



# WISE-2: Biology data reporting to EEA

## Current content, data dictionary, reporting tools, challenges and solutions

Biology data from rivers, lakes, transitional and coastal waters

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European Topic Centre on Biodiversity and Ecosystems  
WISE-2 webinar 27.09.2023

# Outline

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1. WISE-2 data flow - brief introduction
2. WISE-2 data - overview
3. WISE-2 data dictionary - overview
4. WISE-2 quality issues and solutions
5. WISE-2 reporting in Reportnet 3

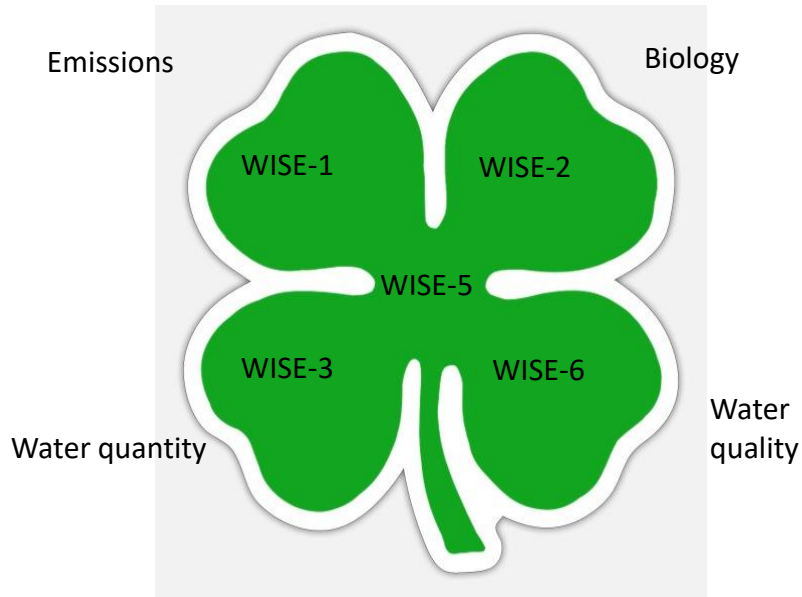


# 1. WISE-2 data flow – brief introduction





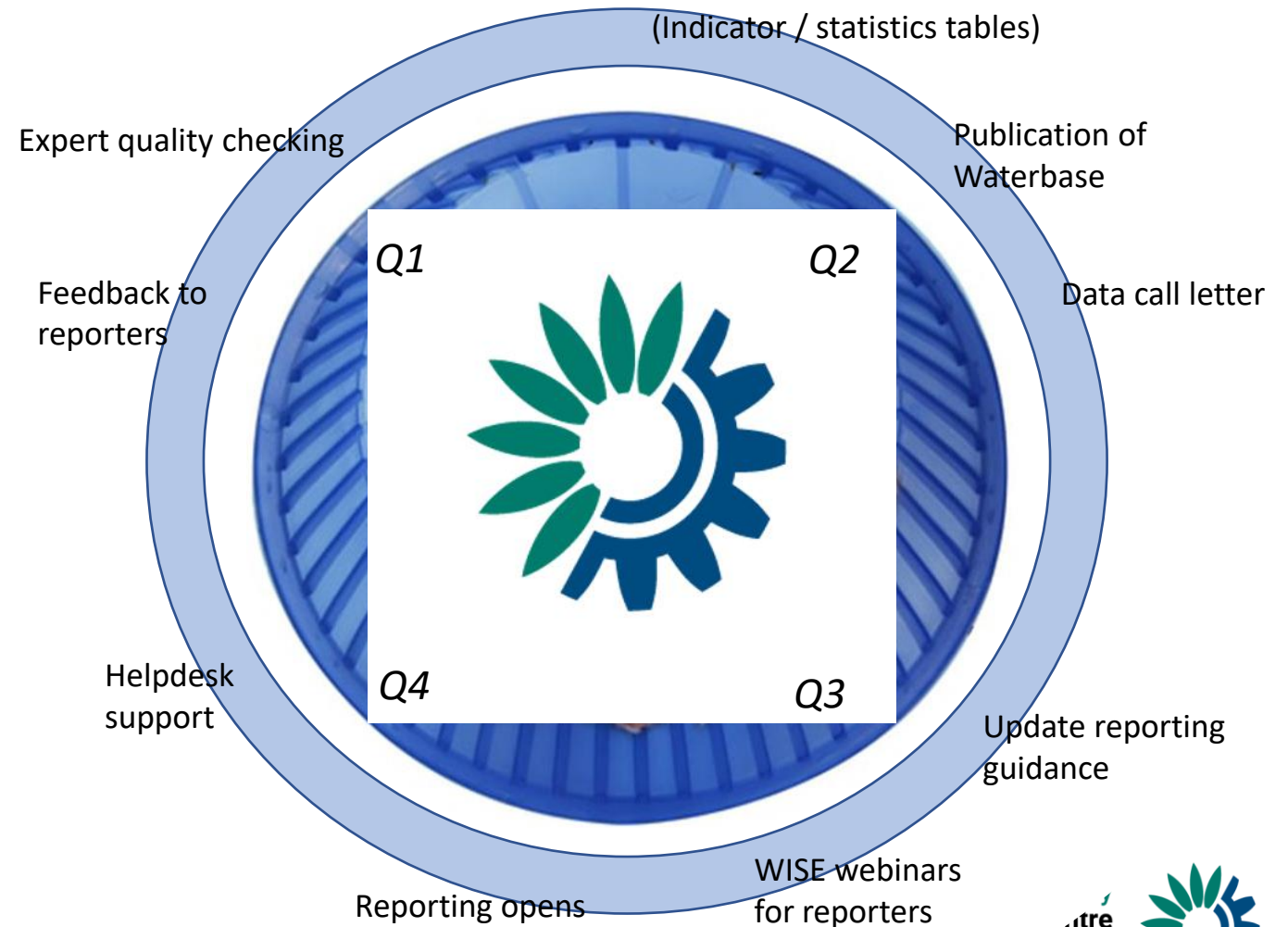
## The WISE SoE data flows



### WISE-2 reporting requires

- a WFD-compliant national classification system
- for calculation of **ecological quality ratios (EQR)**
- used for assessment of **ecological status**
- of surface water bodies

## The WISE SoE reporting cycle: ETC contributions



# Description of the WISE-2 data flow from reporting towards assessment

## METHODS article

Front. Environ. Sci., 22 May 2023

Sec. Freshwater Science

Volume 11 - 2023 |

<https://doi.org/10.3389/fenvs.2023.1057742>

This article is part of the Research Topic

Advances in Marine and Freshwater Monitoring to support  
Aquatic Ecosystem Conservation and Restoration

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## From national monitoring to transnational indicators: reporting and processing of aquatic biology data under the European Environment Agency's State of the Environment data flow



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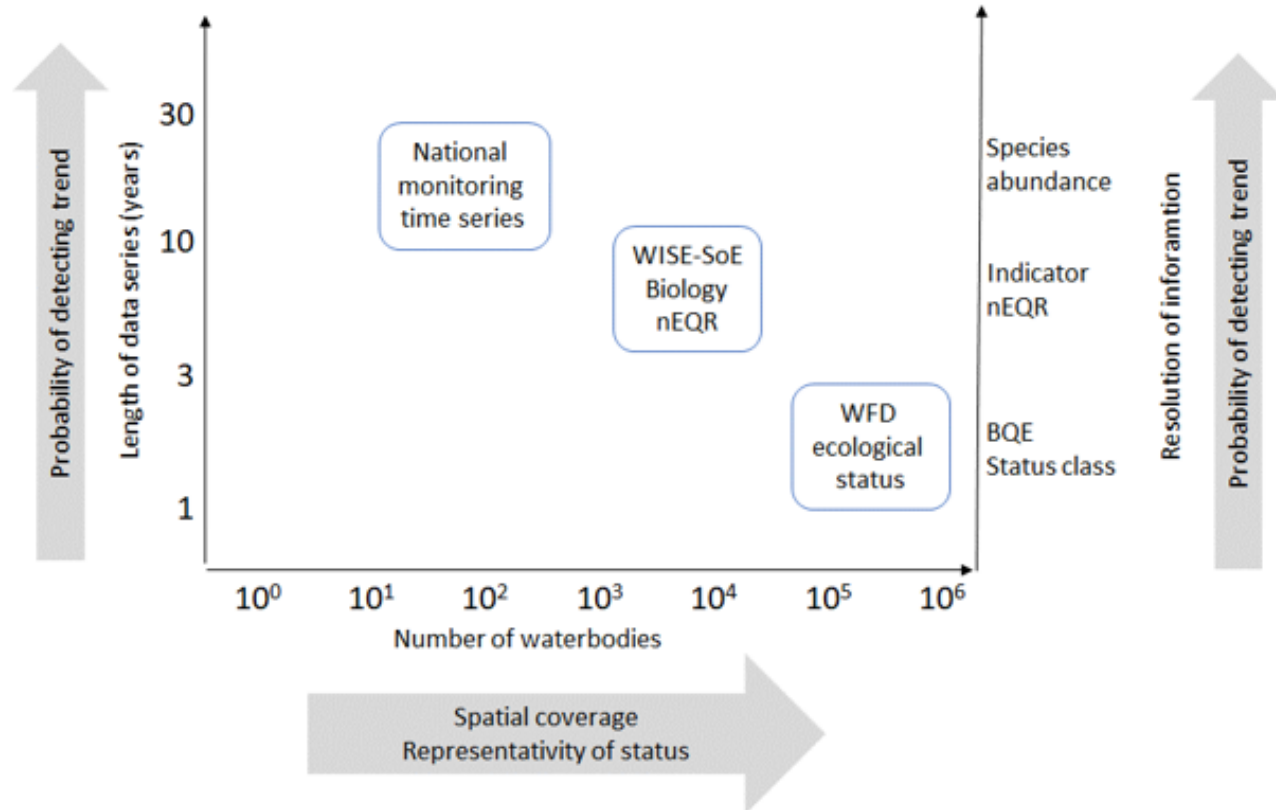
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# Added values of the biology data flow: EQR values

Figure 1. Illustration of the spatial and temporal extent and resolution of WISE-SoE biology data.



Note: The scales of this diagram is only meant to be illustrative, and the position and extent of the text boxes do not represent exact values.

- More **frequent** than WFD data
  - annual reporting
- More **informative** than WFD ecological status class
  - continuous scale
- More **relevant** than water quality data (WISE-6)
  - Ecological status class is determined by biology, and supported by chemistry
- **Harmonised** with spatial reporting to WFD (alt. WISE-5)



# From national EQRs to normalised EQRs

National EQR values must be **normalised** for use across countries

Calculation of nEQR values requires EQR-scale **class boundaries**, which are specific for each

- country
- water category
  - e.g. river
- determinand
  - BQE (+ impact type)
- waterbody type
  - from 2<sup>nd</sup> or 3<sup>rd</sup> RBMP
- natural/AWB/HMWB
  - from 2<sup>nd</sup> or 3<sup>rd</sup> RBMP

Reporting of biological metric values and class boundaries in Ecological Quality Ratio scale  
 The example illustrates the 3 scales for biological metric values and classification systems:  
 (1) original metric value, (2) **national EQR** and (3) **normalised EQR**.

