator.

Option 3: 2nd RBMPs Results reported by EU Member States (+Norway) on physico-chemical quality elements are reused by countries/UNEP for the SDG 6.3.2 indicator (level 2).

European countries reporting of data to SDG 6.3.2

Pro and cons for the different reporting options

	Option 1: Extract from national database or indicators	Option 2a: Reuse of EEA Waterbase data UNEP extract and calculate	Option 2b: Reuse of EEA Waterbase data Dashboard on top of Waterbase	Option 3: Reuse of 2nd RBMPs phys-chemical quality element results
Workload	High for countries and UNEP	High for UNEP	Medium for countries, UNEP and EEA	Medium for UNEP and EEA
Timeliness	Updated results	Partly updated results	Always based on latest version of Waterbase	Relative old results 6-10 years old
Comparability	Reflect national indicators, but results may not be comparable across countries	Do not fully cover national indicators; partly comparable across countries	Do not fully cover national indicators; partly comparable across countries	Reflect WFD 2nd RBMP reporting; different Good/moderate boundaries
Acceptance by countries	High	Low-medium	Medium-High, Countries to accept reporting	Medium

* Option 2a: Countries consulted on UNEPs calculations and additional data reporting may be needed



Option 1: Countries report available information from national water quality databases or indicators.



Option 1: Countries report available information from national water quality databases or indicators.

On the following slides are listed national examples on water quality indicators that could be used as basis for reporting to UNEP SDG

6.3.2. Some remarks

- Some of the data for the national indicators are in Waterbase.
- The workload for countries will be relatively high
- Not all categories (groundwater, rivers, lakes), and parameters are covered by national indicators.
- As the two first examples illustrate national indicators may also be some years old and need update to cover the preferred period (2017-2019)
- Different thresholds are used and this will make comparison difficult.

Option 1: Countries report available information from national water quality databases or indicators.

Tabelle 14

Güteklassifikation für Ammonium-Stickstoff in mg/l, Vergleichswert: Jahresmittel

Gewässertyp	I	I-II	II	II-III	III	III-IV	IV
1.1, 1.2, 2.2, 3.2, 4, 5, 9, 9.1, 9.1K, 9.2, 10, 12, 14 ¹⁾ , 16 ¹⁾ , 19 ²⁾	≤ 0,04	≤ 0,075	≤ 0,1	≤ 0,2	≤ 0,4	≤ 0,8	> 0,8
12 ^{3), 4)} , 14 ⁵⁾ , 15, 15g, 16 ⁵⁾ , 17, 19 ⁴⁾ , 20, 23	≤ 0,04	≤ 0,1	≤ 0,2	≤ 0,4	≤ 0,8	≤ 1,6	> 1,6
22.1, 22.2, 22.3	≤ 0,04	≤ 0,2	≤ 0,3	≤ 0,6			

1) silikatisch, 2) im Mittelgebirge, 3) basenreich, 4) im norddeutschen Tiefland, 5) karbonatisch

Quelle:

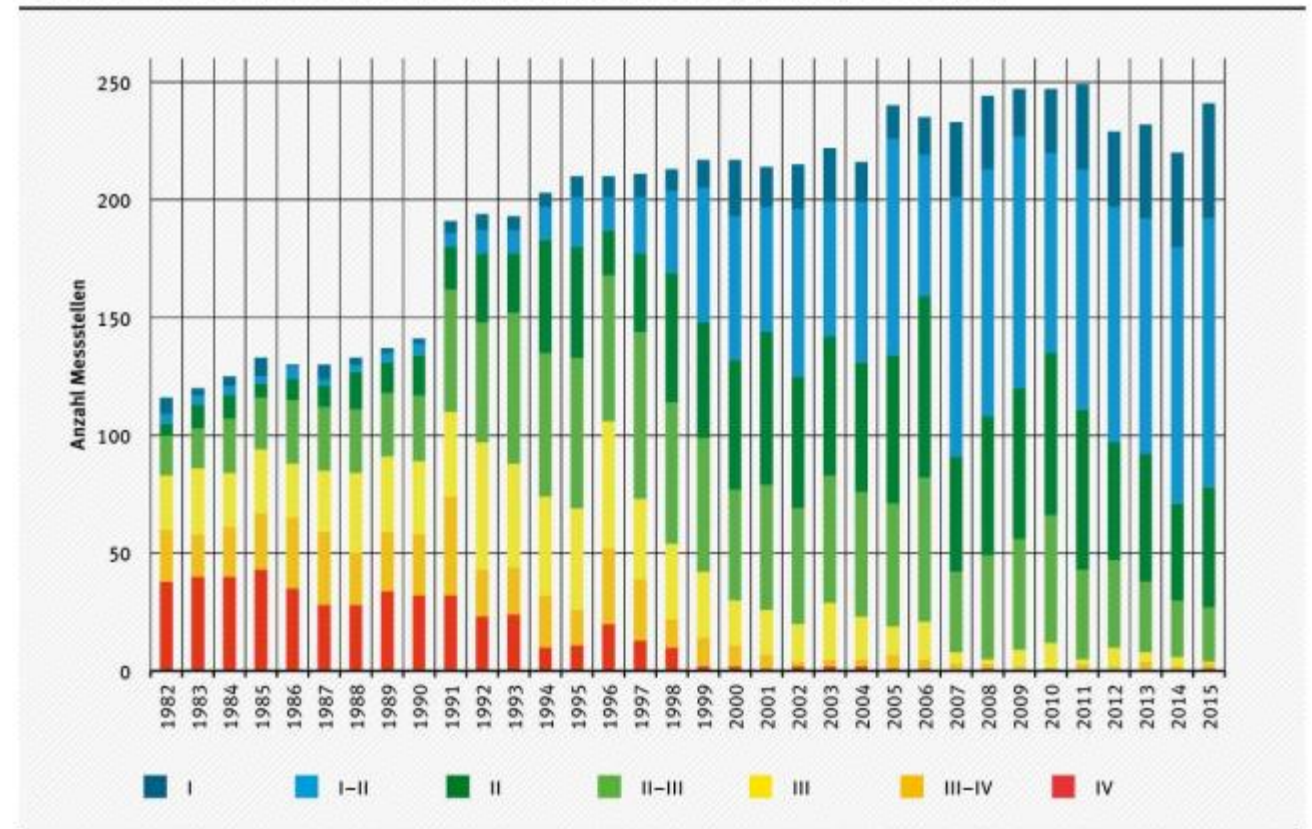


Type specific thresholds

Example: Ammonium in German rivers

Abbildung 21

Güteklassifikation Ammonium-Stickstoff 1982–2015 (LAWA-Messstellen)



Quelle: Zusammenstellung des Umweltbundesamtes nach Angaben der LAWA

Source: UBA 2016, [Gewässer in Deutschland. Zustand und Bewertung](#)



Option 1: Countries report available information from national water quality databases or indicators.

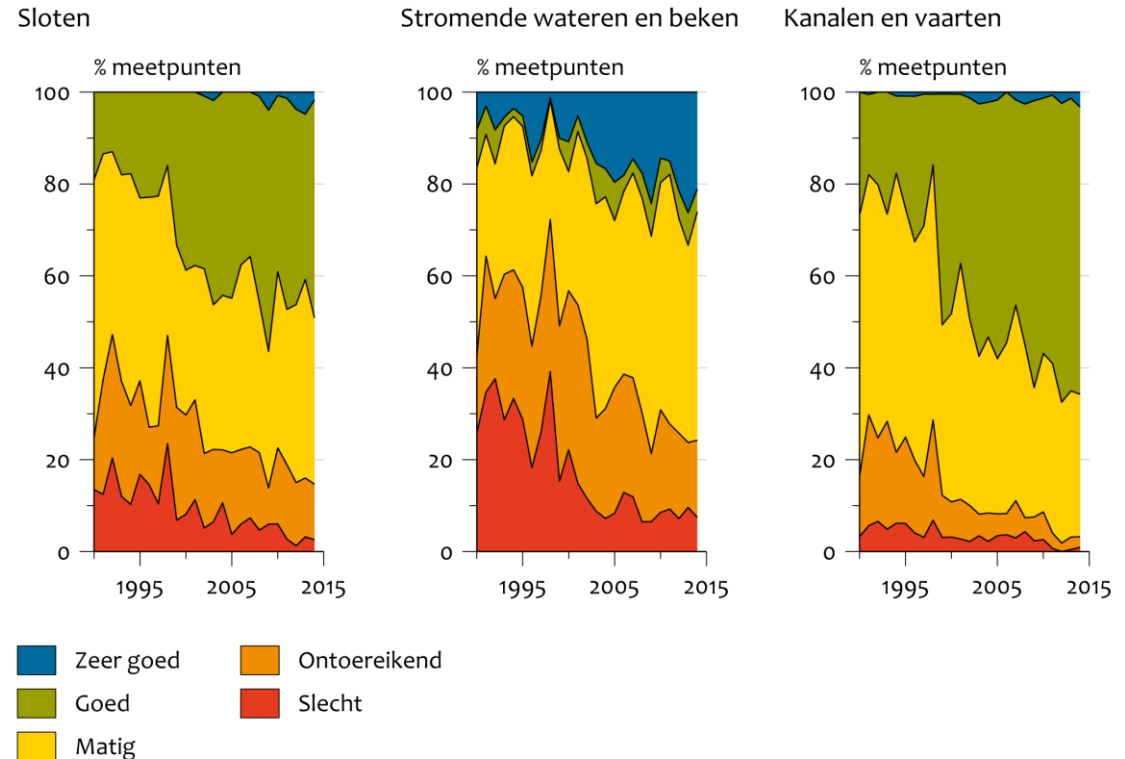
Example: Nitrogen in Dutch regional waters Ditches, streams and canals 1990-2014

Thresholds – based on percentiles

In de figuren over de concentratie zijn de mediaan van de meetpunten en de 10-, 25-, 75- en 90-percentiel weergegeven.

