# Freshwater and Marine data flows
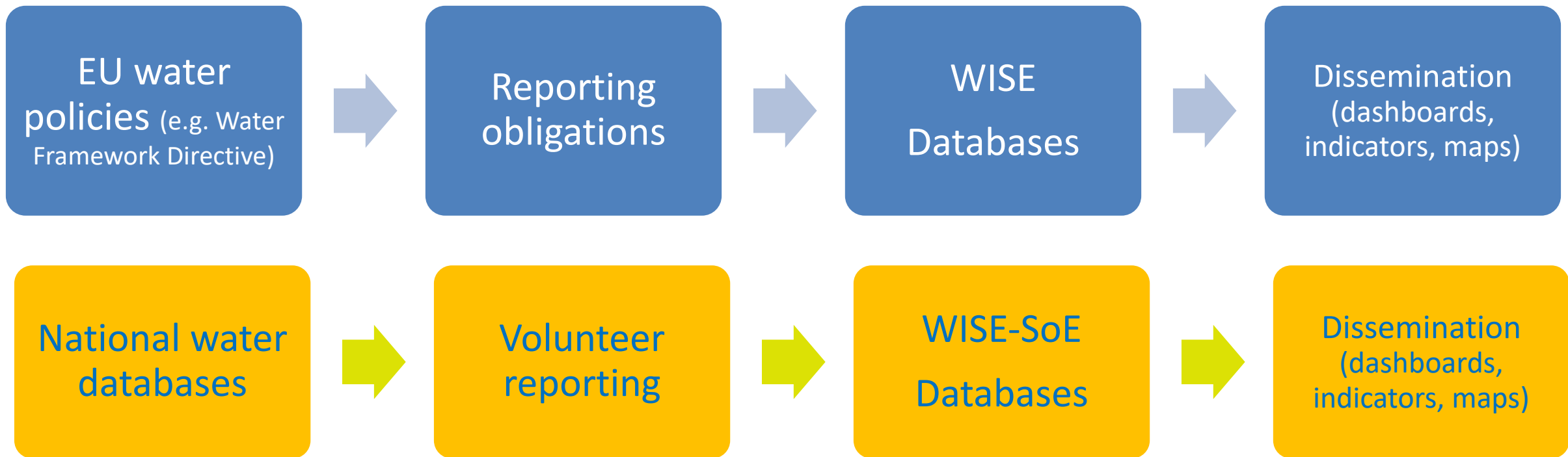
26. May 2021 – EuropaBon
1st Stakeholder Workshop
Peter Kristensen, EEA

**European Environment Agency**

# EEA objectives and data flows (Water directives and WISE-SoE)

**The European Environment Agency provides sound, independent information on the environment for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public**. In close collaboration with the European Environmental Information and Observation Network (Eionet) and its 32 member countries, the EEA gathers data and produces assessments on a wide range of topics related to the environment.

| EU water policies (e.g. Water Framework Directive) | → | Reporting obligations | → | WISE Databases | → | Dissemination (dashboards, indicators, maps) |
|---|---|---|---|---|---|---|
| National water databases | → | Volunteer reporting | → | WISE-SoE Databases | → | Dissemination (dashboards, indicators, maps) |

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Tables

Surface water bodies: Number and Size, by Chemical status

| Show: | | Number | | % Number (pane) | | Length | | % Length (pane) | | Area | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Management plan (RBMP) | RBMP | Good | Failing to achi. | Good | Failing to achi. | Good | Failing to achi. | Good | Failing to achi. | Good | Failing to achi. |
| 2nd | 2nd | 42 065 | 50 966 | 45,2% | 54,8% | 630 058 | 380 680 | 62,3% | 37,7% | 241 992 | 193 423 |
| Water bodies | NUTS0 | Number | | % Number (pane) | | Length | | % Length (pane) | | Area | |
| (All) | | Good | Failing to ach. | Good | Failing to ach. | Good | Failing to achi. | Good | Failing to achi. | Good | Failing to ach. |
| Filter by: | AT | | 8 127 | | 100,0% | | 32 278 | | 100,0% | | 522 |
| Chemical status | BE | 12 | 541 | 2,2% | 97,8% | | 9 346 | | 100,0% | 14 | 1 501 |
| (Multiple values) | BG | 322 | 25 | 92,8% | 7,2% | 22 358 | 1 940 | 92,0% | 8,0% | 512 | 254 |
| Category | CY | 173 | 7 | 96,1% | 3,9% | 1 560 | 61 | 96,3% | 3,7% | 870 | |
| (All) | CZ | 768 | 349 | 68,8% | 31,2% | 11 799 | 6 343 | 65,0% | 35,0% | 203 | 60 |
| Type | DE | | 9 808 | | 100,0% | | 137 160 | | 100,0% | | 26 177 |
| (All) | DK | 72 | 62 | 53,7% | 46,3% | 38 | 150 | 20,1% | 79,9% | 22 245 | 4 374 |
| | EE | 73 | 15 | 83,0% | 17,0% | 1 783 | 53 | 97,1% | 2,9% | 12 196 | 11 000 |
| Filter by spatial unit: | ES | 4 476 | 329 | 93,2% | 6,8% | 75 735 | 5 912 | 92,8% | 7,2% | 15 168 | 787 |
| Country | FI | 3 966 | 3 440 | 49,5% | 50,5% | 24 906 | 10 848 | 69,7% | 30,3% | 51 636 | 9 697 |
| (All) | FR | 7 181 | 1 814 | 79,8% | 20,2% | 146 560 | 38 071 | 79,4% | 20,6% | 27 213 | 3 560 |
| River basin district (RBD) | HR | 1 443 | 129 | 91,8% | 8,2% | 17 338 | 1 736 | 90,9% | 9,1% | 13 211 | 852 |
| (All) | HU | 493 | 84 | 85,4% | 14,6% | 9 891 | 2 759 | 78,2% | 21,8% | 746 | 131 |
| | IT | 6 152 | 733 | 89,4% | 10,6% | 59 436 | 7 008 | 89,5% | 10,5% | 11 447 | 5 029 |
| Sub-unit | LU | | 110 | | 100,0% | | 1 214 | | 100,0% | | |
| (All) | LV | 50 | 22 | 69,4% | 30,6% | 1 656 | 453 | 78,5% | 21,5% | 156 | 2 398 |
| | MT | 10 | 9 | 52,6% | 47,4% | 3 | | 100,0% | | 379 | 0 |
| | NL | 279 | 368 | 43,1% | 56,9% | 1 570 | 2 585 | 37,8% | 62,2% | 379 | 6 924 |
| | PL | 3 331 | 1 489 | 69,1% | 30,9% | 75 326 | 36 071 | 67,6% | 32,4% | 1 573 | 831 |