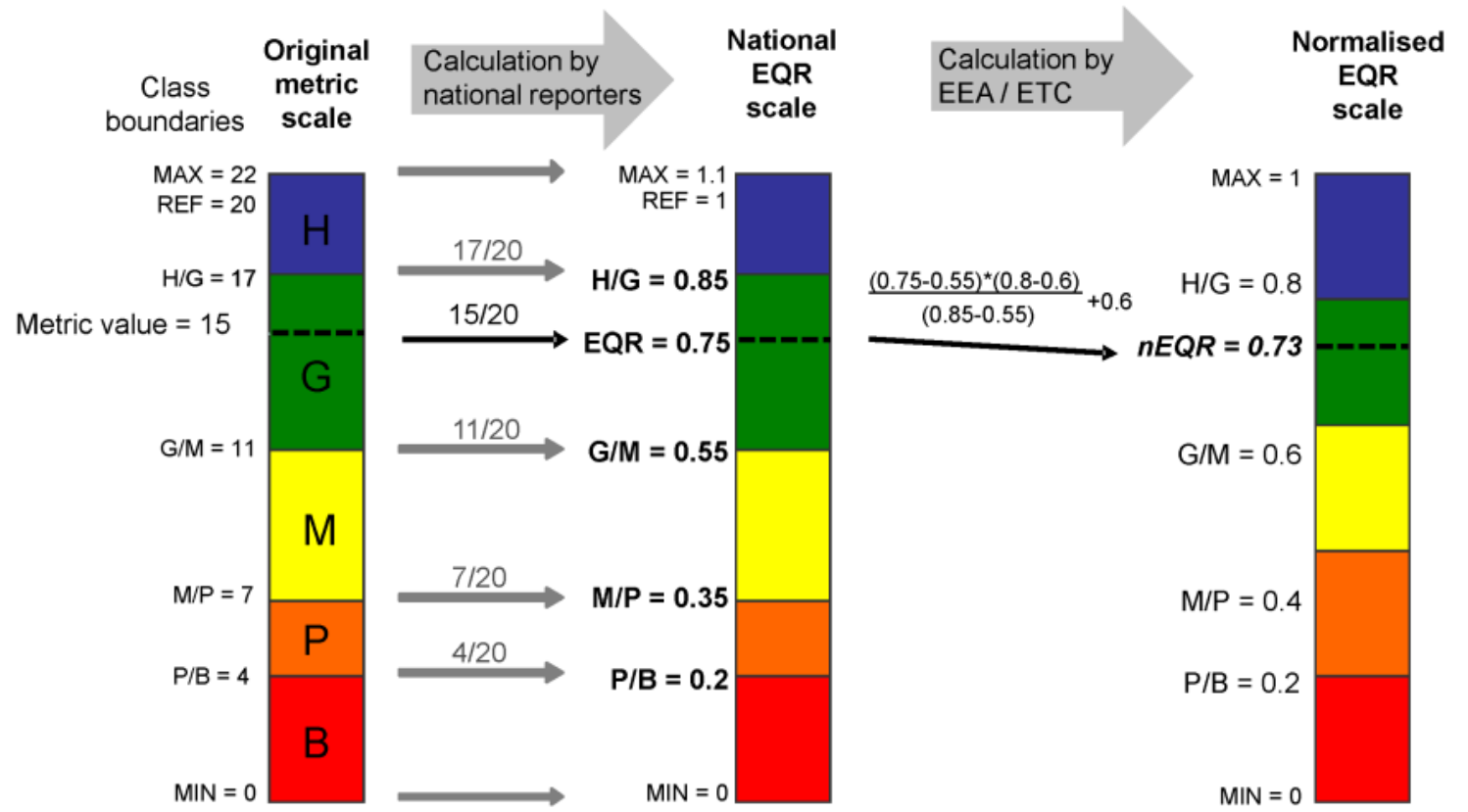
Values are comparable across countries only in the **normalised EQR** scale.

Data reporters are asked to report as follows:

- **national EQR values** + **class boundaries** in national EQR scale (required) and / or
- **normalised EQR values** (class boundaries not required)

This way the EEA/ETC can calculate normalised EQR values, in cases where not reported.

H = High (class 1)  
 G = Good (class 2)  
 M = Moderate (class 3)  
 P = Poor (class 4)  
 B = Bad (class 5)  
 REF = Reference condition for calculation of EQR  
 MIN = min. of metric scale  
 MAX = max. of metric scale



# Requested biology determinands: code list in CDR

## Vocabulary

A = Acidification, E = Eutrophication,  
G = General degradation, H = hydromorphologic

Code	Label	Definition
EEA_11-04-1	PhytoplanktonEQR_E	Lakes only
EEA_11-08-5	PhytoplanktonEQR	TC waters only
EEA_13-01-4	InvertebrateEQR_G	Rivers only
EEA_13-03-6	InvertebrateEQR_A	Rivers only
EEA_13-05-8	InvertebrateEQR	TC waters only
EEA_14-01-7	FishEQR_G	Rivers and lakes
EEA_14-02-8	FishEQR_H	Rivers and lakes
EEA_14-05-1	FishEQR	T waters only
EEA_121-01-7	MacroalgaeEQR	TC waters only
EEA_122-02-1	AngiospermsEQR	TC waters only
EEA_123-04-6	MacrophyteEQR_E	Lakes only
EEA_124-04-9	PhytobenthosEQR_E	Rivers only





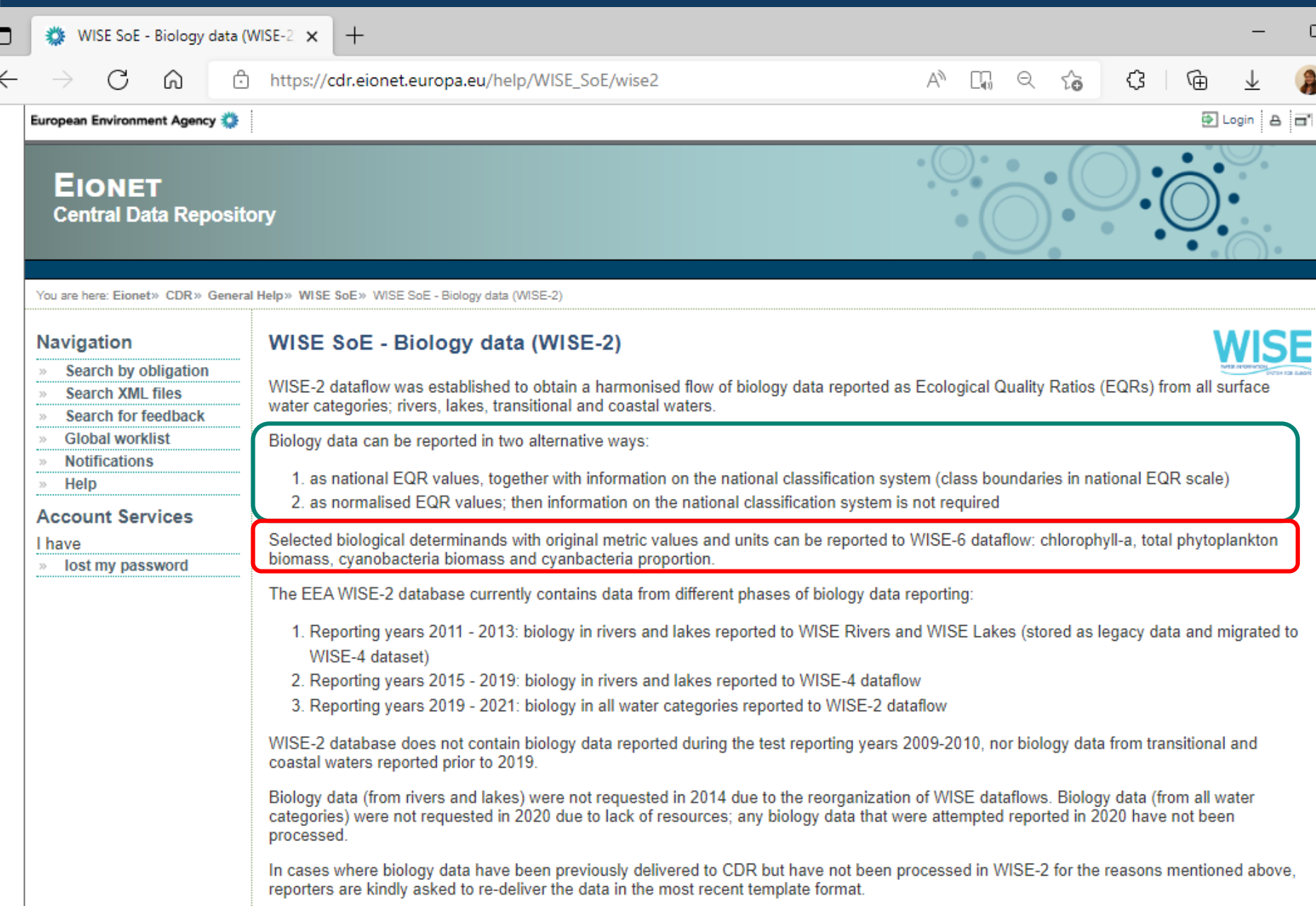
# Requested biology determinands: code list in RN3

The screenshot shows the Reportnet 3 Dataset designer interface. The browser address bar displays the URL: [reportnet.europa.eu/dataflow/946/datasetSchema/60303?tab=6450b25591ddaf00019b4b47&view=tabularData](https://reportnet.europa.eu/dataflow/946/datasetSchema/60303?tab=6450b25591ddaf00019b4b47&view=tabularData). The user is logged in as Jannicke Moe. The interface shows a table with the following columns: Actions, Validations, code, label, definition, eligibleWaterBodyCategory, and isApplicableForClassificationSystem. The table contains three rows of data for different determinands.

Actions	Validations	code	label	definition	eligibleWaterBodyCategory	isApplicableForClassificationSystem
		EEA_11-04-1	PhytoplanktonEQR_E	Lakes only, eutrophication	LW	EFPI-LT,IPAM,MASRP,NITMET,NMASRP,PLUTO,PMPL,PP-LW-AU,PP-LW-BE-FL,PP-LW-DK,PP-LW-EE,PP-LW-FI,PP-LW-IE,PP-LW-LT,PP-LW-NL,PP-LW-NO,PP-LW-RO,PP-LW-SE,PP-LW-SI,PSI
		EEA_11-08-5	PhytoplanktonEQR	TC waters only	CW,TW	Chla,FITOHMIB,IBI,MPI,PHIL,PP-CW-DE,PP-CW-DK,PP-CW-EE,PP-CW-PL,PP-CW-UK,TWif
		EEA_121-01-7	MacroalgaeEQR	TC waters only	CW,TW	Balcosis,CARLIT,CCO,CFR,CWOGA,DepFuc,DepZos,EEI-c,EI,EPI,EXCLAME,HPI,MA-DE,MaQI,MA-SI,MDFLD,MQAI,MSMDI,OGA Tool,OMAI,OMBT,PEQI,PHYBIBCO,PMarMAT,RICQI,RSI, RSLA,TWOGA



# General information: still available in Central Data Repository



WISE SoE - Biology data (WISE-2) x +

https://cdr.eionet.europa.eu/help/WISE\_SoE/wise2

European Environment Agency

**EIONET**  
Central Data Repository

You are here: Eionet» CDR» General Help» WISE SoE» WISE SoE - Biology data (WISE-2)

**Navigation**

- » Search by obligation
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**Account Services**

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- » lost my password

**WISE SoE - Biology data (WISE-2)**

WISE-2 dataflow was established to obtain a harmonised flow of biology data reported as Ecological Quality Ratios (EQRs) from all surface water categories; rivers, lakes, transitional and coastal waters.