10% percentile High
25% percentile Good
50% percentile Moderate
75% percentile Poor
90% percentile Bad

Waterkwaliteit op basis van stikstofconcentratie








Bron: Limnodata; IHW (Waterschappen; RWS); bewerkt door PBL.

Source: CBS, PBL, RIVM, WUR (2016). [Vermesting van regionaal water, 1990 - 2014](#) (Indicator U552, versie 05, 20 april 2016). www.clo.nl. Centraal Bureau voor de Statistiek (CBS), Den Haag; PBL Planbureau voor de Leefomgeving, Den Haag; RIVM Rijksinstituut voor Volksgezondheid en Milieu, Bilthoven; en Wageningen University and Research, Wageningen.

PBL/apr16
www.clo.nl/nl055205



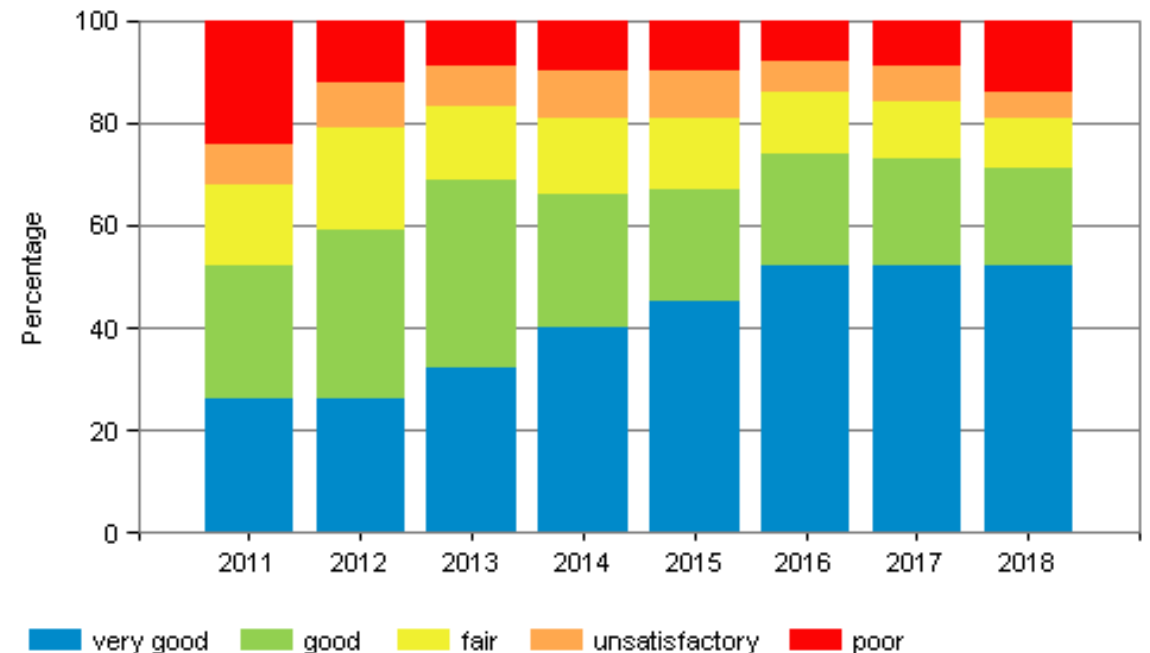
Option 1: Countries report available information from national water quality databases or indicators.

Assessment	Ortho-P [mg/L P]
 very good	up to < 0,02
 good	0,02 to < 0,04
 moderate	0,04 to < 0,06
 unsatisfactory	0,06 to < 0,08
 bad	0,08 and more



National thresholds

Example: Phosphate in Swiss rivers



Source: FOEN, Water indicators
[Nutrients in watercourses](#)

Option 2: Data in EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator

- **Overview of water quality parameters in Waterbase water quality**
- Simple water quality indicator based on common statistical based thresholds



EEA Waterbase water quality

WISE-SoE Waterbase Water Quality

- 39 European countries
- Approximately 20.000 monitoring sites
- Groundwater, rivers, lakes,
- +600 determinands
- Main temporal coverage 1992-2017
- [Waterbase \(version 11 – May 2019\)](#)
 - Disaggregated data: 34 million records (monitoring site, date, determinands)
 - Aggregated data: 2.3 million records (monitoring site, year, determinands)
- *Update Waterbase in spring 2020 including 2018 data and better geographical coverage*

SDG 6.3.2 Water quality – Level 1 – Reuse of data in Waterbase

- *Waterbase has a wide coverage for the parameters needed to populate the SDG set of water quality parameters.*
- 2a) Data are extracted from Waterbase by UNEP and UNEP calculates the SDG 6.3.2 indicator.
- 2b) EEA produce a dashboard with harmonised results of the SDG 6.3.2 indicator.
 - -> Countries accept (or do not accept) the country information as the delivery and
 - -> UNEP reuse the dashboard results for the SDG 6.3.2 indicator.

Parameter group	Parameter
Oxygen	Dissolved Oxygen Biochemical Oxygen Demand
Salinity	Electrical conductivity Salinity, Total dissolved solids
Nitrogen	Total oxidised nitrogen Nitrate Nitrite Total nitrogen Ammonium
Phosphorus	Orthophosphate Total phosphorus
Acidification	pH

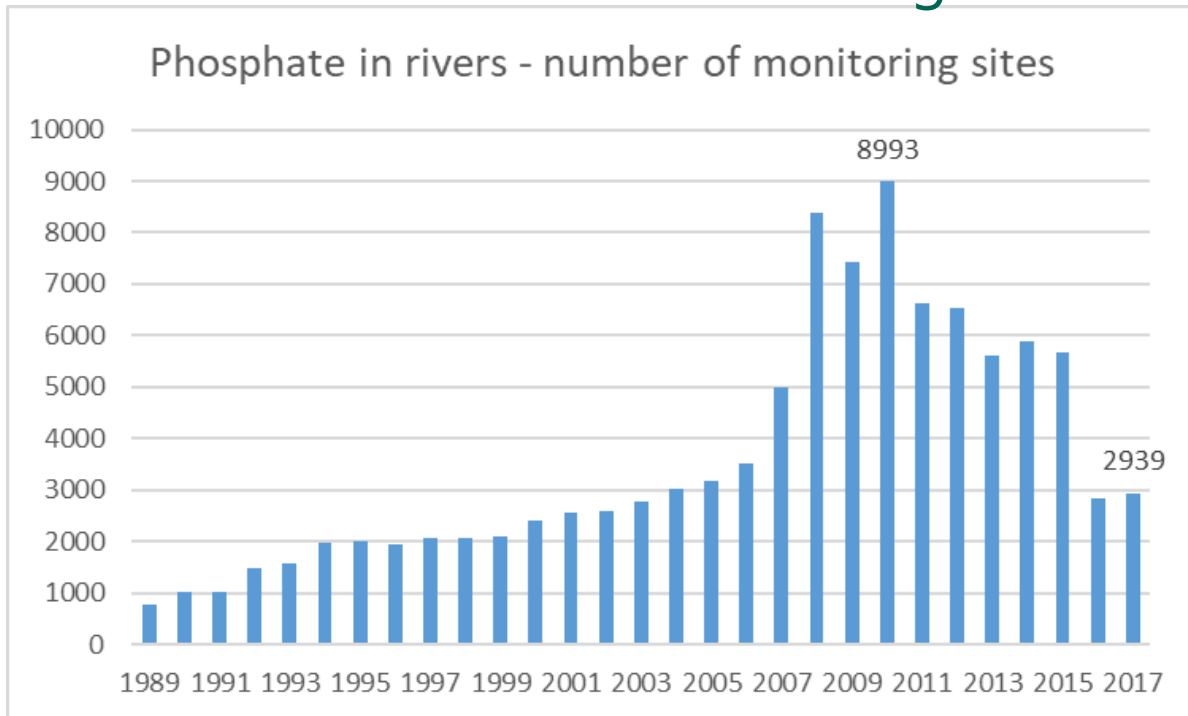
Waterbase coverage of water quality parameters (1992-2017)