Notes:

Graphs

Ecological status, by Category (% Number of surface water bodies)

Interactive maps

Water bodies (excluding unknown status) failing to achieve Good Ecological status, by RBD

Link to [Quality element status](#)

Six thematic web pages with dashboards

Related content

Data references    Data visualisations    Figures used    News and articles    See also

Quality element status | Ecological status of surface water | Delineation of water bodies | Chemical status of surface water | Groundwater quantitative and | Pressures and impacts

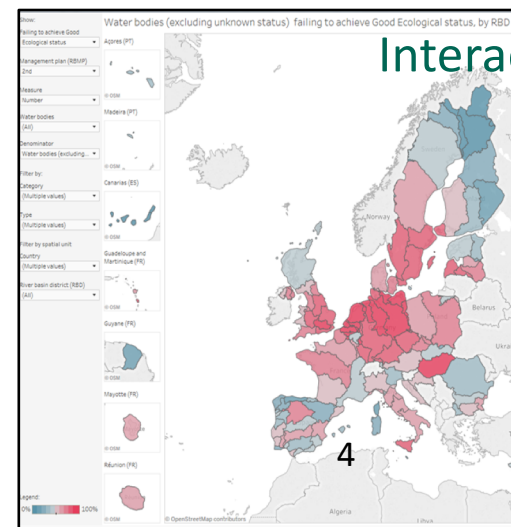[https://www.eea.europa.eu/themes/water/european-waters/water-quality-and-water-assessment/water-assessments/eea-2018-water-assessment](https://www.eea.europa.eu/themes/water/european-waters/water-quality-and-water-assessment/water-assessments/eea-2018-water-assessment)

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# Ecological status and potential



**Surface waters** (rivers, lakes, transitional and coastal waters)

**Ecological status or potential**

Biological quality elements (phytoplankton, phytobenthos, benthic invertebrates, fish macrophytes)
Physico-chemical elements (Nutrients, organic pollution, acidification, RBSP)
Hydromorphology elements (hydrology, morphology, barriers)