Biology data can be reported in two alternative ways:

1. as national EQR values, together with information on the national classification system (class boundaries in national EQR scale)
2. as normalised EQR values; then information on the national classification system is not required

Selected biological determinands with original metric values and units can be reported to WISE-6 dataflow: chlorophyll-a, total phytoplankton biomass, cyanobacteria biomass and cyanobacteria proportion.

The EEA WISE-2 database currently contains data from different phases of biology data reporting:

1. Reporting years 2011 - 2013: biology in rivers and lakes reported to WISE Rivers and WISE Lakes (stored as legacy data and migrated to WISE-4 dataset)
2. Reporting years 2015 - 2019: biology in rivers and lakes reported to WISE-4 dataflow
3. Reporting years 2019 - 2021: biology in all water categories reported to WISE-2 dataflow

WISE-2 database does not contain biology data reported during the test reporting years 2009-2010, nor biology data from transitional and coastal waters reported prior to 2019.

Biology data (from rivers and lakes) were not requested in 2014 due to the reorganization of WISE dataflows. Biology data (from all water categories) were not requested in 2020 due to lack of resources; any biology data that were attempted reported in 2020 have not been processed.

In cases where biology data have been previously delivered to CDR but have not been processed in WISE-2 for the reasons mentioned above, reporters are kindly asked to re-deliver the data in the most recent template format.

Guidance text in CDR:  
minor updates pending



# General information: still available in Central Data Repository

## Dataflow specific instructions

- [Reporting obligation](#)
- [Data dictionary](#)
- [WISE SoE - Biology data \(WISE-2\) Reporters](#)
- [WISE SoE Reportnet guidance](#)
- [WISE2 CDR QC tests](#)
- [WISE2 QC reference - WFD NCSWaterBodyType](#)
- [WISE2 QC references](#)

## Changes in the 2022 data call

In 2022 there has only been minor changes to the data dictionary (e.g. vocabularies) and quality checking rules. The following changes were implemented in 2021.

### Acceptable water body types

For monitoring sites and water bodies where a water body type has already been reported to the WFD [surfaceWaterBodyTypeCode], the same water body type must be used in WISE-2 reporting. For the WISE-2 reporting in 2022, the allowed set of water body types will still be limited to those reported to WFD under the 2nd RBMP. For subsequent WISE-2 reportings, this set will be expanded with the additional water body types reported under the 3rd RBMP.

Most of the information in CDR is being transferred to RN3

WISE-2 Reportnet guidance document: in preparation

Updated code lists:

- Classification procedure
  - from «Other»
- Water body type
  - from WFD 2022 – 3rd RBMP

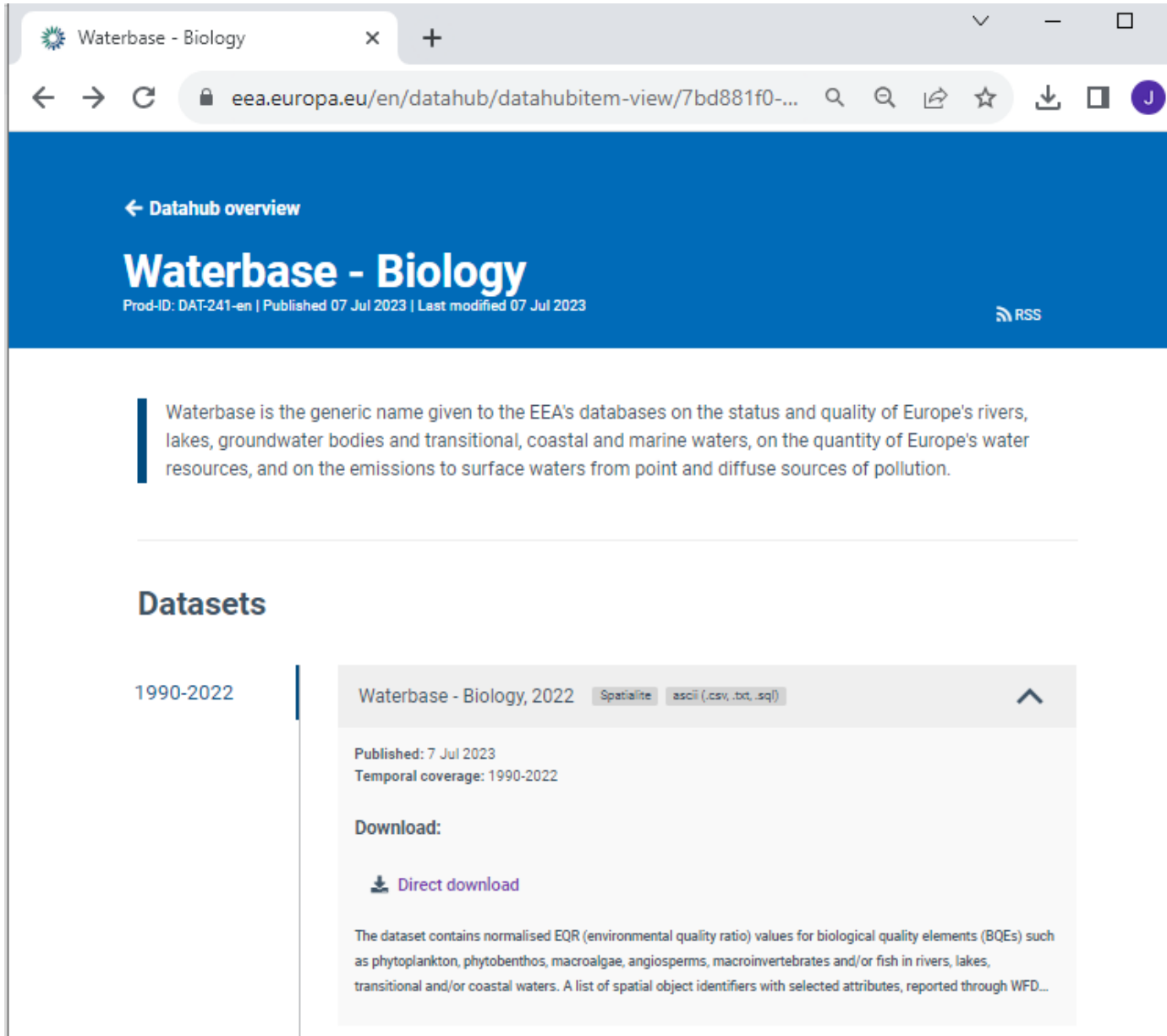


## 2. WISE-2 data - overview





# WISE-2 data are published in Waterbase - Biology



The screenshot shows a web browser window with the URL [eea.europa.eu/en/datahub/datahubitem-view/7bd881f0-...](https://eea.europa.eu/en/datahub/datahubitem-view/7bd881f0-...). The page title is "Waterbase - Biology" and it includes a breadcrumb "← Datahub overview". Below the title, it states "Prod-ID: DAT-241-en | Published 07 Jul 2023 | Last modified 07 Jul 2023" and has an RSS icon. A descriptive paragraph explains that Waterbase is the generic name for EEA's databases on the status and quality of Europe's rivers, lakes, groundwater, and emissions. The "Datasets" section shows a filter for "1990-2022" and a dataset card for "Waterbase - Biology, 2022". The card indicates it is published on 7 Jul 2023 with temporal coverage from 1990-2022. It offers a "Direct download" option and provides a brief description of the dataset's content.

## Waterbase – Biology 2022:

- Data call in 2022
- Latest monitoring year: 2021
- Dashboards label: 2021
- Reporting ends 2023
- Publication in 2023

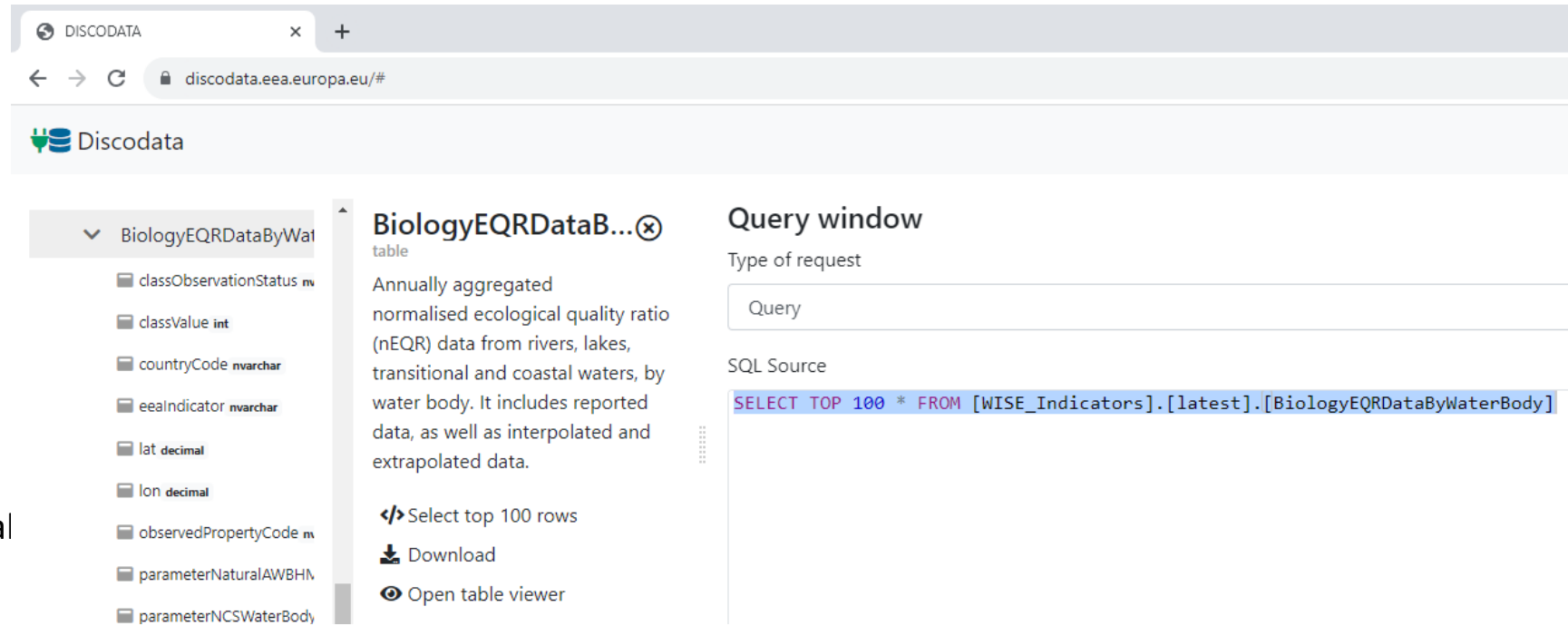
## Four tables with quality-checked data:

- BiologyEQRData
- BiologyEQRDataByWaterBody
- BiologyEQRClassificationProcedure
- SpatialObject\_DerivedData (from WFD or WISE-5)



# WISE-2 data can also be accessed from Discodata

- More user-friendly format than tables published in Waterbase (CSV, SQLite)
- WISE\_SOE tables
  - (not updated with data from 2022 data call)
- WISE\_INDICATOR tables
  - nEQR values calculated from national EQR values + class boundaries
  - nEQRs aggregated from monitoring site to water body level
  - Interpolation and extrapolation of nEQRs for 1-3 missing years
- «Indicator tables» are used in dashboards, trend analysis, etc.