SDG_grp	Observed Property	Label	River		Lakes		Groundwater	
			No countries	MonSites*Year	No countries	MonSites*Year	No countries	MonSites*Year
1-Oxygen	EEA_3131-01-9	Oxygen saturation	32	70917	33	16948	3	5068
	EEA_3132-01-2	Dissolved oxygen	35	79607	37	17396	34	90722
	EEA_3133-01-5	BOD5	32	77103	29	3623	4	432
	EEA_3133-02-6	BOD7	8	4432	6	825		
	EEA_3133-03-7	CODCr	30	40619	22	1194	4	134
	EEA_3133-04-8	CODMn	19	19531	18	6424	12	10891
1-Oxygen Total			36	292209	37	46410	34	107247
2-Salinity	EEA_31-03-8	Total dissolved solids	5	2522	1	4	7	5597
	EEA_3142-01-6	Electrical conductivity	34	49440	32	13317	30	84135
2-Salinity Total			34	51962	32	13321	30	89732
3-Nitrogen	CAS_14797-55-8	Nitrate	38	96376	36	16144	37	164049
	CAS_14797-65-0	Nitrite	35	73266	33	10601	35	142117
	CAS_14798-03-9	Ammonium	38	99546	36	23228	37	127005
	EEA_3161-02-2	Total oxidised nitrogen	18	50862	17	12518	2	4078
	EEA_31615-01-7	Total nitrogen	34	51486	30	19170	11	2128
3-Nitrogen Total			39	371536	36	81661	37	439377
4-Phosphorus	CAS_14265-44-2	Phosphate	38	93936	33	17158	23	65920
	CAS_7723-14-0	Total phosphorus	39	81094	36	24532	15	26879
4-Phosphorus Total			39	175030	36	41690	25	92799
5-Acidification	EEA_3152-01-0	pH	37	103970	35	22248	29	77050
5-Acidification Total			37	103970	35	22248	29	77050

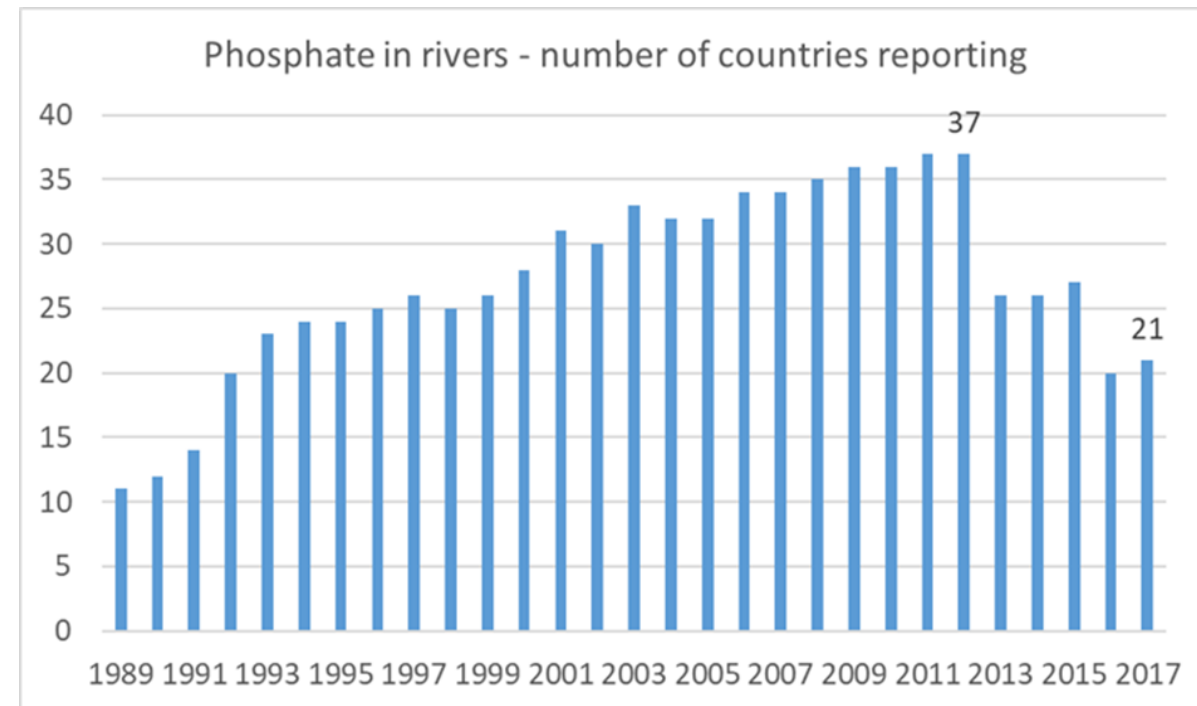
Waterbase has good coverage of the selected water quality parameters, only total dissolved solids is reported from few countries.

Reporting of phosphate in rivers

Number of river monitoring sites



Number of countries reporting



Update Waterbase in spring 2020 including 2018 data and better geographical coverage



Number of countries reporting on water quality parameters

Europe – rivers – number of countries reporting

SDG_WQ	Observed Prop	Label	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Grand
1-Oxygen	EEA_3131-01-9	Oxygen saturation	11	13	14	13	14	15	14	15	19	20	19	23	23	24	24	24	25	23	21	22	23	14	15	19	11	12	32
	EEA_3132-01-2	Dissolved oxygen	19	20	21	20	20	21	21	23	25	26	26	27	28	29	27	29	31	30	29	28	30	19	20	23	13	13	35
	EEA_3133-01-5	BOD5	16	16	17	17	16	17	17	17	20	21	22	22	24	25	25	26	29	28	28	28	29	20	20	22	11	11	32
	EEA_3133-02-6	BOD7	3	3	3	3	5	5	5	5	5	5	4	4	4	5	5	6	4	4	3	4	4	2	2	3	2	2	8
	EEA_3133-03-7	CODCr	14	13	14	13	11	13	13	15	17	17	18	17	19	21	20	24	23	21	19	18	17	13	14	16	9	9	30
	EEA_3133-04-8	CODMn	8	8	9	8	8	10	10	11	12	12	12	15	15	16	14	15	13	12	13	14	13	9	9	10	5	7	19
1-Oxygen Total			21	22	23	23	24	25	25	26	29	29	29	31	32	32	32	33	34	34	33	34	35	25	26	29	16	17	36
2-Salinity	EEA_31-03-8	Total dissolved solids																		1	1	1	2	5	4	3	1	1	5
	EEA_3142-01-6	Electrical conductivity	2	4	4	4	4	4	4	4	4	4	4	4	5	5	20	26	25	26	24	26	27	20	21	24	13	15	34
2-Salinity Total			2	4	4	4	4	4	4	4	4	4	4	4	5	5	20	26	25	26	24	26	27	20	21	24	13	15	34
3-Nitrogen	CAS_14797-55-8	Nitrate	20	21	22	22	22	25	24	24	28	30	29	31	31	32	31	32	32	33	33	34	34	28	28	29	15	15	38
	CAS_14797-65-0	Nitrite	13	14	15	14	14	17	17	20	20	25	25	27	26	27	28	28	28	29	28	28	30	20	20	21	11	10	35
	CAS_14798-03-9	Ammonium	21	21	22	23	22	23	22	23	26	28	27	28	30	29	30	30	31	32	30	33	34	27	27	28	15	16	38
	EEA_3161-02-2	Total oxidised nitrogen	8	8	9	8	8	9	8	9	10	11	11	12	14	12	9	11	12	10	11	10	10	6	5	7	5	6	18
	EEA_31615-01-7	Total nitrogen	12	14	17	16	17	18	18	19	20	22	20	24	22	24	23	26	27	24	24	25	27	22	21	24	10	13	34
3-Nitrogen Total			23	24	25	26	25	27	26	28	30	32	31	33	34	34	34	35	36	36	35	36	37	29	29	31	16	17	39
4-Phosphorus	CAS_14265-44-2	Phosphate	19	22	23	24	23	26	25	26	28	31	30	31	32	32	34	33	34	34	34	34	36	22	23	25	14	15	38
	CAS_7723-14-0	Total phosphorus	18	20	21	22	22	24	24	26	27	27	28	32	32	32	31	33	34	33	33	34	34	26	26	29	15	17	39
4-Phosphorus Total			22	23	24	25	24	27	26	28	30	31	31	33	34	34	34	35	36	36	35	36	37	29	29	31	16	17	39
5-Acidification	EEA_3152-01-0	pH	9	10	12	12	13	16	14	18	18	22	21	24	27	27	28	29	29	33	31	34	34	23	24	27	14	16	37
5-Acidification Total			9	10	12	12	13	16	14	18	18	22	21	24	27	27	28	29	29	33	31	34	34	23	24	27	14	16	37
Grand Total			23	24	25	26	26	27	26	28	30	32	31	33	34	34	34	35	36	36	35	36	37	29	29	31	18	19	39