ECOLOGICAL STATUS

HIGH
GOOD
MODERATE
POOR
BAD

One-out all out principle,

# WISE WFD - All (surface water bodies) all BQE

**2nd RBMP BQEs**
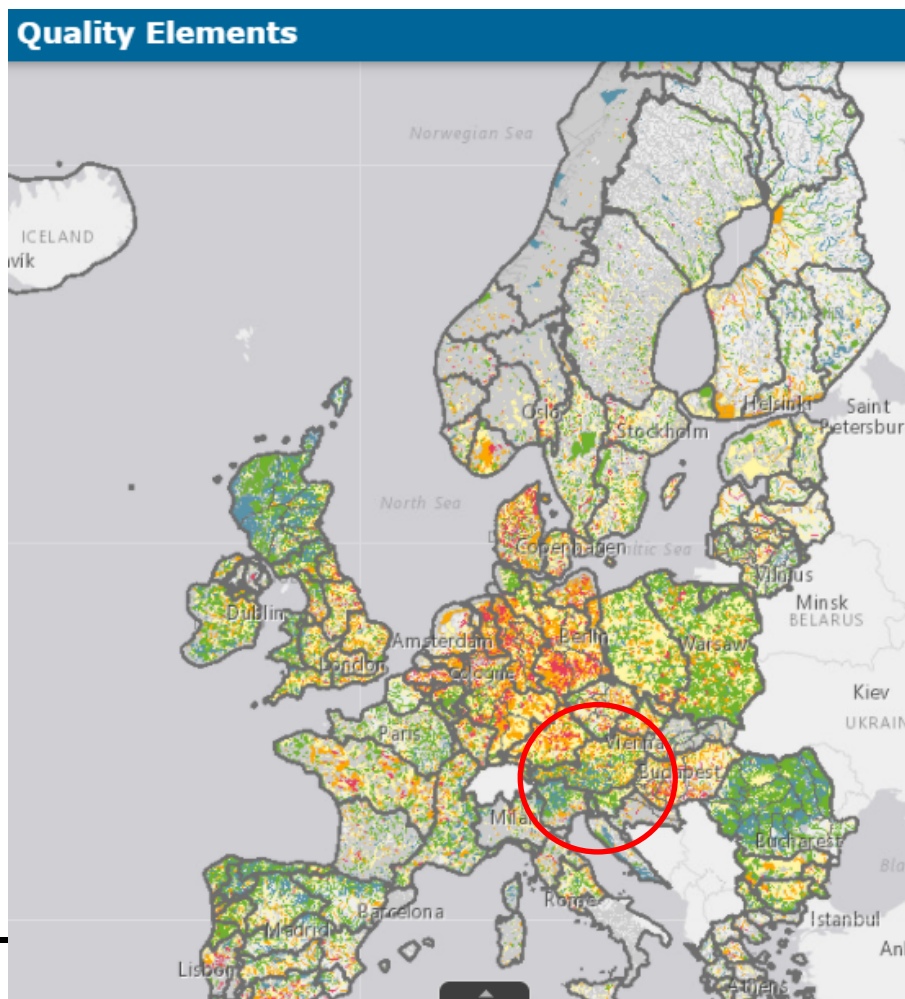
**Zoom**



Link to map application

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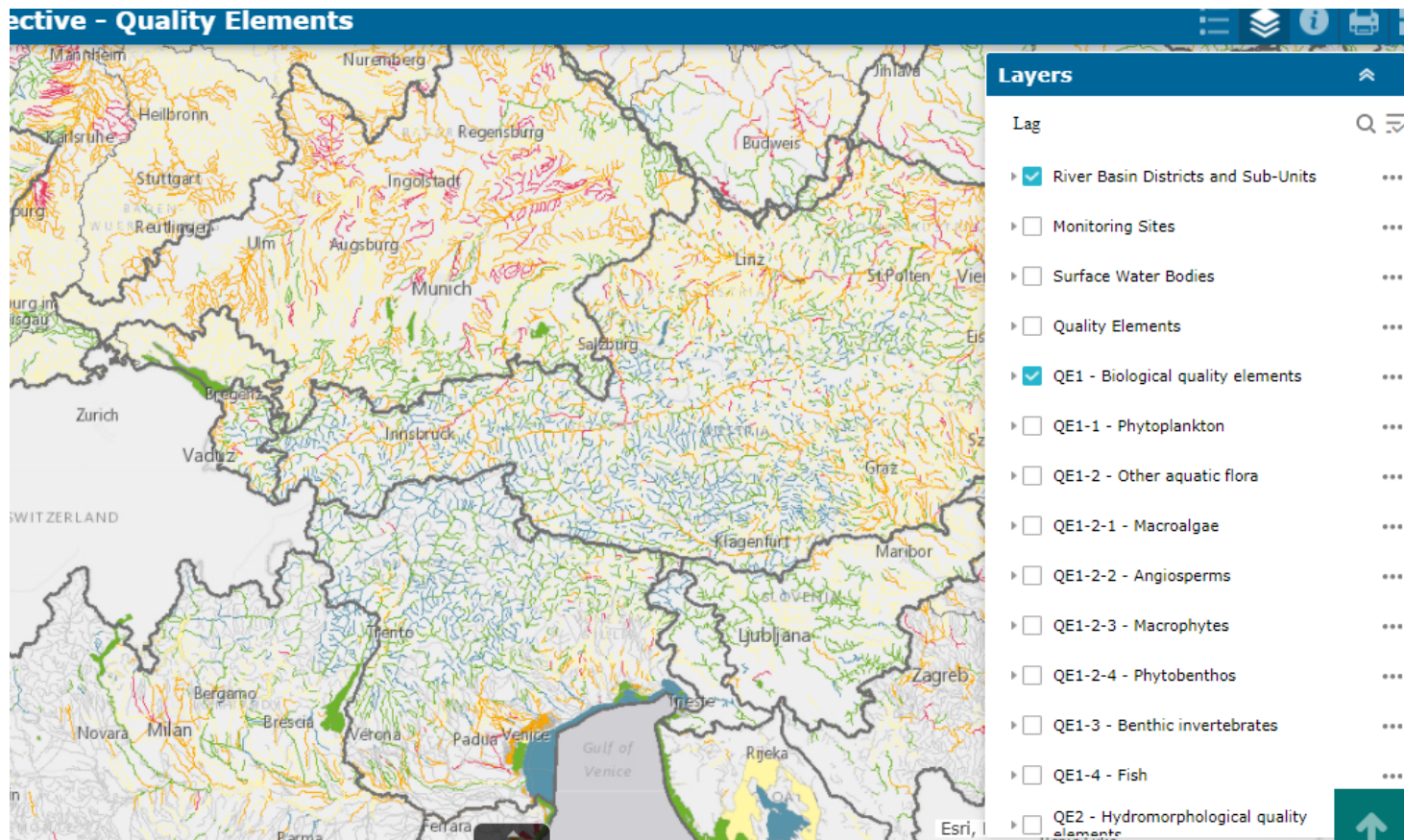
# Biological quality elements