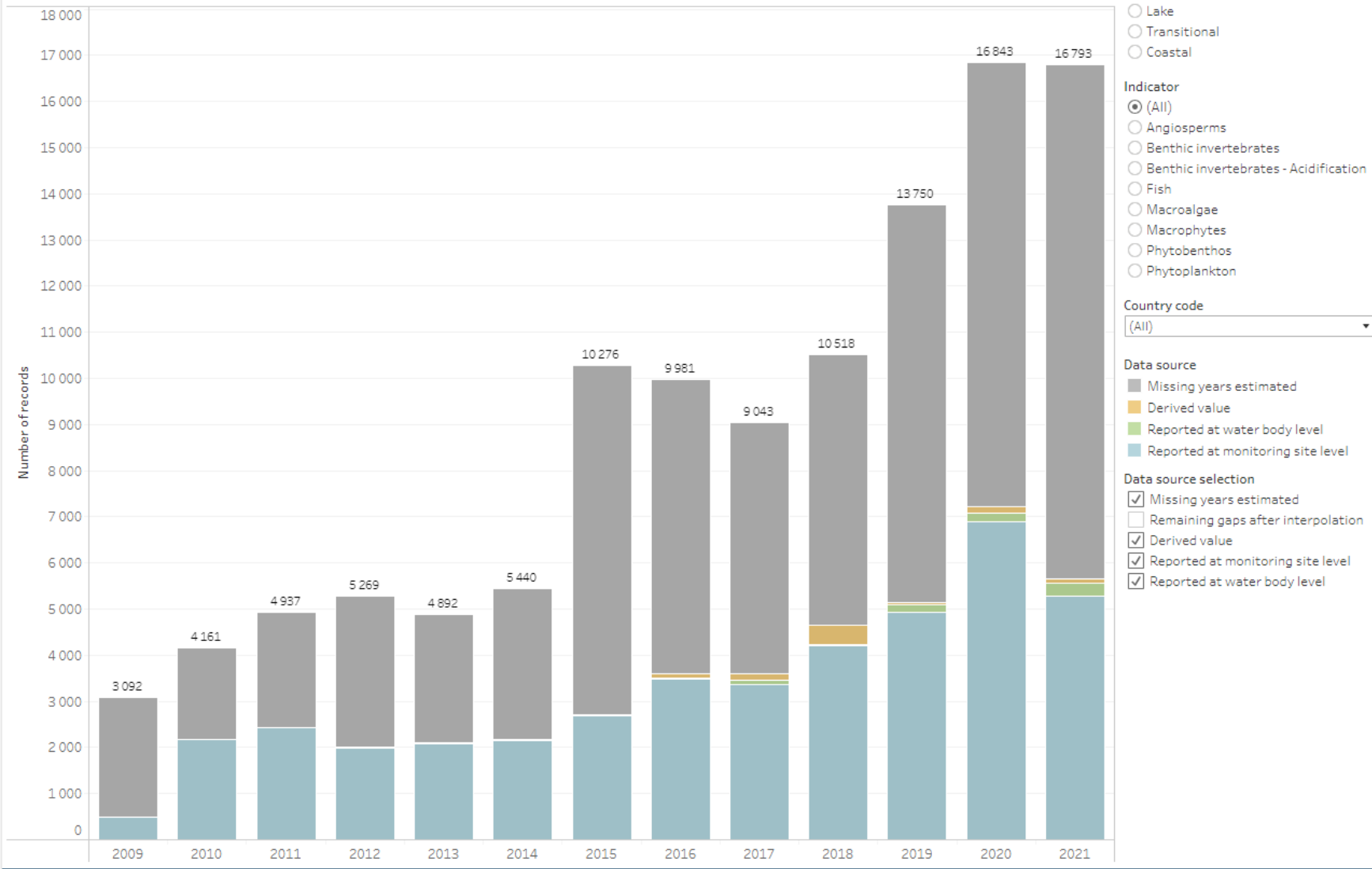
The screenshot shows the Discodata web interface. The browser address bar displays 'discodata.eea.europa.eu/#'. The page title is 'Discodata'. A sidebar on the left shows a tree view of data tables, with 'BiologyEQRDataByWaterBody' selected. The main content area displays the table name 'BiologyEQRDataByWaterBody' and a description: 'Annually aggregated normalised ecological quality ratio (nEQR) data from rivers, lakes, transitional and coastal waters, by water body. It includes reported data, as well as interpolated and extrapolated data.' Below the description are three icons: 'Select top 100 rows', 'Download', and 'Open table viewer'. On the right, a 'Query window' is visible, showing a 'Type of request' dropdown set to 'Query' and an 'SQL Source' text area containing the query: 'SELECT TOP 100 \* FROM [WISE\_Indicators].[latest].[BiologyEQRDataByWaterBody]'.



# Overview of reported WISE-2 data: number of records

Warning! This is a draft dashboard for internal use. It may be removed or changed without prior notice. Do not link to it in publications or web sites.

Number of Records by Year and Source - Bar Chart - All in All



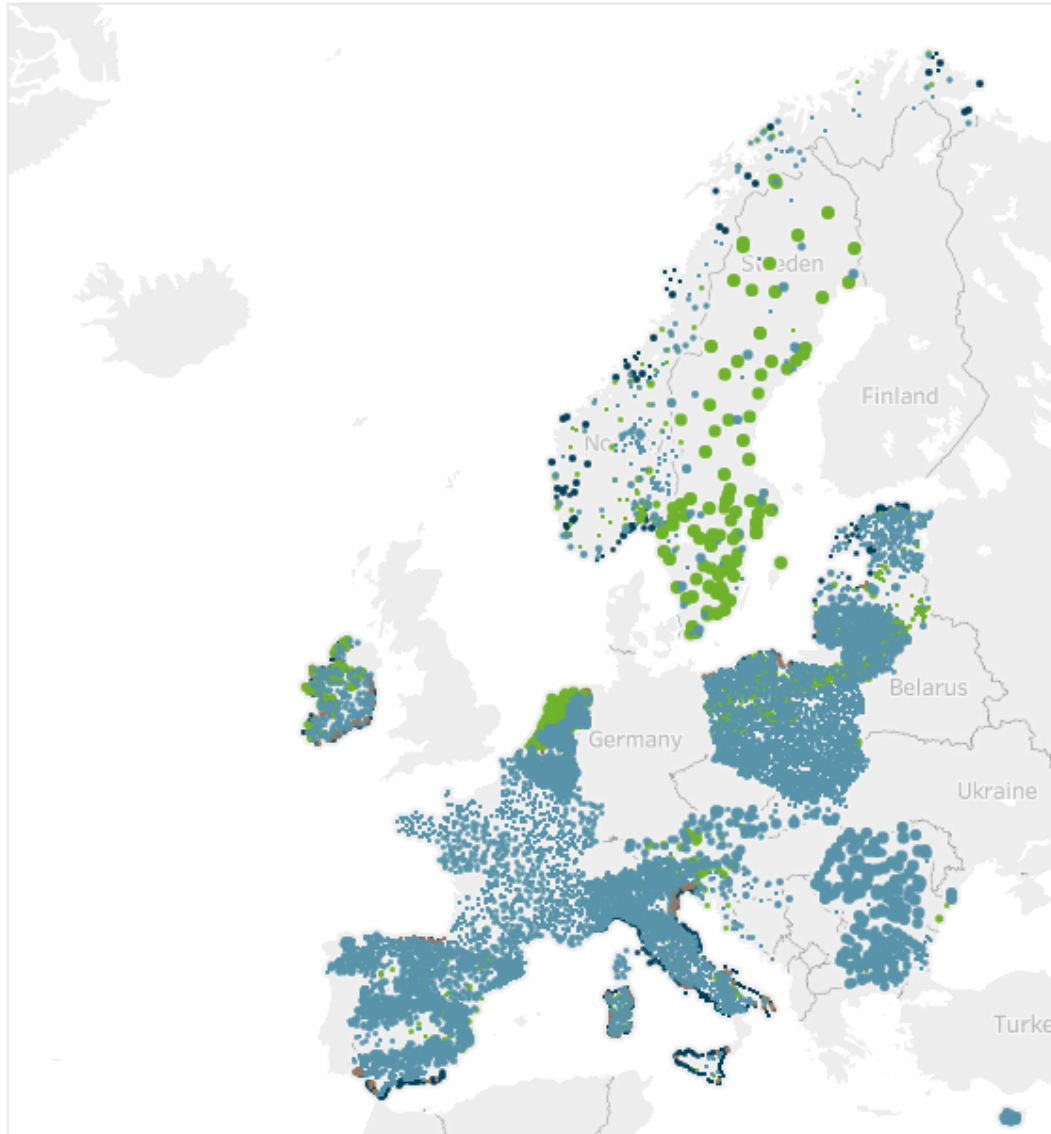
- Map of all stations with WISE-2 data (any year)
- Dominated by rivers data
- Some countries have very good coverage; some are still missing

[https://tableau-public.discomap.eea.europa.eu/views/BiologyDataByWaterBody\\_2021\\_webinar/](https://tableau-public.discomap.eea.europa.eu/views/BiologyDataByWaterBody_2021_webinar/)



# Overview of reported WISE-2 data: geographic coverage

Warning! This is a draft dashboard for internal use. It may be removed or changed without notice.  
Series Length by Water Body - Map - All in All



Category

- River
- Lake
- Transitional
- Coastal

- Map of all stations with WISE-2 data (any year)
- Dominated by rivers data
- Some member states have very good coverage
- Some member states are still missing





# Overview of WISE-2 indicator data: biological quality elements

Warning! This is a draft dashboard for internal use. It may be removed or changed without prior notice. Do not link to it in publications or web sites.

Number of Records by Year and Source - Table

Monitoring year	River				Lake			Transitional				Coastal				
	Benthic inverte..	Benthic inverte..	Fish	Phytob..	Fish	Macrop..	Phytopl..	Angios..	Benthic inverte..	Fish	Macroa..	Phytopl..	Angios..	Benthic inverte..	Macroa..	Phytopl..
2009	1 653	21	142	771	72	99	332			2						
2010	1 974	21	154	1 198	109	195	508			2						
2011	2 338	22	187	1 342	143	311	590			2				2		
2012	2 401	14	201	1 360	159	331	775			2		3		6	11	6
2013	1 965	14	226	1 193	165	436	857		1	2		3	1	8	13	8
2014	2 128		209	1 397	171	550	937		1	6		3	2	10	16	10
2015	4 045	19	306	3 179	224	659	1 086	7	98	25	52	86	51	137	68	234
2016	3 881	33	342	3 138	209	478	981	11	123	30	58	112	56	168	92	269
2017	3 507	33	315	2 899	182	259	864	11	124	28	58	113	55	184	104	307
2018	4 055	32	385	3 572	269	224	916	12	123	21	81	150	70	196	101	311
2019	5 095	19	802	4 736	569	354	1 117	17	131	47	69	153	73	195	92	281
2020	5 879	20	1 356	5 767	760	540	1 382	17	134	63	85	156	92	189	105	298
2021	5 879	20	1 356	5 767	773	540	1 382	17	134	58	85	153	87	183	99	260