Overview of monitoring sites for the water quality parameters

Europe – rivers – distinct number of monitoring sites

SDG_WQ	Observed Prop	Label	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1-Oxygen	EEA_3131-01-9	Oxygen saturation	962	1013	1122	1158	1294	1539	1496	1553	1902	2132	2002	2225	2514	2614	2857	4485	4647	4184	4758	3352	4445	5214	5128	4841	1597	1883
	EEA_3132-01-2	Dissolved oxygen	1428	1505	1637	1639	1701	1965	1989	2077	2471	2706	2617	2807	2954	3074	3231	5207	5626	4193	4052	4283	5571	4479	4545	4439	1617	1794
	EEA_3133-01-5	BOD5	1017	1069	1213	1205	1182	1519	1482	1537	1935	2168	2377	2580	2820	2952	3101	4886	5263	4175	6116	5305	5750	5207	4936	5224	1031	1053
	EEA_3133-02-6	BOD7	89	89	82	79	200	196	236	224	233	239	171	175	175	303	282	306	150	145	63	75	124	183	183	185	162	83
	EEA_3133-03-7	CODCr	642	660	723	738	711	777	758	950	1244	1286	1347	1489	1516	1585	1553	3310	3042	2179	2828	2048	2291	2661	2658	2673	524	426
	EEA_3133-04-8	CODMn	629	629	636	528	592	773	734	804	850	861	927	1035	1190	1304	963	972	763	605	664	847	801	638	632	565	276	313
2-Salinity	EEA_31-03-8	Total dissolved solids																		110	123	123	215	623	726	349	127	126
	EEA_3142-01-6	Electrical conductivity	72	92	93	89	93	95	96	105	104	106	104	104	140	149	1478	3927	3362	3195	3859	4211	5261	6324	6369	6496	1653	1863
3-Nitrogen	CAS_14797-55-8	Nitrate	1442	1522	1859	1854	1939	1890	1904	1960	2398	2648	2768	2941	3088	3191	3377	4916	5506	4879	7170	6641	6774	6532	6566	6403	3040	3168
	CAS_14797-65-0	Nitrite	817	818	962	1040	1185	1342	1442	1621	1882	2160	2289	2441	2642	2710	3040	4164	5113	4515	5336	3845	4544	5383	5578	5420	1385	1592
	CAS_14798-03-9	Ammonium	1637	1700	2110	2117	2241	2161	2191	2236	2672	2891	2923	2983	3306	3363	3506	4142	5347	5239	7578	6775	6851	6365	6440	6415	3115	3242
	EEA_3161-02-2	Total oxidised nitrogen	515	505	658	672	778	872	850	866	915	1010	1065	1590	1583	1621	1928	2448	3831	3548	5037	3283	3182	2911	2965	2926	2465	2838
	EEA_31615-01-7	Total nitrogen	646	733	882	902	985	1041	1114	1118	1191	1216	1330	1826	1937	2032	2149	3917	4088	3352	3193	3138	3616	2985	3092	3126	882	995
4-Phosphorus	CAS_14265-44-2	Phosphate	1493	1568	1979	2008	1954	2055	2063	2108	2407	2546	2592	2772	3029	3163	3526	4982	5731	4842	7273	6466	6427	5606	5892	5678	2837	2939
	CAS_7723-14-0	Total phosphorus	1178	1323	1448	1607	1589	1632	1648	1658	1774	1875	2115	2395	2807	2943	3111	5299	5648	4579	6021	5852	6383	4378	4462	4346	2502	2521
5-Acidification	EEA_3152-01-0	pH	980	1067	1103	1165	1226	1386	1380	1429	1562	2114	2285	2410	2810	2826	3239	5152	5404	7651	11898	11406	12490	6520	6649	6085	1769	1964



Recommendations to enhance comparability at the European level

- Re-use of existing delineations of water bodies and river basin districts (WFD)
- Harmonization of parameter selection and target setting among Member States
- Use of monitoring data from the last three years previous to the reporting year (2017-2019 for the 2020 data drive) with at least 4 measurements (surface waters) per year and monitoring site

EEA options

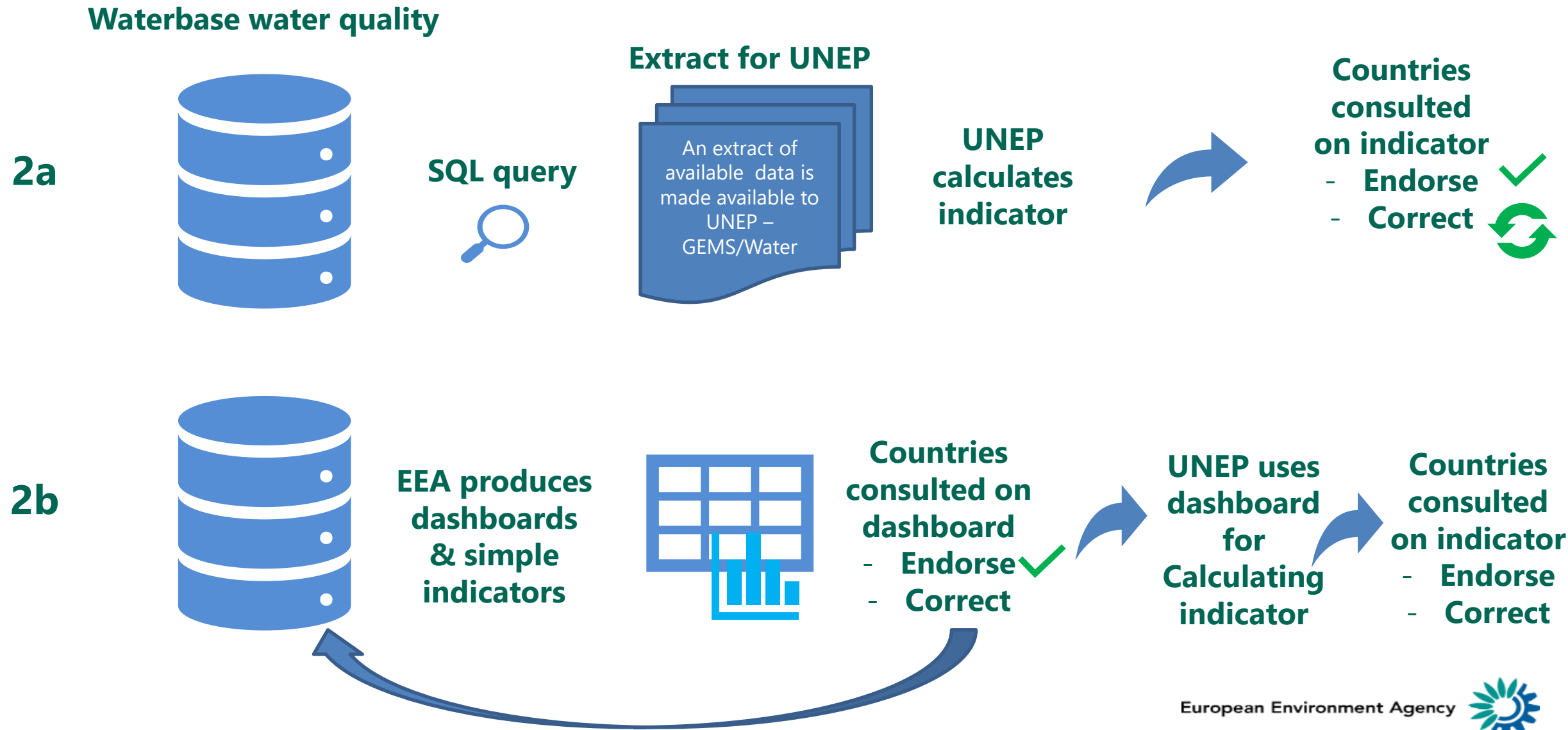
- Waterbase water quality has a
 - wide geographical coverage (up to 39 countries),
 - include information on RBDs, water bodies, monitoring sites (e.g. +10.000 river monitoring sites), and
 - Waterbase is updated with 2018 data and 2019 data is first available in 2021
 - all the suggested parameters and parameter groups by UNEP.

Option 2: Data reported by countries to EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator

- Overview of water quality parameters in Waterbase water quality
- **Simple water quality indicator based on common statistical based thresholds**



Option 2: Data reported by countries to EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator.

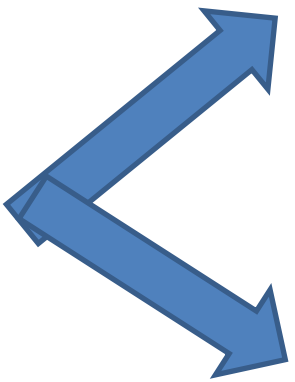


Option 2: Data reported by countries to EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator.