QE1 - Biological quality elements status in surface water bodies — **River**
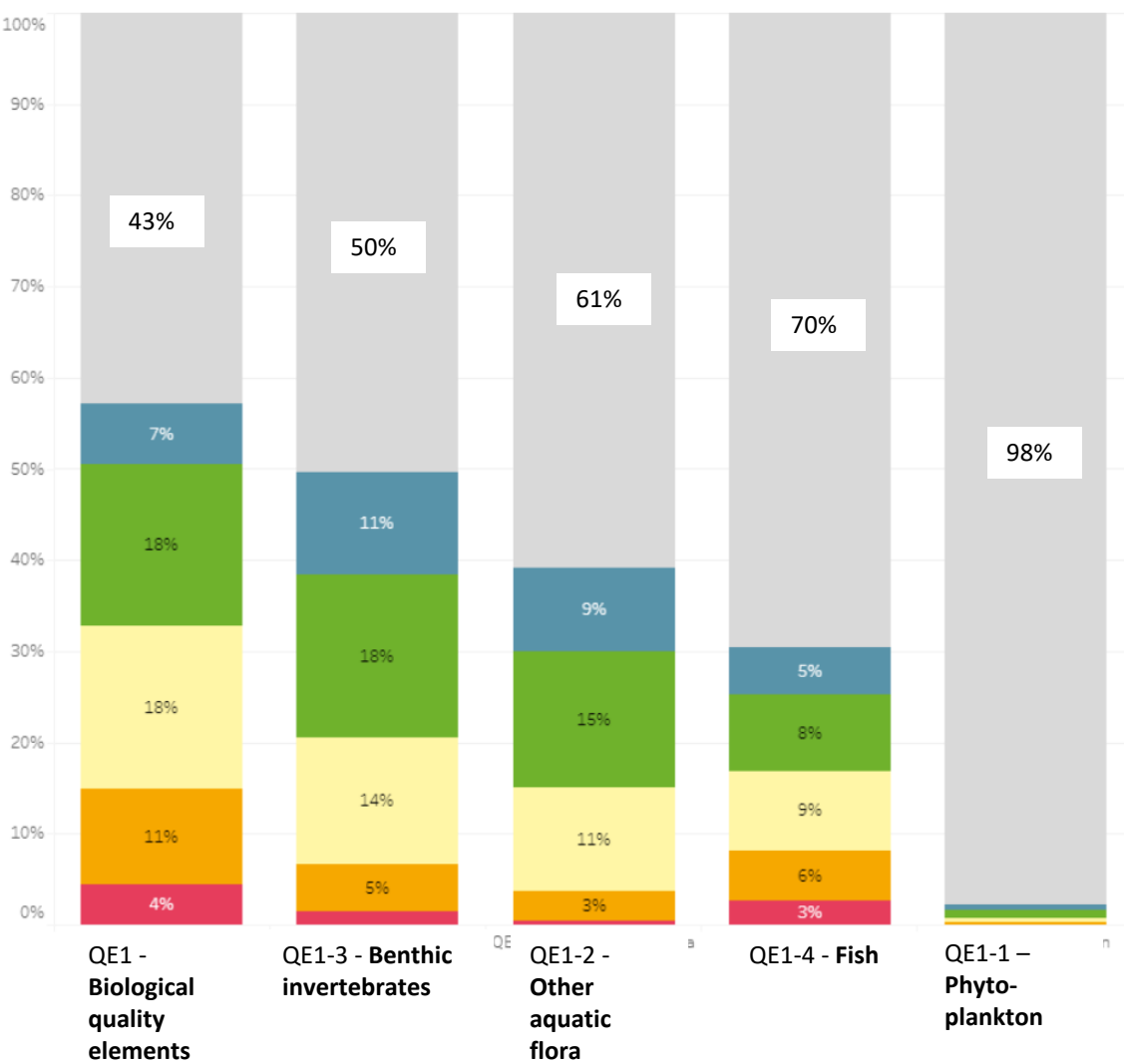
| | Rivers | | | Lakes | | |
|---|---|---|---|---|---|---|
| | Countries | Number | Length (km) | Countries | Number | Area (km²) |
| Total water bodies | 29 | 114.125 | 1.705.693 | 27 | 25.798 | 96.495 |
| **QE1 - Biological quality elements** | 28 | 65.214 | 1.014.822 | 25 | 11.385 | 71.119 |
| *% water bodies with BQEs* | | *57%* | *59%* | | *44%* | *74%* |
| QE1-1 - Phytoplankton | 16 | 2.472 | 66.020 | 25 | 9.166 | 62.507 |
| QE1-2 - Other aquatic flora | 27 | 44.755 | 763.016 | 23 | 4.699 | 36.412 |
| QE1-3 - Benthic invertebrates | 28 | 56.618 | 880.641 | 19 | 3.571 | 38.824 |
| QE1-4 - Fish | 27 | 34.684 | 531.888 | 18 | 3.904 | 32.535 |

| | Transitional waters | | | Coastal waters | | |
|---|---|---|---|---|---|---|
| | Countries | Number | Area (km²) | Countries | Number | Area (km²) |
| Total water bodies | 17 | 1.021 | 17.096 | 24 | 5.516 | 438.339 |
| **QE1 - Biological quality elements** | 16 | 643 | 13.710 | 24 | 2.683 | 289.635 |
| *% water bodies with BQEs* | | *63%* | *80%* | | *49%* | *66%* |
| QE1-1 - Phytoplankton | 15 | 401 | 10.228 | 24 | 2.331 | 271.462 |
| QE1-2 - Other aquatic flora | 12 | 342 | 7.671 | 22 | 1.376 | 185.147 |
| QE1-3 - Benthic invertebrates | 15 | 421 | 10.998 | 24 | 1.934 | 228.802 |
| QE1-4 - Fish | 12 | 262 | 7.359 | 1 | 1 | 16 |

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# WISE-SoE (State of the environment) data flows – annual reporting

| National water databases | → | Volunteer reporting | → | WISE-SoE Databases | → | Dissemination (dashboards, indicators, maps) |
|---|---|---|---|---|---|---|
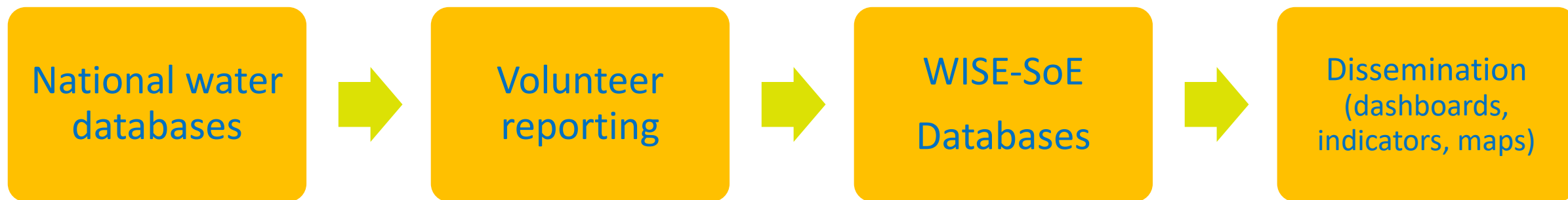
- WISE-1 Emissions – <u>Reporting obligation</u> – <u>Waterbase</u> - Dissemination