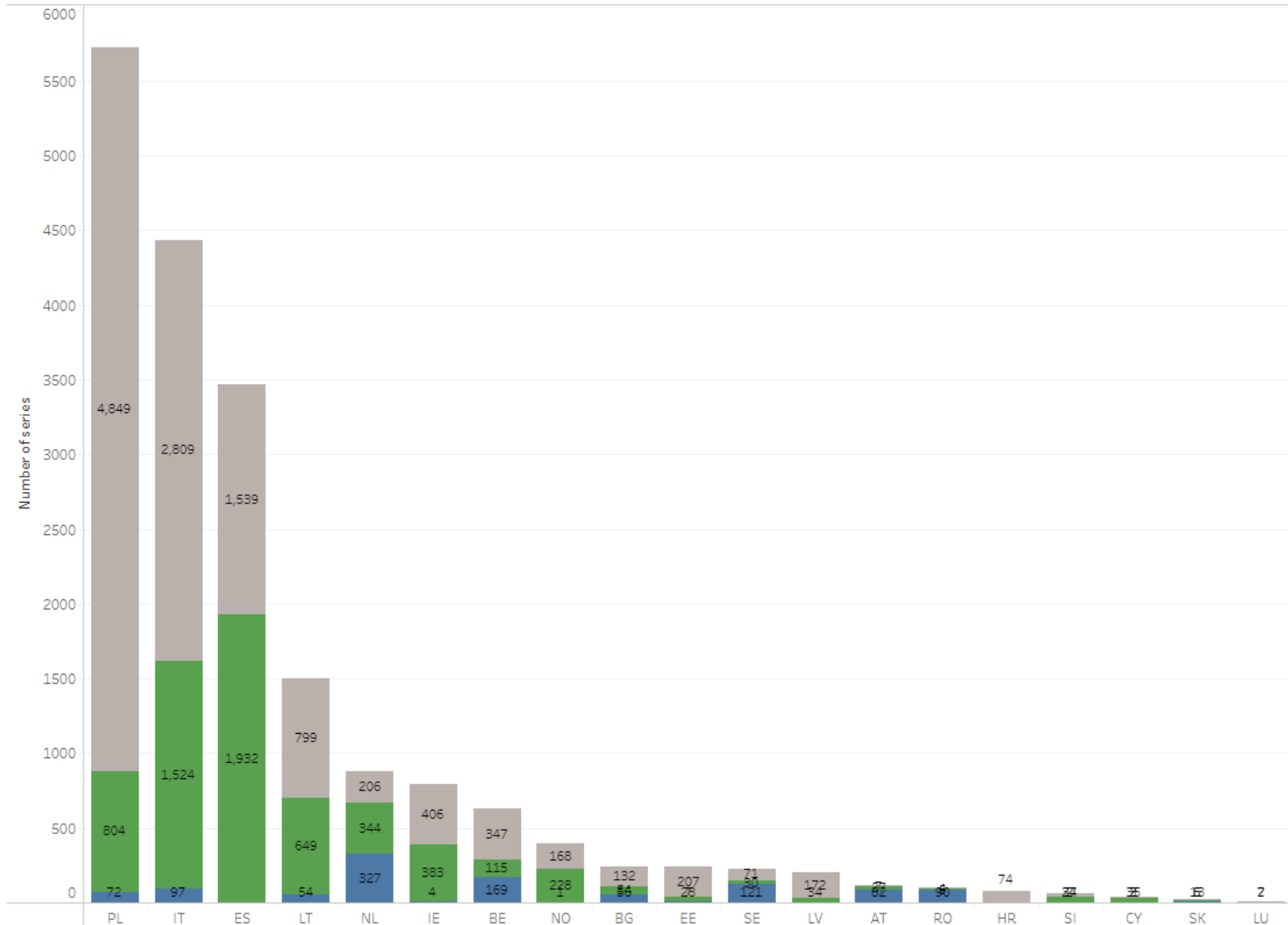
Note: Monitoring year 2021 includes extrapolation from 2020



# Overview of WISE-2 indicator data: no.of series by member state

Warning! This is a draft dashboard for internal use. It may be removed or changed without prior notice. Do not link to it in publications or web sites.

Number of Series by Country - Bar Chart



- Category**
- (All)
  - River
  - Lake
  - Transitional
  - Coastal
- Indicator**
- (All)
  - Angiosperms
  - Benthic invertebrates
  - Benthic invertebrate...
  - Fish
  - Macroalgae
  - Macrophytes
  - Phytobenthos
  - Phytoplankton
- Series length**
- (All)
  - long
  - short
  - other
- Series length**
- other
  - short
  - long

«Consistent time series» are needed for displaying temporal trends in nEQR values aggregated from water bodies to larger regions

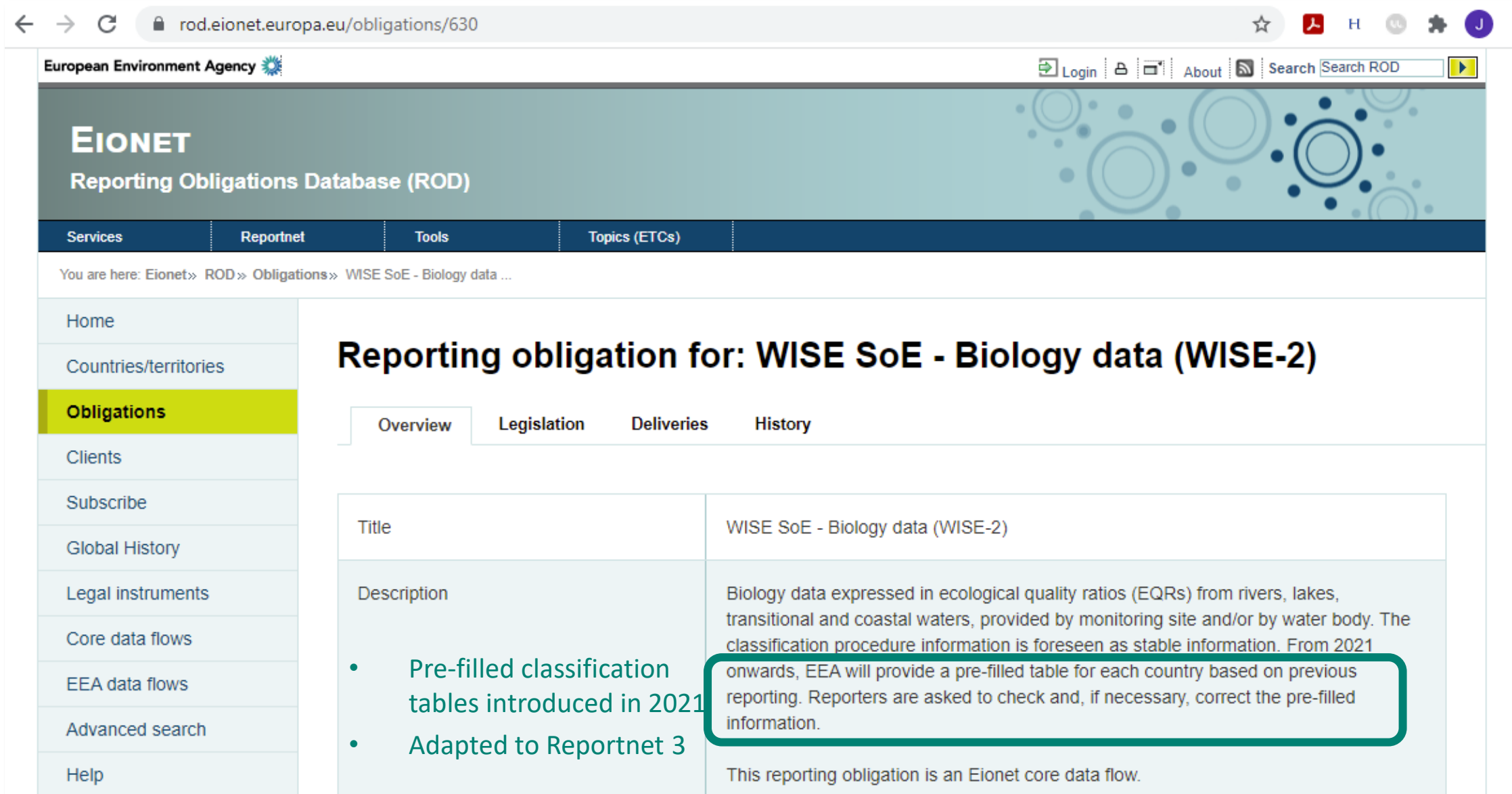
- Short: all years 2016-2021
- Long: all years 2009-2021
- Other: any other years



# 3. WISE-2 data dictionary - overview



# Reporting Obligation Database



The screenshot shows the EIONET Reporting Obligations Database (ROD) website. The browser address bar displays the URL `rod.eionet.europa.eu/obligations/630`. The page header includes the European Environment Agency logo and navigation links for Login, About, and Search. The main navigation menu contains Services, Reportnet, Tools, and Topics (ETCs). The breadcrumb trail indicates the current location: Eionet >> ROD >> Obligations >> WISE SoE - Biology data ...

The left sidebar menu is highlighted on the 'Obligations' section, which includes links for Home, Countries/territories, Obligations, Clients, Subscribe, Global History, Legal instruments, Core data flows, EEA data flows, Advanced search, and Help.

## Reporting obligation for: WISE SoE - Biology data (WISE-2)

Overview Legislation Deliveries History


Title	WISE SoE - Biology data (WISE-2)
Description	<p>Biology data expressed in ecological quality ratios (EQRs) from rivers, lakes, transitional and coastal waters, provided by monitoring site and/or by water body. The classification procedure information is foreseen as stable information. From 2021 onwards, EEA will provide a pre-filled table for each country based on previous reporting. Reporters are asked to check and, if necessary, correct the pre-filled information.</p> <ul style="list-style-type: none"><li>• Pre-filled classification tables introduced in 2021</li><li>• Adapted to Reportnet 3</li></ul>
	This reporting obligation is an Eionet core data flow.





# Reporting Obligation Database

## Reporting dates and guidelines

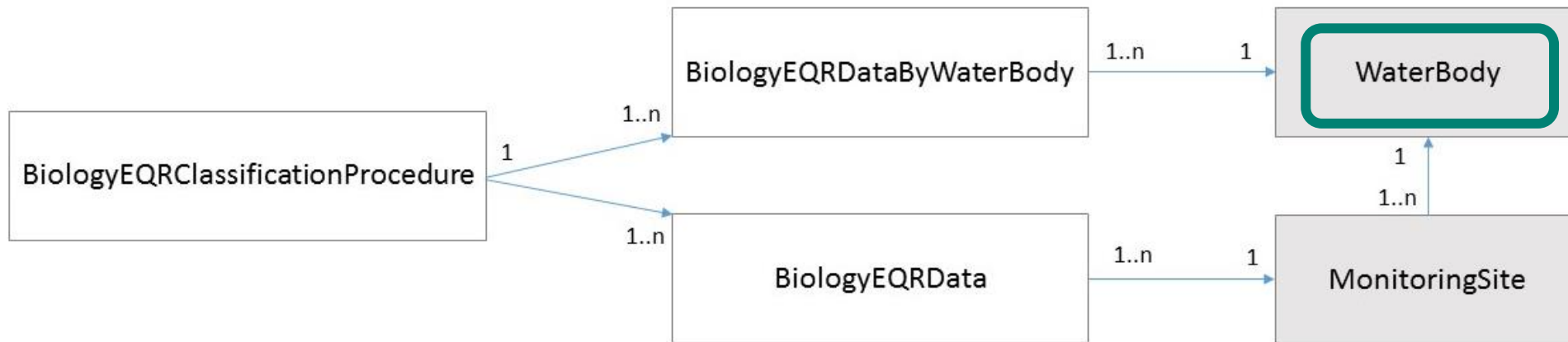
National reporting coordinators	National Focal Points (eionet-nfp)
National reporting contacts	WISE SoE - Biological data in rivers, lakes, transitional and coastal waters (WISE-2) Reporters (reportnet-awp-wise2-reporter)
Reporting frequency	Annually
Next report due	14/01/2024
Date comments	WISE 2 data call was paused in 2020 and is resumed from 2021 on.
Report to	European Environment Agency
Other clients using this reporting	
Reporting guidelines	Guidelines and templates available through the Reportnet Data Dictionary [Valid since 01/10/2017]
Information	A formal request is sent to NFPs and NRCs every year with reference to reporting guidelines and templates available through Reportnet Data Dictionary. More information is available at <a href="http://cdr.eionet.europa.eu/help/WISE_SoE/wise2">http://cdr.eionet.europa.eu/help/WISE_SoE/wise2</a>
Principle repository	CDR (In transition to RN3)
Data used for	 Waterbase - Biology

**Reporting starts: 02.10.2023**



# WISE-2 data model

Report **national EQR values + classification system AND/OR normalised EQR values**  
(preferably both, for QC)



All data are aggregated to water body level for visualisation, assessment etc.