Waterbase water quality



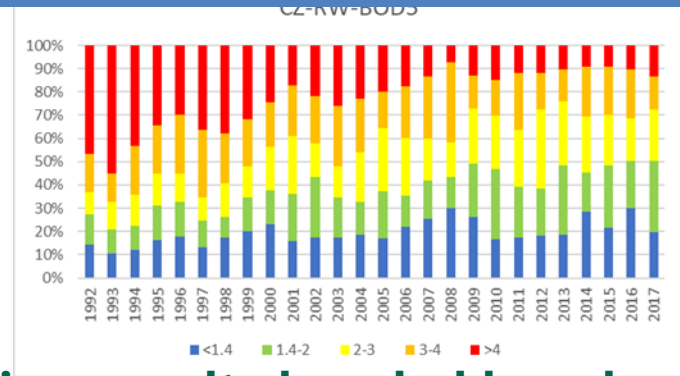
EEA produces dashboards & simple indicator



Overview of national information - Parameters, monitoring sites, years

SDG_GROUP	Label	2010	2011	2012	2013	2014	2015	2016	2017
1-Oxygen	BOD5	126	127	127	128	130	130	127	127
	CODCr	124	125	125	129	130	130	127	127
	CODMn	55	56	57	61	61	62	60	60
2-Salinity	Dissolved oxygen	124	125	125	129	130	130	127	127
	Electrical conductivity	125	126	126	129	130	130	127	127
3-Nitrogen	Total dissolved solids	123	123	123	128	130	130	127	126
	Ammonium	126	127	127	129	130	130	127	127
	Nitrate	126	127	127	129	130	130	127	127
4-Phosphorus	Nitrite	124	125	125	129	130	130	127	127
	Phosphate	51	53	53	56	69	70	68	69
5-Acidification	Total phosphorus	126	127	127	129	130	130	127	127
	pH	125	126	126	129	130	130	127	127

Simple water quality indicators



Countries consulted on dashboard

- Endorse
- Correct

EEA example – phosphorus in Czechia rivers

Threshold values
Annual average -
Rivers

Parameter	Class
Phosphate	<0.04
(mg P/L)	0.04-0.067
	0.067-0.110
	0.110-0.170
	>0.170
Total phosphorus	<0.087
(mg P/L)	0.087-0.125
	0.125-0.174
	0.174-0.264
	>0.264

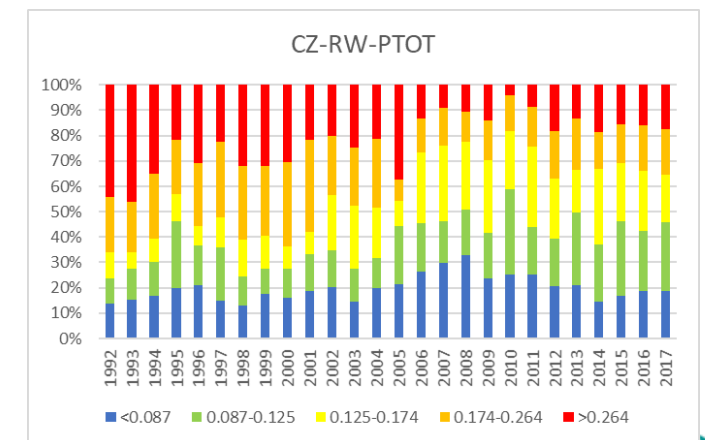
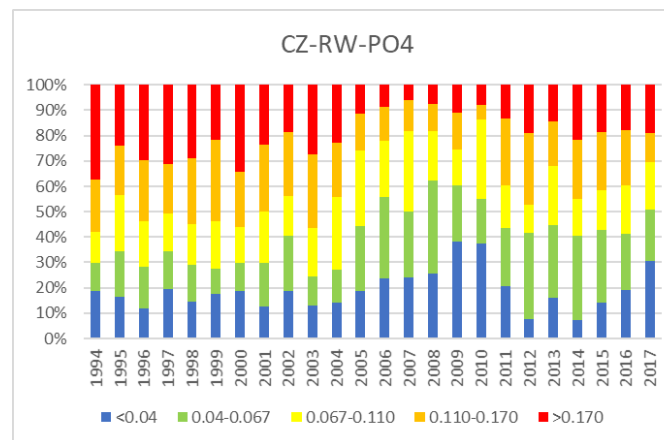
Example: national
set thresholds

Czechia – rivers - number of monitoring sites in different P classes

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Phosphate			64	67	67	67	69	69	64	64	64	69	70	70	68	66	66	63	51	53	53	56	69	70	68	69
<0.04			12	11	8	13	10	12	12	8	12	9	10	13	16	16	17	24	19	11	4	9	5	10	13	21
0.04-0.067			7	12	11	10	10	7	7	11	14	8	9	18	22	17	24	14	9	12	18	16	23	20	15	14
0.067-0.110			8	15	12	10	11	13	9	13	10	13	20	21	15	21	13	9	16	9	6	13	10	11	13	13
0.110-0.170			13	13	16	13	18	22	14	17	16	20	15	10	9	8	7	9	3	14	15	10	16	16	15	8
>0.170			24	16	20	21	20	15	22	15	12	19	16	8	6	4	5	7	4	7	10	8	15	13	12	13
Total phosphorus	59	65	66	65	52	67	69	69	69	69	69	69	66	70	68	67	67	122	126	127	127	129	130	130	127	127
<0.087	8	10	11	13	11	10	9	12	11	13	14	10	13	15	18	20	22	29	32	32	26	27	19	22	24	24
0.087-0.125	6	8	9	17	8	14	8	7	8	10	10	9	8	16	13	11	12	22	42	24	24	37	29	38	30	34
0.125-0.174	6	4	6	7	4	8	10	9	6	6	15	17	13	7	19	20	18	35	29	40	30	22	39	30	24	
0.174-0.264	13	13	17	14	13	20	20	19	23	25	16	16	18	6	9	10	8	19	18	20	24	26	19	20	23	23
>0.264	26	30	23	14	16	15	22	22	21	15	14	17	14	26	9	6	7	17	5	11	23	17	24	20	20	22

Relative total phosphorus

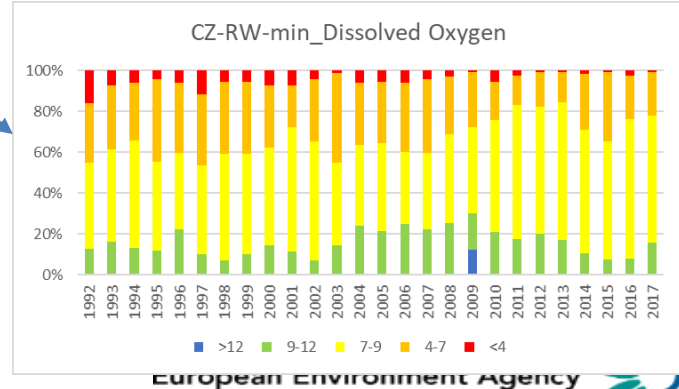
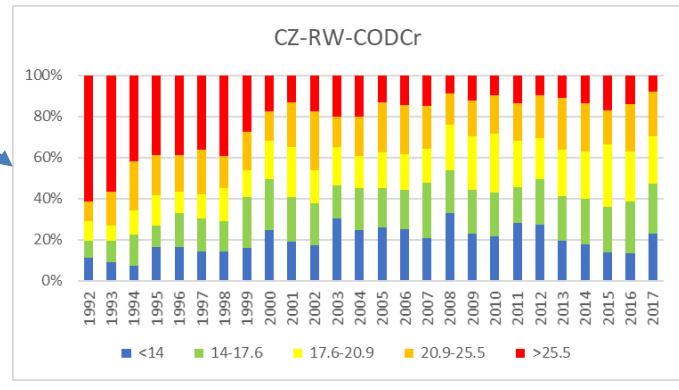
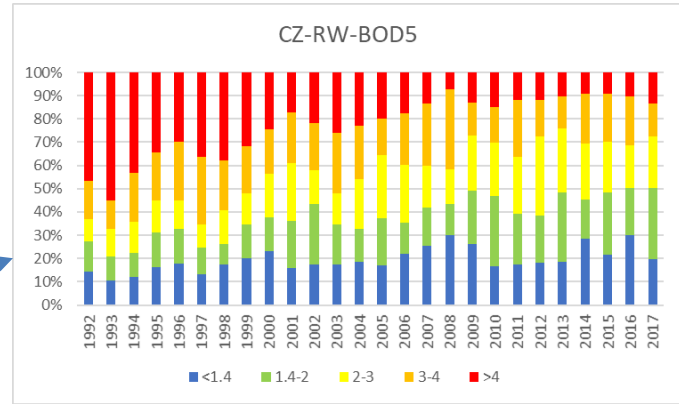
CZ-RW-PTOT	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<0.087	14%	15%	17%	20%	21%	15%	13%	17%	16%	19%	20%	14%	20%	21%	26%	30%	33%	24%	25%	25%	20%	21%	15%	17%	19%	19%
0.087-0.125	10%	12%	14%	26%	15%	21%	12%	10%	12%	14%	14%	13%	12%	23%	19%	16%	18%	18%	33%	19%	19%	29%	22%	29%	24%	27%
0.125-0.174	10%	6%	9%	11%	8%	12%	14%	13%	9%	9%	22%	25%	20%	10%	28%	30%	27%	29%	23%	31%	24%	17%	30%	23%	24%	19%
0.174-0.264	22%	20%	26%	22%	25%	30%	29%	28%	33%	36%	23%	23%	27%	9%	13%	15%	12%	16%	14%	16%	19%	20%	15%	15%	18%	18%
>0.264	44%	46%	35%	22%	31%	22%	32%	32%	30%	22%	20%	25%	21%	37%	13%	9%	10%	14%	4%	9%	18%	13%	18%	15%	16%	17%