- WISE-2 Biological data - <u>Reporting obligation</u> – <u>Waterbase</u> - Dissemination

- WISE-3 Water quantity - <u>Reporting obligation</u> – <u>Waterbase</u> - Dissemination

- WISE-5 Spatial data - <u>Reporting obligation</u> – <u>Waterbase</u> - Dissemination

- WISE-6 Water quality - <u>Reporting obligation</u> – <u>Waterbase</u> - Dissemination

See also <u>https://cdr.eionet.europa.eu/help/WISE_SoE</u>

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# Dissemination - Waterbase and dashboards, maps etc.

## Waterbase water quality - biology
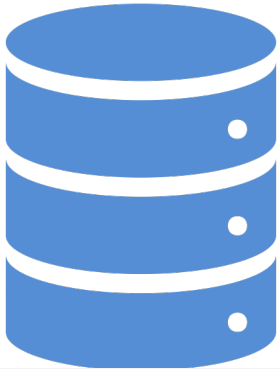
EEA dashboards & indicator
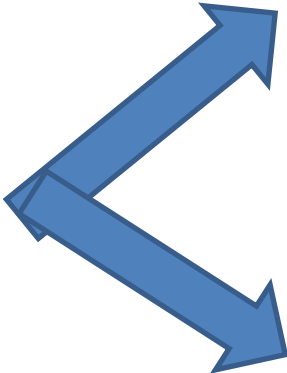
**Overview of water quality and biological information**

**- 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 |
| | Dissolved oxygen | 124 | 125 | 125 | 129 | 130 | 130 | 127 | 127 |
| ⊟2-Salinity | Electrical conductivity | 125 | 126 | 126 | 129 | 130 | 130 | 127 | 127 |
| | Total dissolved solids | 123 | 123 | 123 | 128 | 130 | 130 | 127 | 126 |
| ⊟3-Nitrogen | Ammonium | 126 | 127 | 127 | 129 | 130 | 130 | 127 | 127 |
| | Nitrate | 126 | 127 | 127 | 129 | 130 | 130 | 127 | 127 |
| | Nitrite | 124 | 125 | 125 | 129 | 130 | 130 | 127 | 127 |
| ⊟4-Phosphorus | Phosphate | 51 | 53 | 53 | 56 | 69 | 70 | 68 | 69 |
| | Total phosphorus | 126 | 127 | 127 | 129 | 130 | 130 | 127 | 127 |
| ⊟5-Acidification | pH | 125 | 126 | 126 | 129 | 130 | 130 | 127 | 127 |

**Water quality and biological charts and maps**

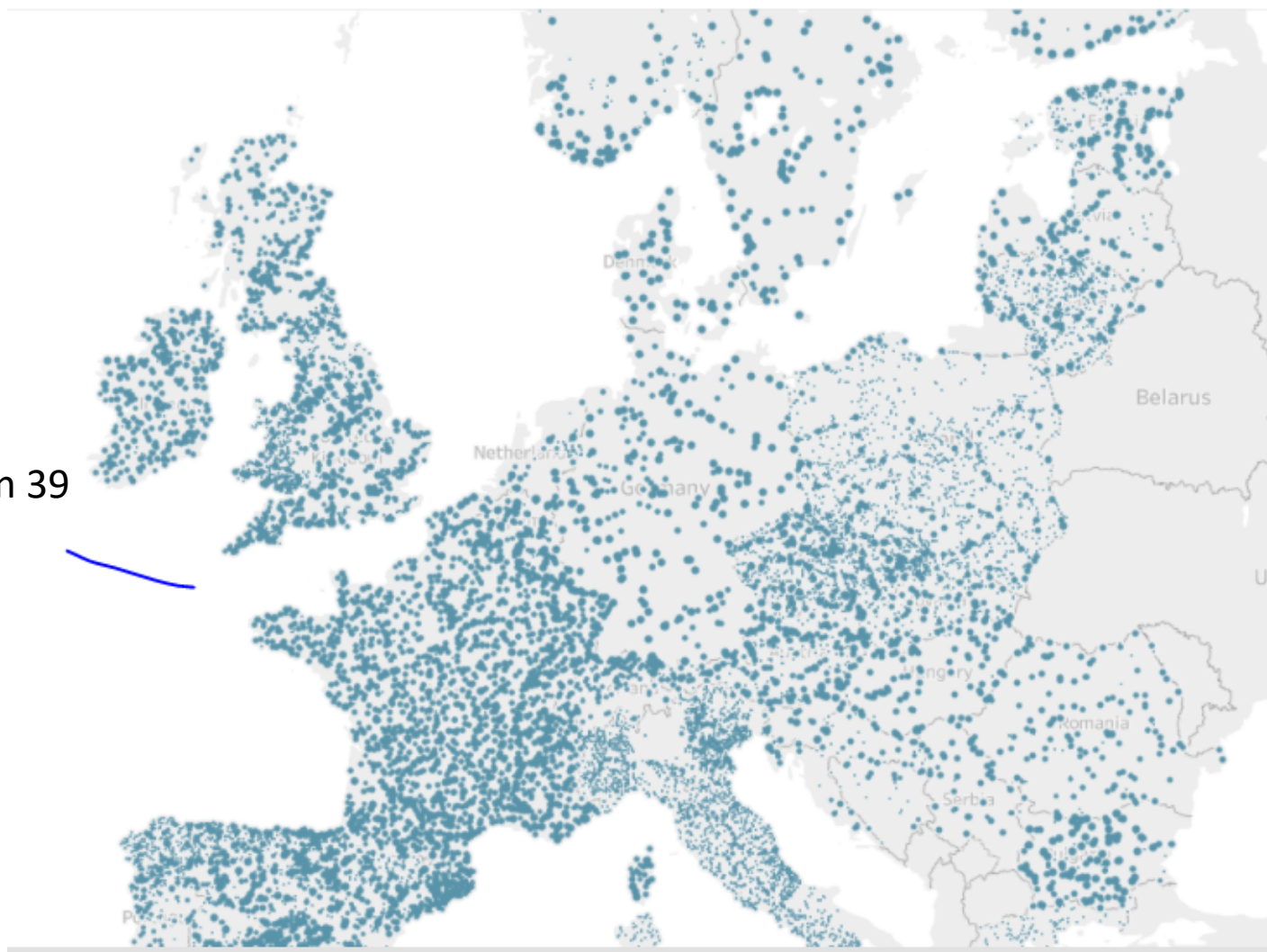Waterbase - Water Quality ICM
Waterbase biology