Report EQR values on **waterbody level OR monitoring site level**  
(preferably not both)

[https://dd.eionet.europa.eu/visuals/diagram\\_biology2.jpg](https://dd.eionet.europa.eu/visuals/diagram_biology2.jpg)



# Reporting guidance in the Common Data Repository

## Dataflow specific instructions

- [Reporting obligation](#)
  - [Data dictionary](#)
  - [WISE SoE - Biology data \(WISE-2\) Reporters](#)
  - [WISE SoE Reportnet guidance](#)
  - [WISE2 CDR QC tests](#)
  - [WISE2 QC reference - WFD NCSWaterBodyType](#)
  - [WISE2 QC references](#)
- Reporting obligation (voluntary)
    - Eionet core data flow → evaluation
  - Data dictionary: only minor changes
  - WISE-2 reporters list: needs revision?
    - By National Focal Points
  - Reportnet guidance (pdf):  
last version from 2019
    - **WISE-2 Reportnet 3 guidance in preparation**
  - CDR QC tests: partly tested in RN3
  - QC reference - water body type
    - harmonised with WFD info
  - QC references: to be updated
    - new Classification systems reported in 2022

# Reporting guidance: water body types

## Changes in the 2022 data call

In 2022 there has only been minor changes to the data dictionary (e.g. vocabularies) and quality checking rules. The following changes were implemented in 2021.

### Acceptable water body types

For monitoring sites and water bodies where a water body type has already been reported to the WFD [surfaceWaterBodyTypeCode], the same water body type must be used in WISE-2 reporting. For the WISE-2 reporting in 2022, the allowed set of water body types will still be limited to those reported to WFD under the 2nd RBMP. For subsequent WISE-2 reportings, this set will be expanded with the additional water body types reported under the 3rd RBMP.

### BiologyEQRClassificationProcedure

The table BiologyEQRClassificationProcedure no longer needs to be filled in by reporters for each reporting. Instead, EEA provides a pre-filled excel template for each country, which can be downloaded directly from the CDR envelope. The template contains the BiologyEQRClassificationProcedure table pre-filled with harmonized data from the previous reporting. Reporters are asked to check and, if necessary, correct the pre-filled information (classification system, applicable water body types, class boundaries etc.).

- Until 2020:
  - Any national water body type was accepted
  - Intercalibration types were preferred
- From 2021:
  - For water bodies reported to WFD: same WB type must be reported to WISE-2
  - For other water bodies (Eionet): other WB types can be reported
- From 2023:
  - For countries reporting to WFD, only WFD identifiers will be accepted (?)
  - For other countries, EIONET identifiers will still be accepted



# Reporting guidance: pre-filled classification tables

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In 2022 there has only been minor changes to the data dictionary (e.g. vocabularies) and quality checking rules. The following changes were implemented in 2021.

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For monitoring sites and water bodies where a water body type has already been reported to the WFD [surfaceWaterBodyTypeCode], the same water body type must be used in WISE-2 reporting. For the WISE-2 reporting in 2022, the allowed set of water body types will still be limited to those reported to WFD under the 2nd RBMP. For subsequent WISE-2 reportings, this set will be expanded with the additional water body types reported under the 3rd RBMP.

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- Information on class boundaries is needed for conversion from national to normalised EQR values
- Not required to report every year if stable, but -
- Classification table must be in the same delivery as reported EQR values, for quality checking across tables
- Pre-filled tables: will ease the burden for reporters and for data managers
- Also implemented in Reportnet 3 (see updated info on separate slide)






# 4. WISE-2 quality issues and solutions





# Automatic Quality Checking - Validation in RN3

- Most data quality issues are handled by validation in RN3 after import & before release
- Records with inconsistent information cause “Blocker”
  - national vs. normalised EQR
  - normalised EQR vs. status class
  - water body information inconsistent with WFD 2<sup>nd</sup> RBMP data
  - data quality statement when not needed
  - etc.
- “Blocker” is used to support efficient feedback and corrections
- Questions are always welcome!

	<b>BLOCKER:</b> Blocker messages indicate that the detected error will prevent data submission (release is not possible).
	<b>ERROR:</b> Error messages indicate issues that clearly need corrective action by the data reporter.
	<b>WARNING:</b> Warning messages indicate issues that may be an error. Data reporters are expected to double-check relevant records.
	<b>INFO:</b> Informative message. Neutral or statistical feedback about the delivery, e.g. number of species reported.



# Main challenge: National Classification Systems

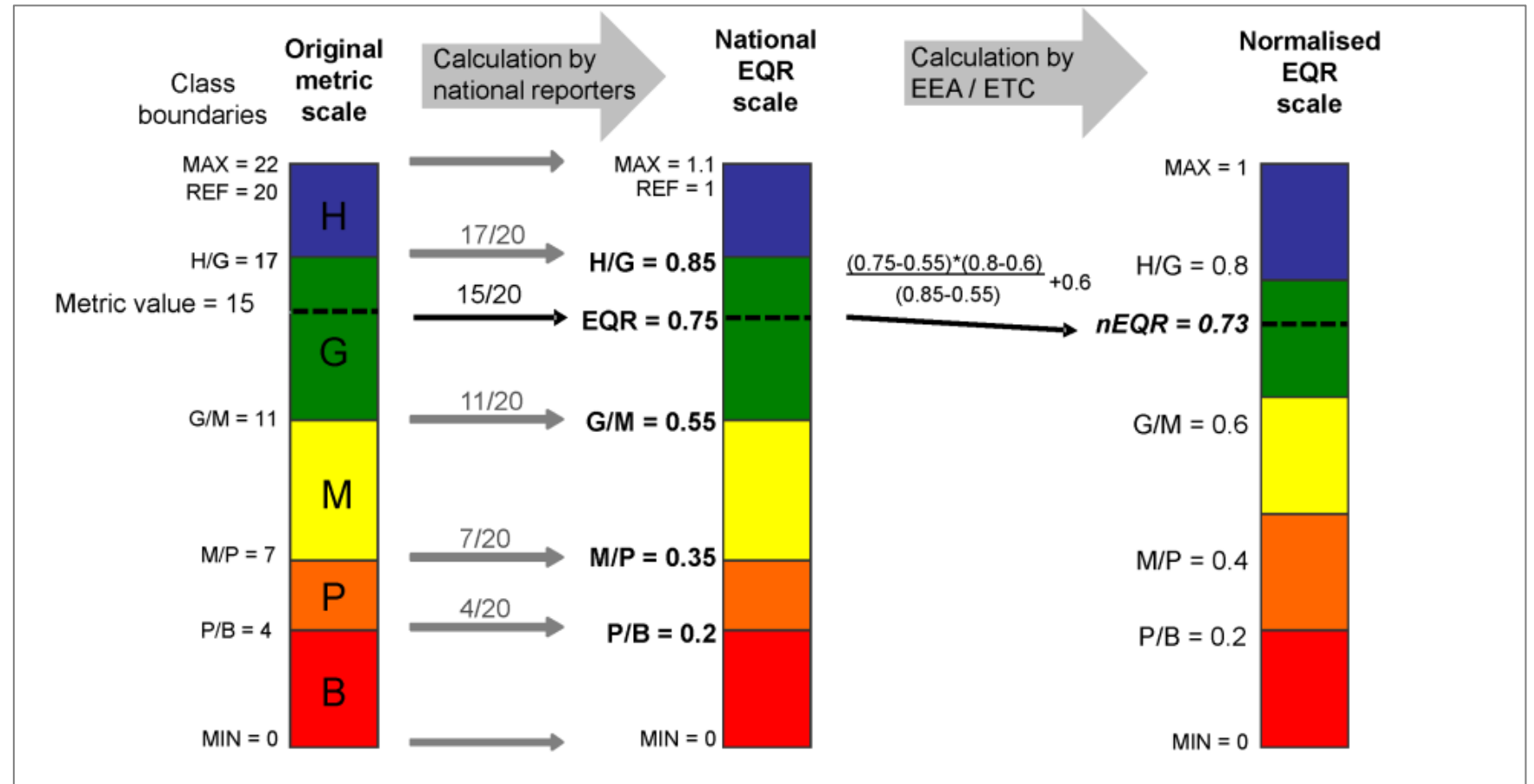
Calculation of nEQR requires EQR-scale class boundaries

specific for each

- country
- water category
- determinand (BQE, impact type)
- waterbody type
- natural/AWB/HMWB


How to handle  
EQR = class boundary?

$$NormEQR = \frac{[EQR] - [LowerBoundaryEQR]}{[UpperBoundaryEQR] - [LowerBoundaryEQR]} * 0.2 + [LowerBoundaryNormEQR]$$



# Questionnaire on BQE status classification based on EQR values at class boundaries

32 Responses      29:35 Average time to complete      Closed Status





[View results](#)       Open in Excel ...

1. In your country, how would you handle a case where the EQR value is equal to a class boundary?

For example, consider an observed EQR value of 0.55 for a given BQE and water body, and a classification system where the Good-Moderate class boundary is also 0.55. (The corresponding normalized EQR value is 0.60).

How would this observation be classified in your country?