EEA example – oxygen parameters in Czechia rivers

National set thresholds – BOD5, CODCr & CODMn 20,40, 60, 80% percentiles
 Dissolved oxygen and Oxygen saturation minimum - expert (me) judgement and

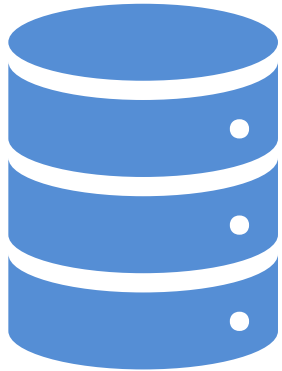
Oxygen status class	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BOD5	62	67	67	67	67	69	69	69	69	69	69	69	70	70	68	67	67	122	126	127	127	128	130	130	127	127
<1.4	9	7	8	11	12	9	12	14	16	11	12	12	13	12	15	17	20	32	21	22	23	24	37	28	38	25
1.4-2	8	7	7	10	10	8	6	10	10	14	18	12	10	14	9	11	9	28	38	28	26	38	22	35	26	39
2-3	6	8	9	9	8	7	10	9	13	17	10	9	15	19	17	12	10	29	29	31	43	35	31	28	23	28
3-4	10	8	14	14	17	20	15	14	13	15	14	18	16	11	15	18	23	17	19	31	20	18	28	27	27	18
>4	29	37	29	23	20	25	26	22	17	12	15	18	16	14	12	9	5	16	19	15	15	13	12	12	13	17
CODCr	62	67	67	67	67	69	69	69	69	69	69	69	69	69	68	67	67	122	124	125	125	129	130	130	127	127
<14	7	6	5	11	11	10	10	11	17	13	12	21	17	18	17	14	22	28	27	35	34	25	23	18	17	29
14-17.6	5	7	10	7	11	11	10	17	17	15	14	11	14	13	13	18	14	26	26	22	28	28	29	29	32	31
17.6-20.9	6	5	8	10	7	8	11	9	13	17	11	13	11	12	12	11	15	32	36	28	25	29	30	39	31	29
20.9-25.5	6	11	16	13	12	15	11	13	10	15	20	10	13	17	16	14	10	21	23	23	26	33	30	22	29	28
>25.5	38	38	28	26	26	25	27	19	12	9	12	14	14	9	10	10	6	15	12	17	12	14	18	22	18	10
CODMn																		85	55	56	57	61	61	62	60	60
<3.9																		11	8	14	16	8	19	16	15	5
3.9-4.6																		12	10	13	13	7	12	17	11	13
4.6-5.2																		16	11	10	11	23	9	10	10	14
5.2-6.4																		15	12	11	10	10	13	12	12	16
>6.4																		31	14	8	7	13	8	7	12	12
Dissolved oxygen	62	67	67	67	67	69	69	69	69	69	69	69	66	70	68	67	67	122	124	125	125	129	130	130	127	127
<4	10	5	4	3	4	8	4	4	5	5	3	1	4	4	4	3	2	1	7	3	1	1	2	1	3	1
4-7	18	21	19	27	23	24	24	24	21	14	21	30	20	21	23	24	19	33	23	18	21	19	36	44	27	27
7-9	26	30	35	29	25	30	36	34	33	42	40	28	26	30	24	25	29	51	68	82	78	87	78	75	87	79
9-12	8	11	9	8	15	7	5	7	10	8	5	10	16	15	17	15	17	22	26	22	25	22	14	10	10	20
>12																		15								
Oxygen saturation	62	66	66	67	67	69	69	69	69	69	69	69	70	70	68	67	67									
<40%	9	5	4	5	3	7	5	4	6	5	3	3	4	4	1	2	2									
40-70%	16	23	29	24	24	26	23	21	17	15	22	29	23	25	28	24	19									
70-90%	29	33	26	32	34	33	36	42	42	43	38	30	34	35	23	21	28									
90-120%	8	5	7	6	6	3	5	2	4	6	6	7	9	6	16	20	18									



Option 2: Data reported by countries to EEA Waterbase water quality are reused to populate UNEPs SDG level 1 indicator.

European data set used to set thresholds

Waterbase water quality



European data set used to set thresholds

European statistics – river phosphorus

	Countries	Mon_Sites	Observator	Average	Median	P20%	P40%	P60%	P80%
Phosphate	38	14134	93737	0,129	0,040	0,011	0,028	0,054	0,121
Total phosphorus	39	13474	81014	0,604	0,073	0,024	0,054	0,098	0,185



European thresholds	High	Good	Moderate	Poor	Bad
Percentiles	< 20%	20-40%	40-60%	60-80%	> 80%
Phosphate	< 11	11-28	28-54	54-121	>121
Total phosphorus	< 24	24-54	54-98	98-185	> 185

European data set used to set thresholds

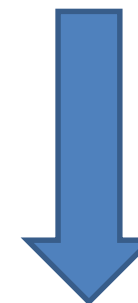
Statistics - Phosphate Annual average - Rivers

	Phosphate (mg P/L)
Number	84282
Mean	0.135
Median	0.044
Percentile 20%	0.011
Percentile 40%	0.030
Percentile 60%	0.060
Percentile 80%	0.139



Threshold values based on percentiles

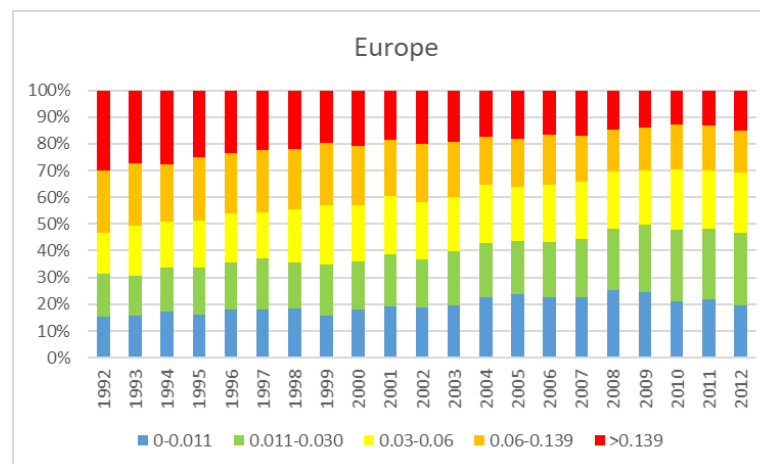
Threshold values
<0.011
0.011-0.030
0.03-0.06
0.06-0.139
>0.139



Threshold values applied on European data

Europe - aggregated

Threshold values	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Grand Total
<0.011	15%	16%	17%	16%	18%	18%	18%	16%	18%	19%	19%	20%	23%	24%	22%	22%	25%	25%	21%	22%	19%	21%
0.011-0.030	16%	15%	16%	17%	18%	19%	17%	19%	18%	20%	18%	20%	20%	20%	21%	22%	23%	25%	27%	27%	27%	22%
0.03-0.06	15%	19%	17%	18%	18%	17%	20%	22%	21%	22%	22%	20%	22%	20%	21%	22%	21%	20%	23%	22%	23%	21%
0.06-0.139	23%	23%	22%	24%	23%	24%	23%	23%	22%	21%	22%	21%	18%	18%	19%	17%	16%	16%	17%	17%	15%	19%
>0.139	30%	27%	28%	25%	23%	22%	22%	20%	21%	18%	20%	19%	17%	18%	17%	17%	15%	14%	13%	13%	15%	18%