CZ-RW-BOD5
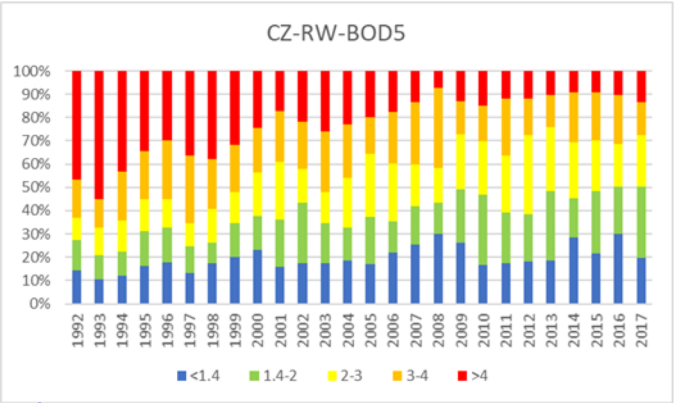
Preliminary dashboards and maps on biological data
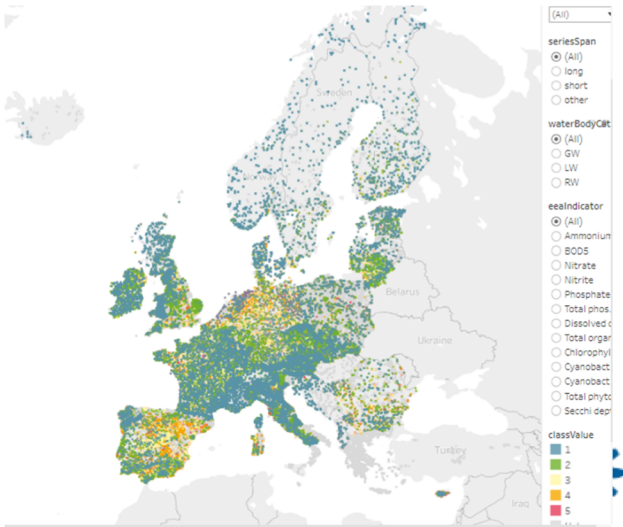
# Overview of monitoring sites – Nitrate in rivers



20 800 river monitoring sites in 39 countries

Series length (year)
- 1
- 10
- 20
- 30

Series Length by Site - Map -

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# Objectives of the biology data flow

- Aim: to show **trends in ecological status** at the European scale
  - Biology is more important for ecological status than abiotic elements
  - Improved status of biological elements can take longer time
- SoE Biology data: ecological status as **continuous values**
  - Ecological Quality Ratios (EQR) can detect trends across and
  - **within status classes**
- Normalised EQR values (nEQR) are **comparable across countries** and water body types
  - Information on national classification systems is requested