[More Details](#)

	To the better class (here: Good)	17
	To the worse class (here: Moder...	9
	I'm not sure	0
	Other	6



- "Boundary cases" are handled differently across Europe
- WISE-2 rule is "worse class"
- 53% of respondents select "better class"
- Will be addressed at ECOSTAT meeting this autumn
- May have implications for WISE-2 rules (2024 reporting)



# Prefilled classification table (since 2021)

	A	B	C	D	E	F	G	H	I	J	K	
1	countryCode	parameterWaterB	parameterNCSWaterBodyType	parameterNati	observedProper	procedureClassificationSystem	parameterBound	parameterBound	parameterBound	parameterBc	resultOf	Remarks
2	NO	RW	REL5321	HMWB	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
3	NO	RW	REM1211	HMWB	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
4	NO	RW	REL5321	Natural	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
5	NO	RW	REM2211	Natural	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
6	NO	RW	inapplicable	Natural	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
7	NO	RW	RMM1202	Natural	EEA 124-04-9		0.99	0.83	0.55	0.27		Intercalibrated method
8	NO	RW	REM3211	Natural	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
9	NO	RW	REL3211	HMWB	EEA 124-04-9		0.95	0.83	0.55	0.27		Intercalibrated method
10	NO	RW	REH1111	Natural	EEA 124-04-9		0.99	0.83	0.55	0.27		Intercalibrated method

- Reporters should check and revise the information
- If class boundaries are changed, the previously stored nEQR records will be also recalculated and replace the original nEQR values
- Class boundaries must be reported for **each combination** of [observedPropertyDeterminandBiologyEQRCode], [parameterNCSWaterBodyType] and [parameterNaturalAWBHMWB] for which EQR data are reported
- Use of "Inapplicable" should be avoided if possible

# Supporting information on national classification systems

- Vocabulary: ClassificationSystem – 275 concepts (metrics); 228 valid
- Information on the applicable BQE, water category and country
- QC reference tables are provided in CDR and in RN3
- Missing codes and be reported as "Other"; vocabulary will be updated the next year (explained elsewhere)
- Info on metrics provides a link to more detailed information: species, biodiversity, etc.

https://dd.eionet.europa.eu/vocabulary/wise/ClassificationSystem

275 concepts found, displaying 1 to 20. [First](#) [Prev](#) **1** [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#)

Id	Label	Status	Status Modified
AFI	AZTI's Fish Index	Valid	07.01.2020
AIML	AIM for Lakes (Austrian Index ...	Valid	07.01.2020
ALFI	Austrian lake fish index: A multimetric ...	Valid	07.01.2020
AMBI	AZTI Marine Biotic Index	Valid	07.01.2020
AQI	Angiosperm Quality Index	Valid	07.01.2020
AQuA	Angiosperm Quality Assessment Index	Valid	07.01.2020
ASPT	Average Score Per Taxon	Valid	07.01.2020
AcidIndex2	Modified Raddum index2 (river ...	Valid	07.01.2020
AeTV	Aestuar Type Verfahren	Valid	07.01.2020
AusMI	Assessment of the biological quality ...	Deprecated - superseded	07.10.2021

## Concept: *AZTI's Fish Index* in the *ClassificationSystem* vocabulary

[← Back to vocabulary](#)

Concept URI	<a href="http://dd.eionet.europa.eu/vocabulary/wise/ClassificationSystem/AFI">http://dd.eionet.europa.eu/vocabulary/wise/ClassificationSystem/AFI</a>
Preferred label	AZTI's Fish Index
Definition	Fish in transitional waters
Notation	AFI
Status	Valid
Status Modified	07.01.2020
Accepted Date	07.01.2020
Not Accepted Date	
Applicable to biological quality elements	EEA_14-05-1 (FishEQR) in wise/ObservedPropertyBiologyEQR
Applicable to water body category	TW (Transitional water body) in wise/WFDWaterBodyCategory
Applicable to country	ES (Spain) in common/countries



# Some common problems and reasons: Classification table

## 1. Duplicate records in classification table

- Reason: national classification system has higher resolution than the WISE-2 data model  
E.g. Phytoplankton - Norway: combining nEQR values from 3 different metrics into one nEQR
- Solution: calculate and report only nEQR values, not the national EQRs + classification system

## 2. Reported classification record is not accepted

- Reason: reported water body information not consistent with WFD (e.g. water body type)
- Solution: use only accepted water body types  
([https://cdr.eionet.europa.eu/help/WISE\\_SoE/wise2/WISE2\\_QC\\_reference\\_WFD\\_NCSWaterBodyType.xlsx](https://cdr.eionet.europa.eu/help/WISE_SoE/wise2/WISE2_QC_reference_WFD_NCSWaterBodyType.xlsx))

## 3. Reference water body information from WFD is incorrect or outdated

- Reason: 2nd RBMP data (WFD 2016) was used as the reference for 2022 reporting
- Solution: References are updated with the 3rd RBMP data (WFD 2022) for the 2023 reporting





#### 4. Reported EQR record is not valid

- Reason: the combination of BQE and water category is not requested (e.g. phytoplankton in rivers)
- Solution: the record should not be reported

#### 5. Reported nEQR is not accepted

- Reason: inconsistent reporting of status class, EQR, class boundaries, and/or nEQR (e.g. EQR = 0.65; G/M boundary = 0.68; reported status class = G (should be M))
- Solution: instructions for status class assessment and nEQR calculation given in the DD

#### 6. Reported status class is not accepted

- Reason: boundary cases (e.g. nEQR = 0.6; status class = Good (should be Moderate))
- Solution: follow the instruction for status class assessment given in the DD
- (Followed up by questionnaire - see later slide)



# Some other issues from WISE-SOE Helpdesk

1. Classification system must be reported for Natural / AWB / HMWB in separate records (if corresponding EQR values are reported)
  - even if the class boundaries are identical
2. Sampling period >1 year
  - Report EQR values for each year separately if possible
  - If not, report latest sampling year and explain in Remark
3. One water body can have different types depending on the BQE
  - Not allowed; only WFD water body type is accepted
4. Information in pre-filled classification table is incorrect
  - Can be corrected by reporter!
5. H/G class boundaries >1 cannot be handled by WISE-2
  - Report nEQR values instead



6. Classification method is not found in the vocabulary
  - Select "Other" and specify in Remark field
7. Classification method is found but is not applicable to my country (or other reference)
  - Select the method and specify in Remark field
8. resultEcologicalStatusClassValue is modified by expert opinion and therefore conflicts with the resultEQRValue
  - resultEQRValue will be given priority, if reported
9. Two EQR values exist for the same determinand (different metrics for same BQE)
  - Select the most representative metric; or calculate nEQR for both and then combine
10. Terminology: Macrophytes in lakes vs. macroalgae & angiosperms in TC waters
  - The DD follows the WFD terminology



# 5. WISE-2 reporting in Reportnet 3

Experiences from testing of  
quality-checking rules

«It's not DIFFICULT, it's DIFFERENT»



# WISE-2 reporting in RN3 vs. CDR: main steps

Step	CDR	RN3	Tips
1. Download template (WISE-SOE_Biology.xls)	From data dictionary – Exports	From WISE-2 Dataflow - Dataflow help	Always use the latest available template
2. Upload filled template	Upload to envelope(s) made in CDR	Import dataset data to «Reporting data»	«Importing» can take time; make sure it has completed; refresh
		Checking of data type, e.g. number vs. text	Check correct decimal point
3. Run validation (1st level quality-check)	"Run automatic QA"	"Validate"	«Validation» can take long time; make sure it has completed; refresh
4. Check validation	Inspect feedback in envelope	Inspect Validations table, with link to respective records	References and QC rules are more easily available in RN3
5. Make corrections	Make all corrections in filled excel template, then repeat steps 2-4 until successful	Try corrections directly in imported data, then repeat steps 3-4 until successful	Corrections can be tried in imported data, but should also be done at the data source
6. Deliver the dataset	Release dataset	«Release to data collection»	Contact reportnet helpdesk if any problems

# Examples of WISE-2 reporting in RN3: Sandbox

Reportnet 3 > Dataflows

User null null

Reporting dataflows (2) Business dataflows (0) Citizen science dataflows (0)

Name	Description	Legal instrument	Obligation	Obligation id

Role Status Pinned Delivery date range Filter Reset

Total: 2 dataflows

Role: LEAD REPORTER Delivery date: 2023-12-31

**WISE 2 - 2023 V2**  
Biological data from rivers, lakes, transitional and coastal waters




Legal instrument: EEA AWP Delivery status: MULTIPLE  
Obligation: WISE SoE - Biological data in rivers, lakes, transitional and coastal ... Dataflow status: OPEN

Test area for RN3:  
"sandbox"



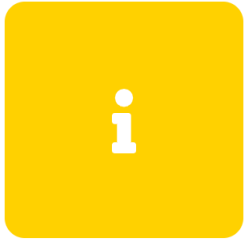







# Select data flow (and country)

 Reportnet 3 >  Dataflows >  Dataflow

## WISE 2 - 2023 V2

Dataflow

-  Dataflow help
-  Reference Dataset - 2 - Reference dataset
-  Germany
-  Norway
-  Poland
-  Portugal



# Reference dataset: contains code lists / vocabularies

## 2 - Reference dataset

WISE 2 - 2023 V2 - Reference Dataset - 2 - Reference dataset

Export dataset data Delete dataset data Validate Show validations QC rules Dashboards Manage copies Refresh

procedureClassificationSystem resultEcologicalStatusClassValue resultObservationStatus NCSWaterBodyType CP\_reference

Export table data Show/Hide columns Validation filter Filter by value

Validations	code	label	definition	eligibleWaterBodyCategory	isApplicableToBQE	isApplicableTo
	AcidIndex2	Modified Raddum index2 (river acidification)	Invertebrates in rivers	RW	EEA_13-03-6	NO
	AeTV	Aestuar Type Verfahren	Invertebrates in transitional and coastal waters	CW,TW	EEA_13-05-8	DE
	AFI	AZTI's Fish Index	Fish in transitional waters	TW	EEA_14-05-1	ES

### procedureClassificationSystem:

- Used as supplementary information
- In RN3 reporters can search for codes, countries, BQEs etc.
- Reference will be expanded with new codes from 2022 reporting ("Other")
- Please check existing codes before reporting "Other"



# Reference dataset: contains code lists / vocabularies



## 2 - Reference dataset

WISE 2 - 2023 V2 - Reference Dataset - 2 - Reference dataset

Export dataset data Delete dataset data Validate Show validations QC rules Dashboards Manage copies Refresh

ClassificationSystem resultEcologicalStatusClassValue resultObservationStatus **NCSWaterBodyType** CP\_reference dataflowMetadata

Export table data Show/Hide columns Validation filter Filter by value

Validations	countryCode	NCSWaterBodyType	swTypeCode	swTypeCategory
	AT	AT-LW-PP_A1	PP_A1	LW
	AT	AT-LW-PP_A2	PP_A2	LW
	AT	AT-LW-PP_A3	PP_A3	LW
	AT	AT-LW-PP_B1	PP_B1	LW
	AT	AT-LW-PP_B2	PP_B2	LW
	AT	AT-IW-PP_C1A	PP_C1a	IW

### NCSWaterbodyType:

- Checked against WFD spatial data (alt. WISE-5)
- "Inapplicable": please avoid if possible
- Existing records with "inapplicable": to be followed up later
- Important field for linking EQR data and classification system



# Reference dataset: contains code lists / vocabularies

## 2 - Reference dataset

WISE 2 - 2023 V2 - Reference Dataset - 2 - Reference dataset

Export dataset data Delete dataset data Validate Show validations QC rules Dashboards Manage copies Refresh

ClassificationSystem resultEcologicalStatusClassValue resultObservationStatus NCSWaterBodyType **CP\_reference** dataflowMetadata

Export table data Show/Hide columns Validation filter Filter by value

Validations	countryCode	parameterWaterBodyCategory	parameterNCSWaterBodyType	parameterNaturalAWBI
-------------	-------------	----------------------------	---------------------------	----------------------

Rows per page 10 1 Go to 1 of 1 Total: 0 records

CP\_reference

- (not yet added here)



# Reporting of classification systems in Reportnet 3

In RN3, the table BiologyEQRClassificationProcedure can be automatically filled with harmonized data from the previous reporting

- Use the the option 'prefilling BiologyEQRClassificationProcedure table' from the 'Import dataset data' menu.
- Reporters are asked to check and, if necessary, correct the pre-filled information
  - classification system, applicable water body types, class boundaries etc.
- New records may be added to the table
- Prefilled records must not be deleted from the table.
  - During the QC, the content of the table will be compared with the list of all classification procedures in the Reference dataset. If any of the reference records from the specific country are found missing in the Reporting dataset, the release of the dataset will be blocked.
  - To ease the identification of the missing records, they will be flagged in the CP\_reference table
  - "CP\_reference" is a read-only table added to the Reporting dataset for this very purpose.
  - The retired or invalid classification procedure entries should be marked by using flag 'Z' in the resultObservationStatus field. When the deliveries are harvested and processed by the EEA, such records will be retired, and excluded from the future reference tables.
- Even if there are no changes, the BiologyEQRClassificationProcedure still needs to filled in RN3 as part of the delivery.