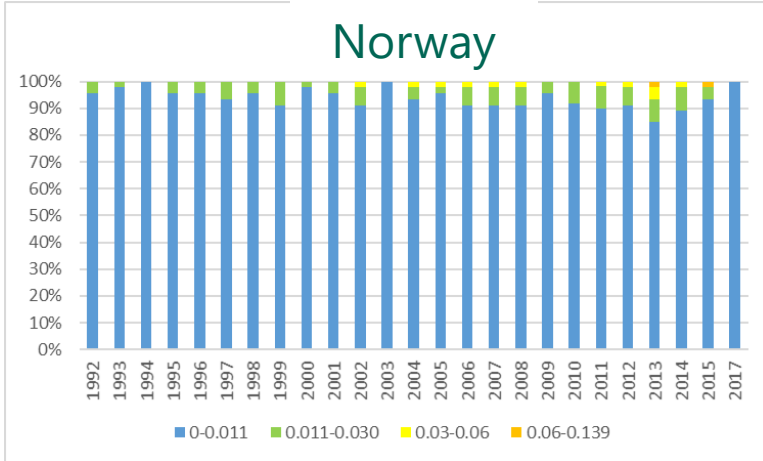


Indicator showing
improvements over time
less red/orange
more blue/green/yellow

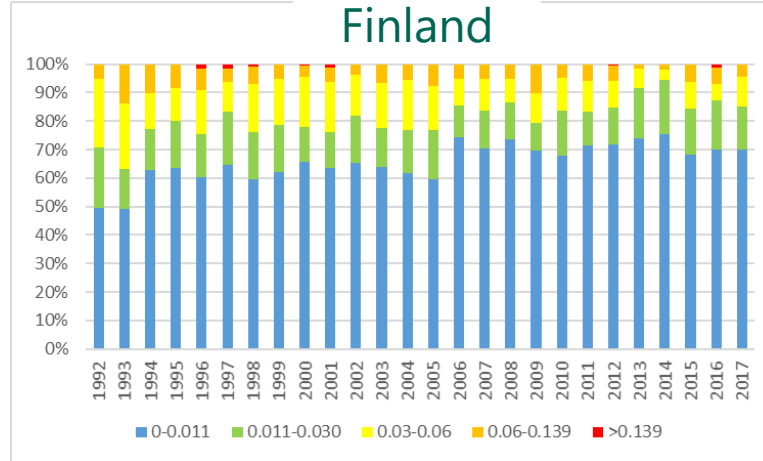


Examples of river phosphate trends by countries

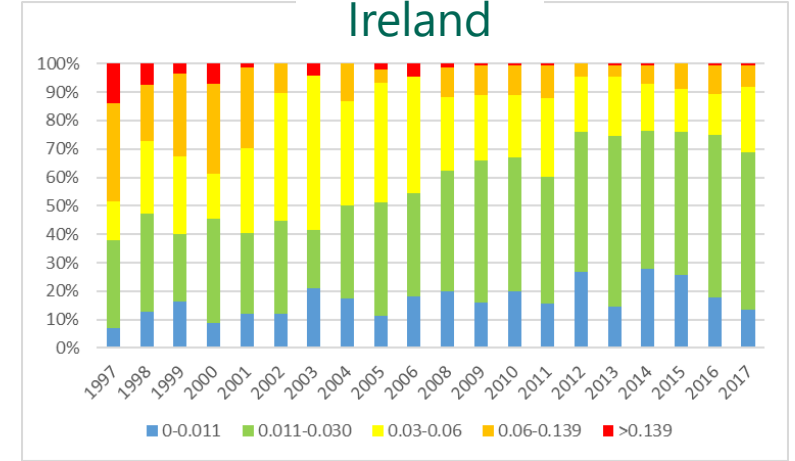
Blue/green



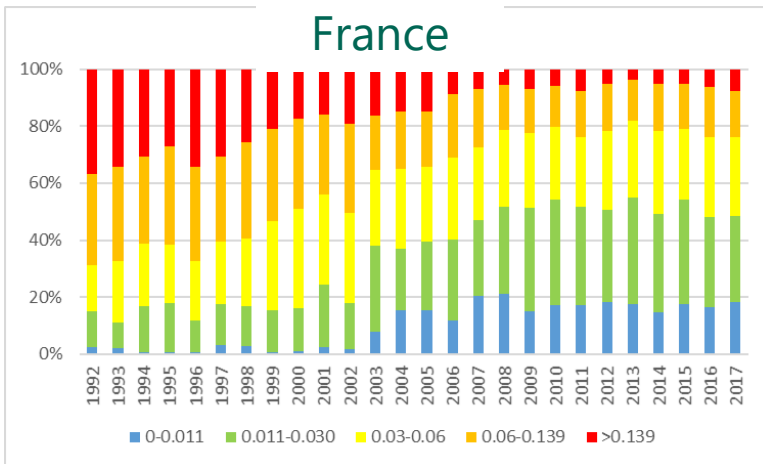
Finland



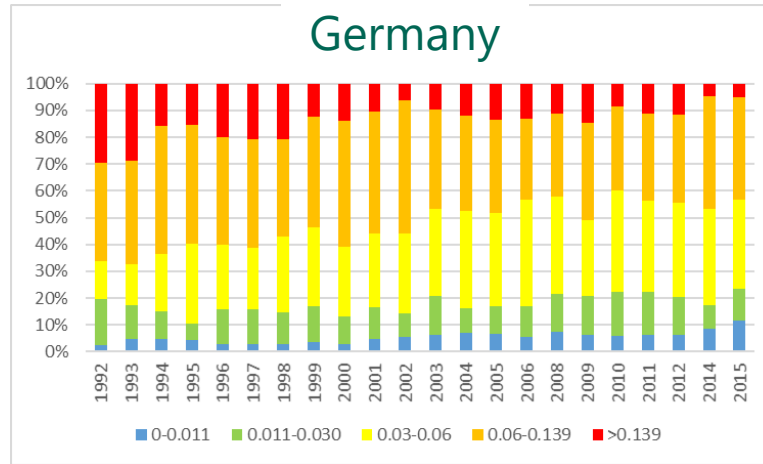
Green/yellow



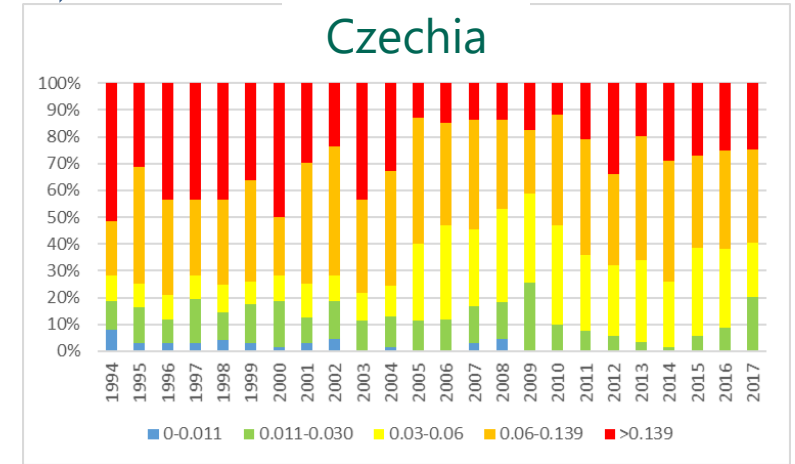
Green/yellow



Germany



Orange/Red



Most countries have improvement in status

Other examples of using European set thresholds

1992-2017 - Rivers



1992-2017 - Rivers



Note: Suspicious IE phosphate data before 2000.

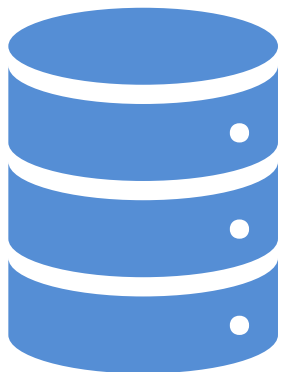
Source: quartiles ([indicator dashboard](#))

Option 3: 2nd RBMPs results reported by EU Member States (+Norway) on physico-chemical quality elements are reused by countries/UNEP for the SDG 6.3.2 indicator



Option 3: 2nd RBMPs results on physico-chemical quality elements are reused by countries/UNEP for the SDG 6.3.2 indicator (level 2).

WFD database



WISE WFD
dashboards
on physico-
chemical QEs



Link



Physico-chemical quality elements

QE3-1-3 - Oxygenation conditions
QE3-1-4 - Salinity conditions
QE3-1-5 - Acidification status
QE3-1-6-1 - Nitrogen conditions
QE3-1-6-2 - Phosphorus conditions

High

Good

Less than good

Some Member States have not reported physico-chemical QEs
Different good/moderate boundaries – (Type specific)
6-10 years old data
No groundwater status



WFD quality elements

Show:

Management plan (RBMP)
2nd

Measure
Number

Water bodies
(All)

Filter by:

Quality element
QE3-1-6-1 - Nitrogen condit..

Quality element status
Multiple values

Ecological status or potential
Multiple values

Category
River

Type
Multiple values

Filter by spatial unit:

Country
All

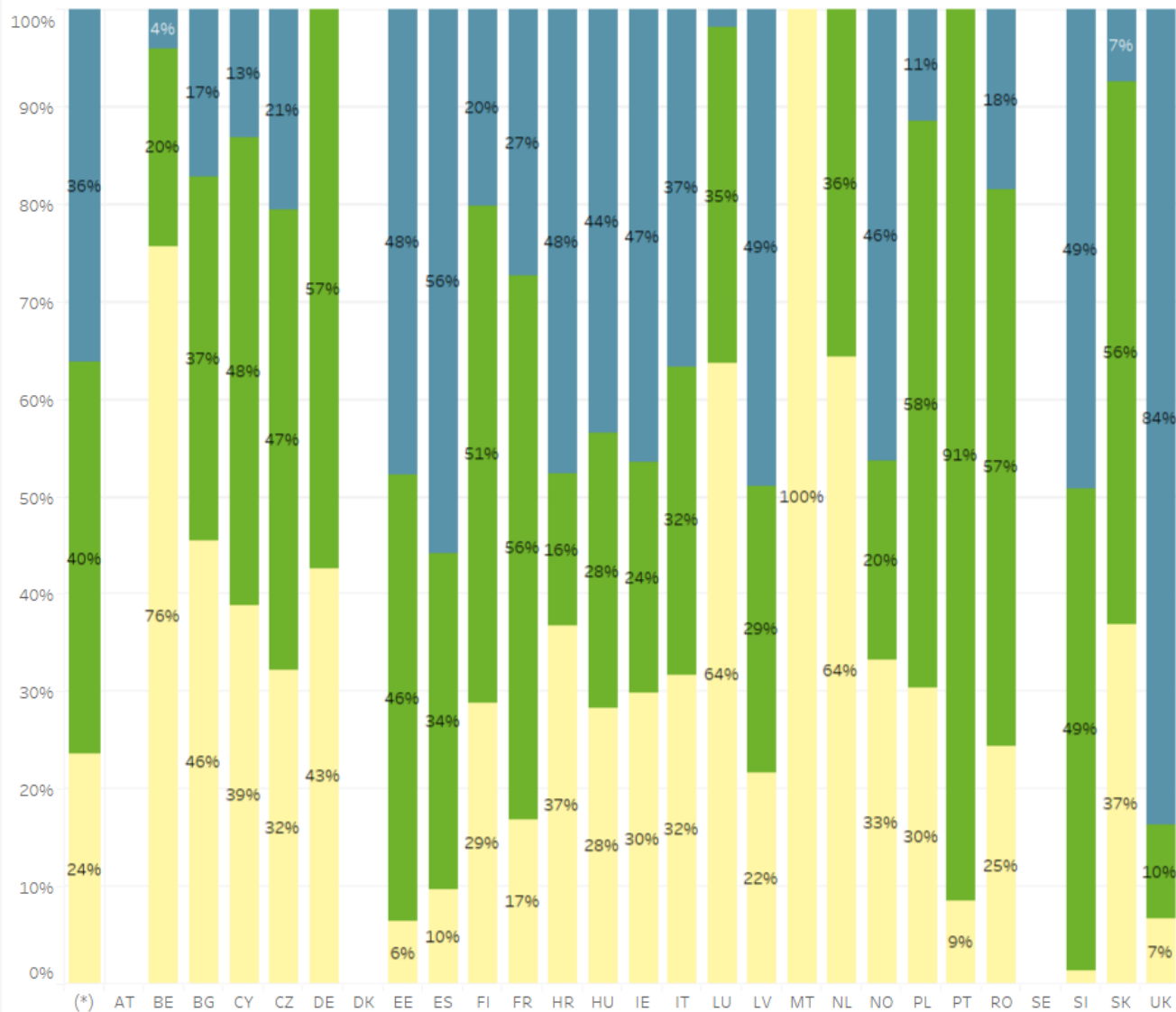
River basin district (RBD)
All

Sub-unit
All

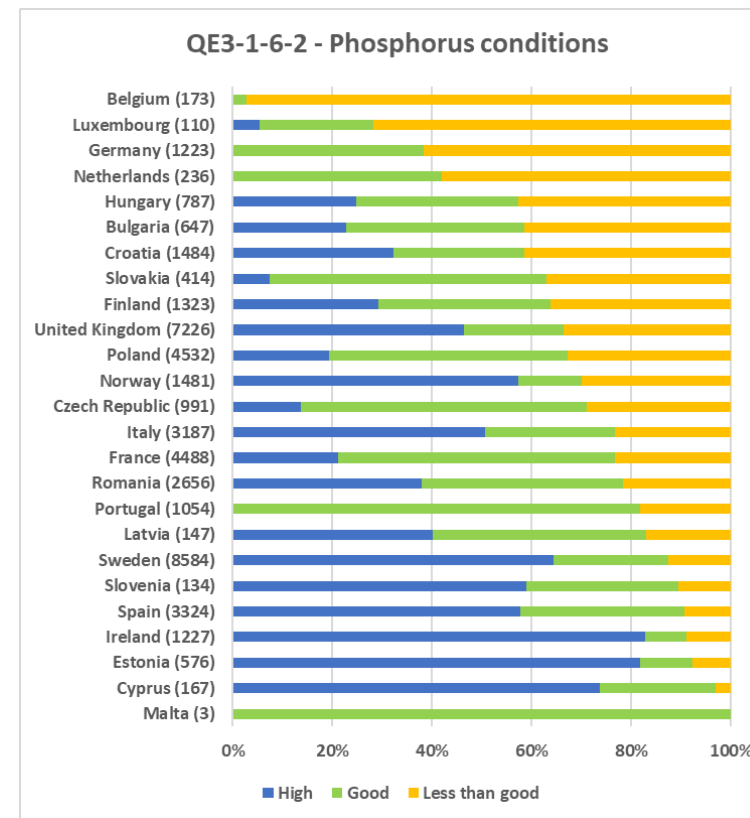
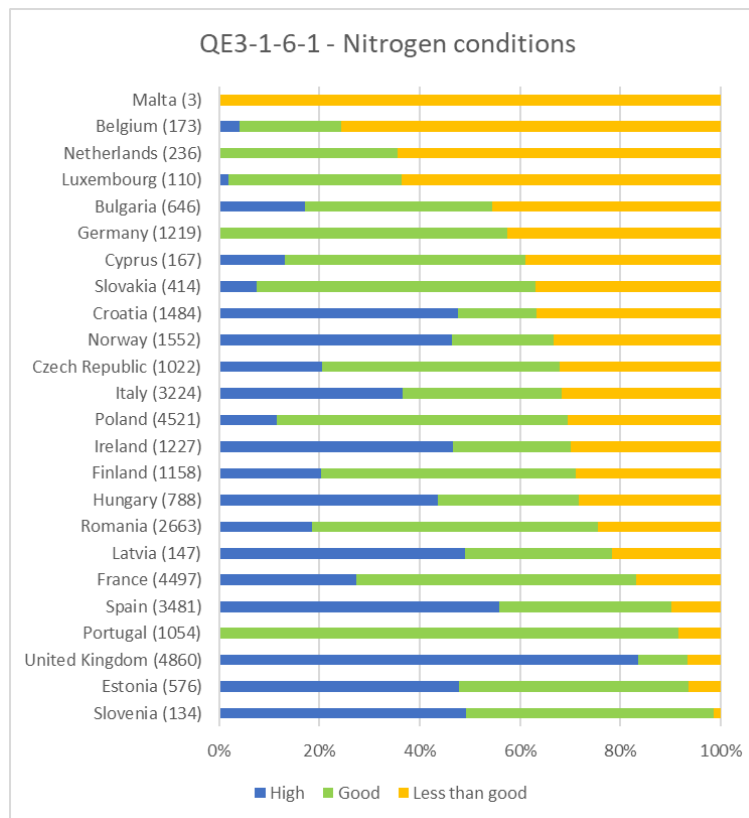
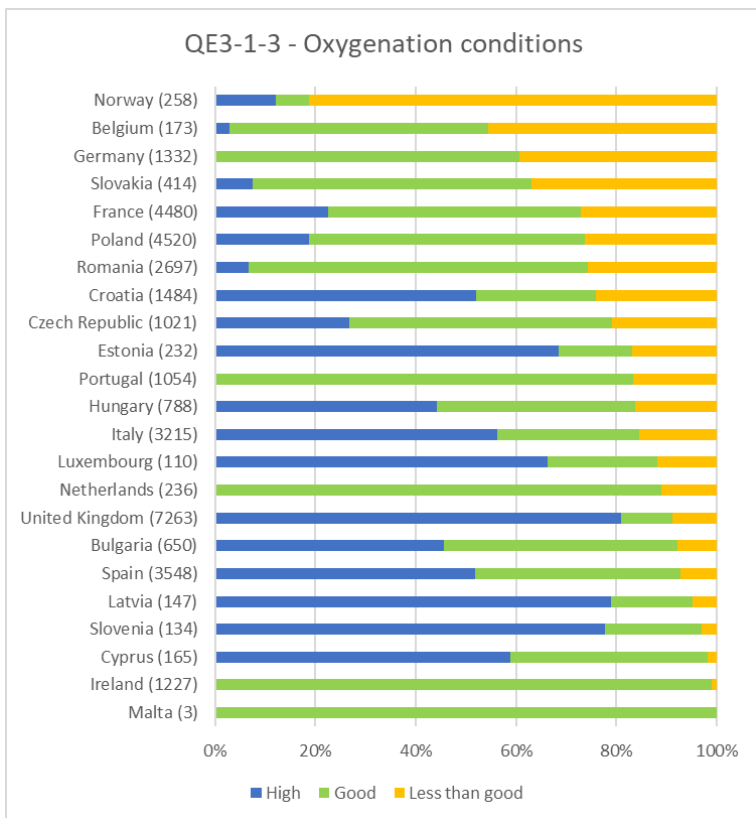
QE status or potential

- High
- Good
- Less than good

QE3-1-6-1 - Nitrogen conditions status in surface water bodies, by country



River water bodies – physico-chemical QE status



Examples of using physico-chemical QE ecological status reported by Member States with the 2nd River Basin Management Plans

Next steps

- Presentation at WG-DIS Webinar April 2020
- Discussions and recommendation from WG-DIS → SCG and/or Water Directors
- If reuse of Waterbase water quality data is accepted, EEA set up a set of dashboards
- Governance aspects – countries report/endorse deliveries to SDG 6.3.2
- UNEP/GEMS Water calculate indicator
- Countries endorse indicators
- EEA dashboards provide detailed information