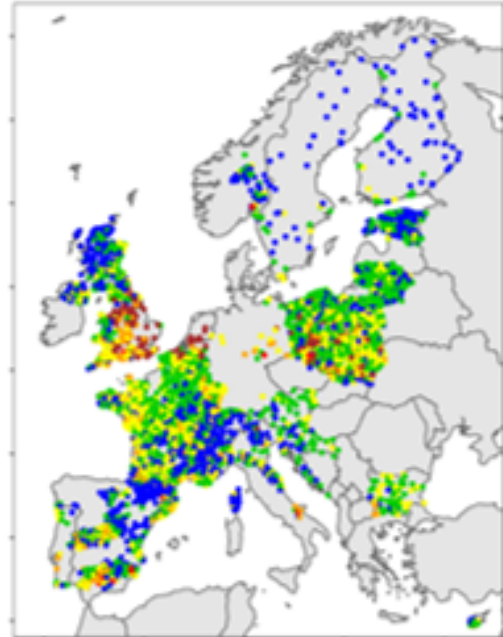# Reporting of biological data
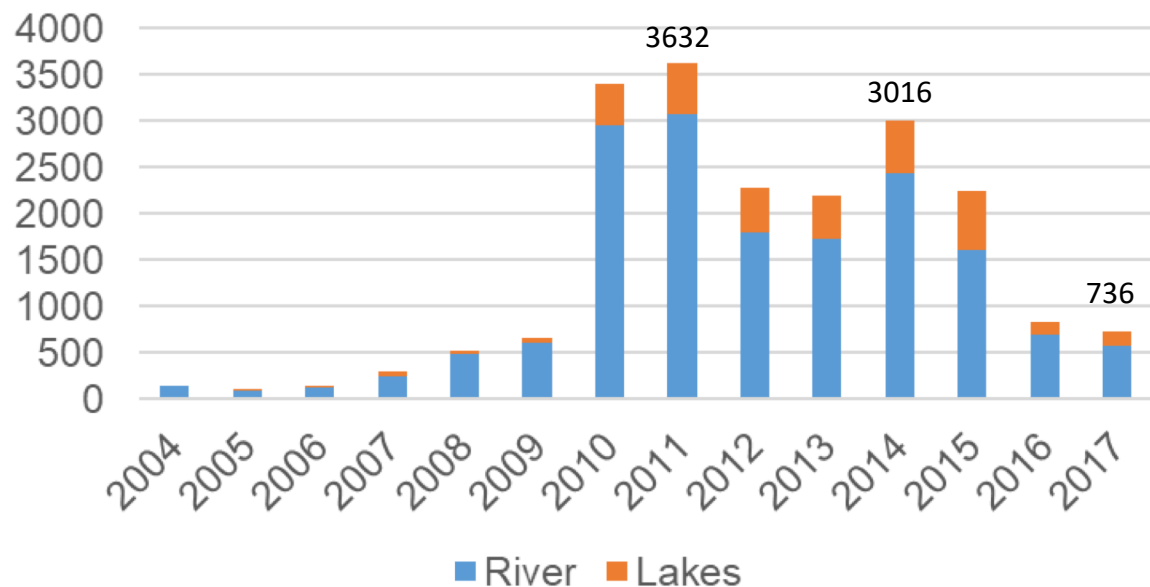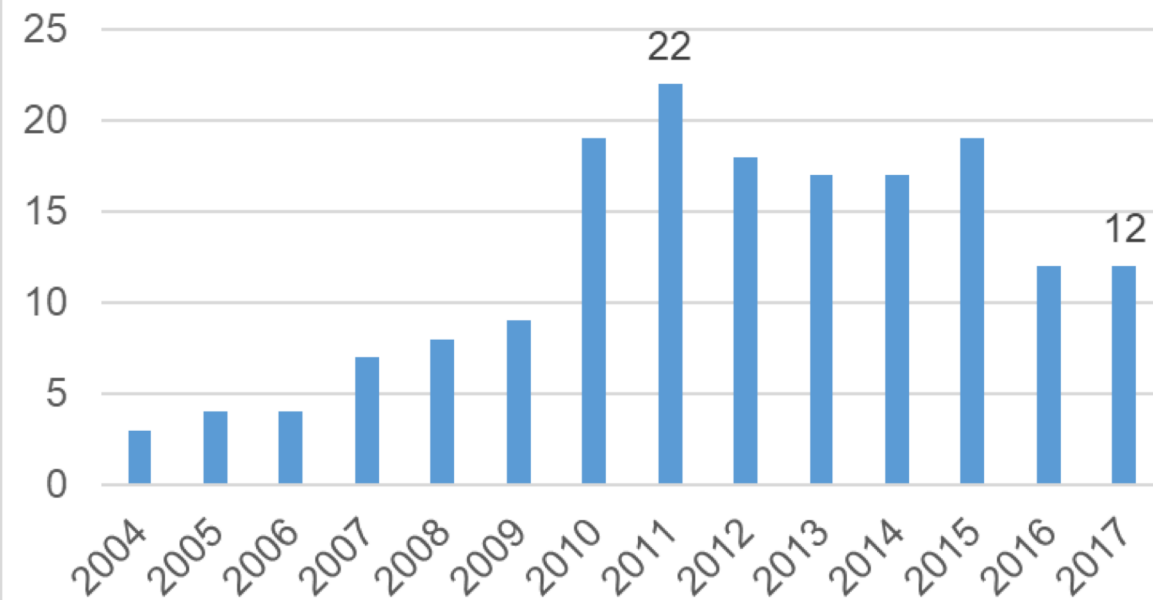


WFD 2nd River Basin Management Plans (2010-2015)
- 65.000 River water bodies with biological quality elements
- 11.400 Lake water bodies with biological quality elements
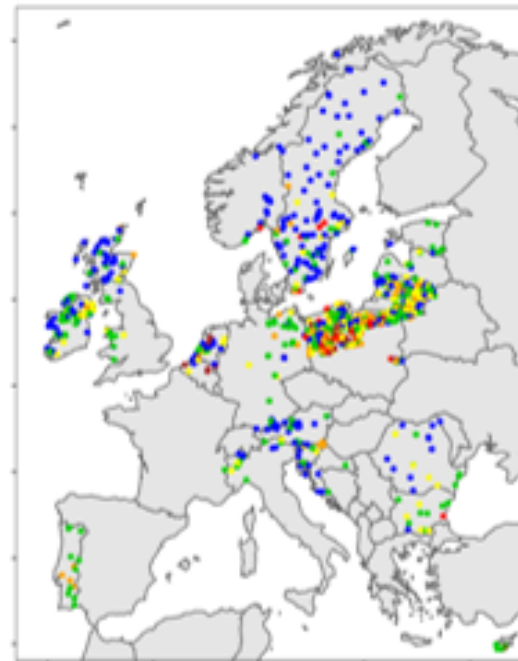- 29 countries

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Phytobenthos rivers

Phytoplankton lakes

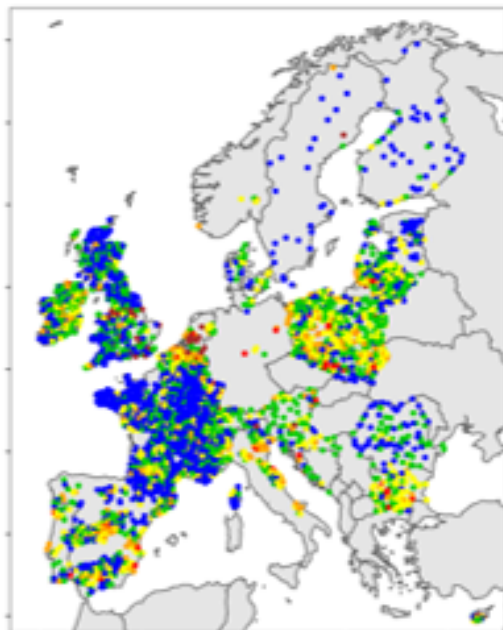Invertebrates rivers

Macrophytes lakes



(a) Phytobenthos in rivers: reported status class

(e) Phytoplankton in lakes: reported status class

(c) Invertebrates in rivers: reported status class
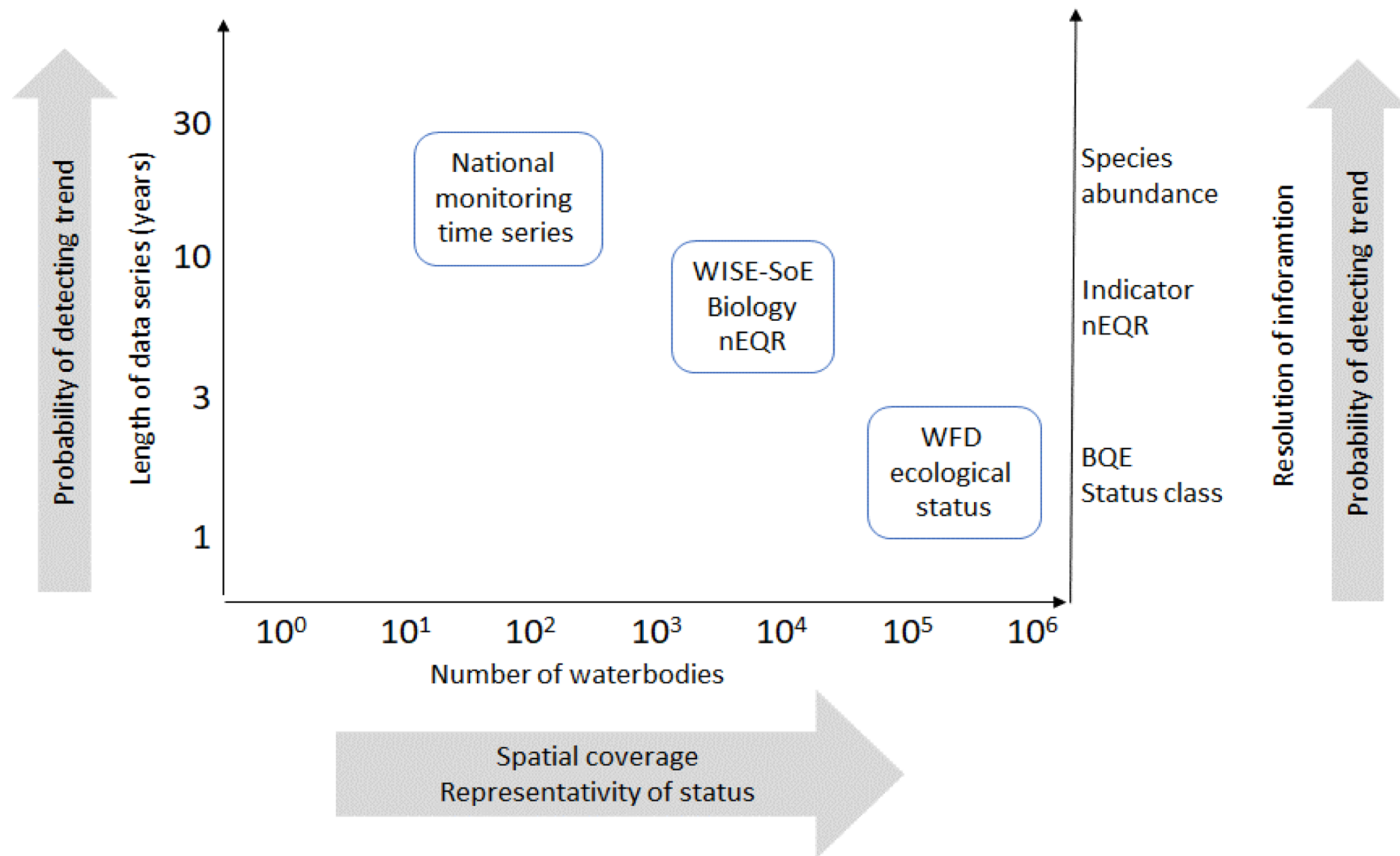
(g) Macrophytes in lakes: reported status class

# Illustration of the spatial and temporal extent and resolution of data.

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# Summary

- EEA uses data from EU water policy reporting and WISE-SoE volunteer reporting.

- The WFD River Basin Management Plan reported <u>every 6th year</u> (next time March 2022) provides a comprehensive dataset on the status including ecological and biological quality element status.

- The WFD dataset  has also information on the pressures causing failure to achieve good status and measures to improve status.

- EEA also collects <u>annually</u> dataon water quality, biological (EQRs)  status, emissions and water quantity. These data supplement the WFD data.

- The EEA WISE-SoE biological data may be used to show <u>trends in status</u>.

- The main constraint for using the WISE-SoE biological data is the limited spatial coverage (not all countries) compared to the more complete WFD biological quality element status.

- EEA <u>does not collect </u> detailed biological data (e.g. on species)

- EEA uses for its indicators datasets on fish stocks (marine) and invasive alien species. For habitats and species see Carlos presentation.

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