# Test reporting: Poland

Reportnet 3 > [Dataflows](#) > [Dataflow](#) > [Poland](#) > [Dataset](#)

User: vata null null

## 1 - Reporting data *Pending* WISE 2 - 2023 V2 - Poland

[Import dataset data](#) [Export dataset data](#) [Delete dataset data](#)

[Validate](#) [Show validations](#) [QC rules](#) [Dashboards](#) [Manage copies](#) [Refresh](#)

[BiologyEQRData](#)

[BiologyEQRDataByWaterBody](#)

[BiologyEQRClassificationProcedure](#)

[CP\\_reference](#)

[Import table data](#) [Export table data](#) [Delete table data](#) [Show/Hide columns](#) [Validation filter](#)



Filter by value




Actions



Validations

monitoringSiteIdentifier  

monitoringSiteIdentifierScheme  

parameterWaterBodyCategory  

Rows per page 10 

  1  

Go to 1 of 1

Total: 0 records

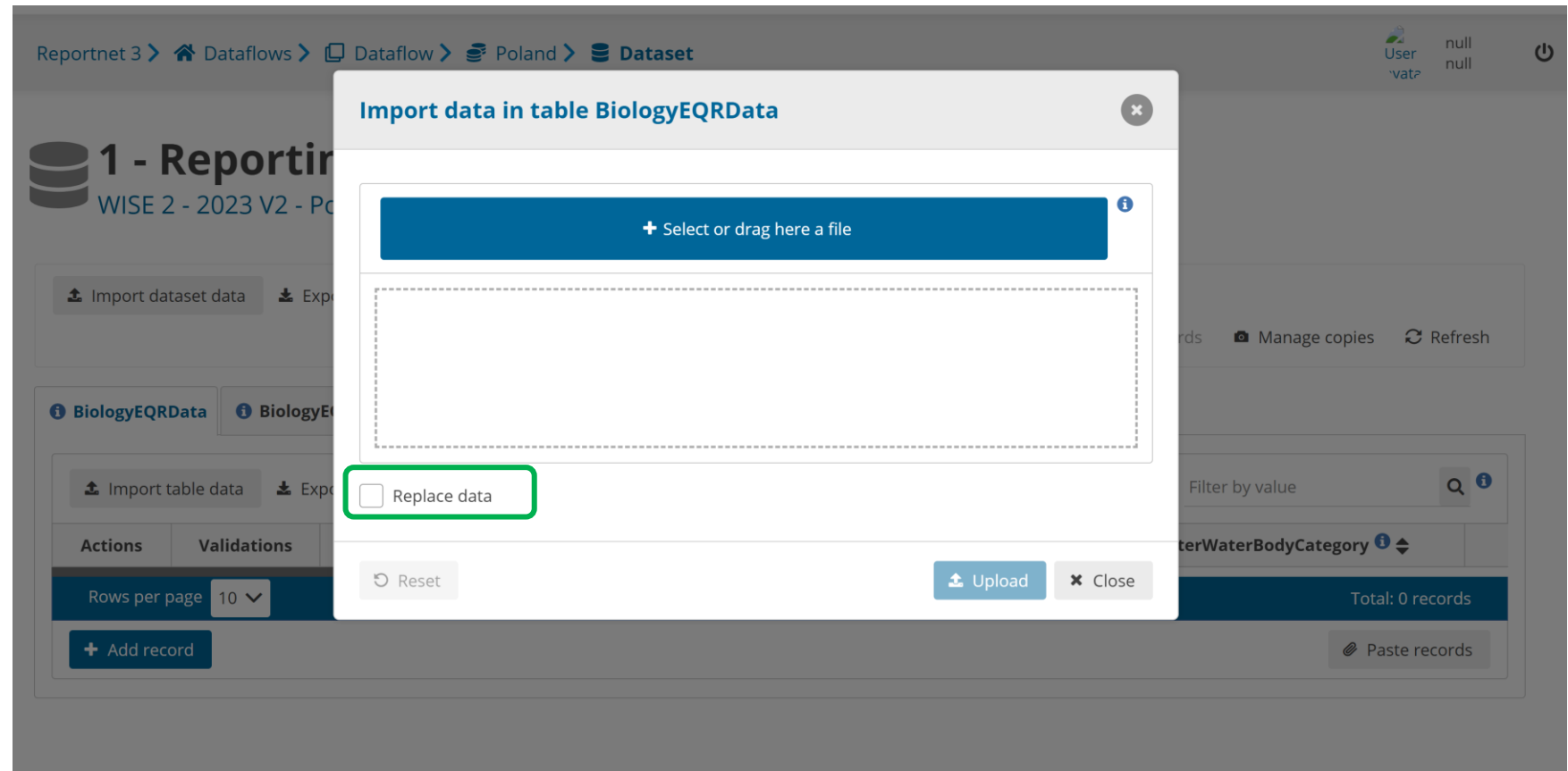
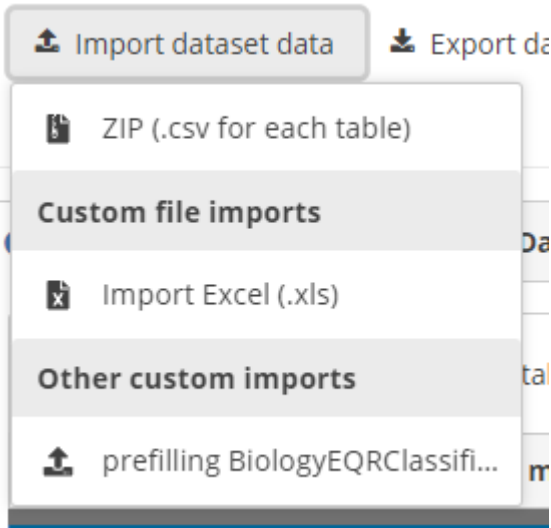
[+ Add record](#)

[Paste records](#)





# Test reporting: Import dataset



- Choose the correct file type
- Note: prefilling option
- Replace data?



# Test reporting: Import dataset

Reportnet 3 > Dataflows > Dataflow > Poland > Dataset

User null  
vat? null

**1 - Reporting data** *Pending*  
WISE 2 - 2023 V2 - Poland

Import dataset data Export dataset data Delete dataset data

Validate Show validations QC rules Dashboards Manage copies Refresh

BiologYQRData BiologYQRDataByWaterBody BiologYQRClassificationProcedure CP\_reference

Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	monitoringSiteIdentifier	monitoringSiteIdentifierScheme	parameterWaterBodyCategory
Total: 0 records				

+ Add record Paste records







- Wait for "Success"
- Then "Refresh"



# Test reporting: View imported data

BiographyQRData BiographyQRDataByWaterBody BiographyQRClassificationProcedure CP\_reference



Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	monitoringSiteIdentifier	monitoringSiteIdentifierScheme	parameterWaterBodyCategory	
 		PL01S0701_0584	euMonitoringSiteCode	RW	17
 		PL01S0701_0584	euMonitoringSiteCode	RW	17
 		PL01S0701_0584	euMonitoringSiteCode	RW	17

BiographyQRData:  
3 records

BiographyQRData BiographyQRDataByWaterBody BiographyQRClassificationProcedure CP\_reference

Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	countryCode	parameterWaterBodyCategory	parameterNCSWaterBodyType	parameterNatu
 		PL	RW	15	Natural







BiographyQR  
Classification  
Procedure:  
1 record



# Test reporting: View imported data

BiographyQRData BiographyQRDataByWaterBody BiographyQRClassificationProcedure CP\_reference



Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	monitoringSiteIdentifier	monitoringSiteIdentifierScheme	parameterWaterBodyCategory	
 		PL01S0701_0584	euMonitoringSiteCode	RW	17
 		PL01S0701_0584	euMonitoringSiteCode	RW	17
 		PL01S0701_0584	euMonitoringSiteCode	RW	17

BiographyQRData:  
3 records

BiographyQRData BiographyQRDataByWaterBody BiographyQRClassificationProcedure CP\_reference

Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	countryCode	parameterWaterBodyCategory	parameterNCSWaterBodyType	parameterNatu
 		PL	RW	15	Natural

BiographyQR  
Classification  
Procedure:  
1 record



# Test reporting: Validation

**1 - Reporting data** *Pending*  
WISE 2 - 2023 V2 - Poland

Validate dataset

This action will take some minutes and it will run in background. Do you want to continue with the validation?

✓ Yes   ✗ No

Actions	Validations	countryCode	parameterWaterBodyCategory	parameterNCSWaterBodyType	parameterNatu
		PL	RW	15	Natural

Rows per page: 10 | Go to 1 of 1 | Total: 1 record




+ Add record | Paste records







- Validation can take LONG time












# Test reporting: Validation






## 1 - Reporting data *Pending* WISE 2 - 2023 V2 - Poland





 Import dataset data  Export dataset data  Delete dataset data



 Validation in progress  Show validations  QC rules  Dashboards  Manage copies  Refresh

-  **BiologyQRData**
-  **BiologyQRDataByWaterBody**
-  **BiologyQRClassificationProcedure**
-  **CP\_reference**

 Import table data  Export table data  Delete table data  Show/Hide columns  Validation filter   

Actions	Validations	countryCode 	parameterWaterBodyCategory 	parameterNCSWaterBodyType 	parameterNatu
 		PL	RW	15	Natural

Rows per page 10     Go to  of 1 Total: 1 record

 Add record  Paste records

Note: "Validation in progress"



# Test reporting: Validation





- "Refresh " and "Show validations"

Import dataset data Export dataset data Delete dataset data

Validate Show validations QC rules Dashboards Manage copies Refresh

BiologYQRData BiologyEQRDataByWaterBody BiologYQRClassificationProcedure CP\_reference

Import table data Export table data Delete table data Show/Hide columns Validation filter Filter by value

Actions	Validations	countryCode	parameterWaterBodyCategory	parameterNCSWaterBodyType	parameterNatu
 		PL	RW	15 	Natural

- Note: validation sign





# Test reporting: View validations table

**Validations** ✕

Type of QC  Table  Field  Level error  Filter Reset

Entity	Table	Field	Code	Level error	Message	Number of records
FIELD	BiologyEQRData	parameterSamplingPeriod	07f5_constraints_parameterSamplingPeriod_year <span>i</span>	<b>BLOCKER</b>	The parameterSamplingPeriod doesn't match the phenomenonTimeReferenceYear.	1
FIELD	BiologyEQRClassificationProcedure	parameterNCSWaterBodyType	04b_reference_NCS <span>i</span>	<b>WARNING</b>	The parameterNCSWaterBodyType was not reported under WFD.	1
RECORD	CP_reference		01_completeness <span>i</span>	<b>BLOCKER</b>	Some of the previously reported records are missing.	256
FIELD	BiologyEQRData	resultEQRValue	12d_relation_CP_missing_EQRValue <span>i</span>	<b>BLOCKER</b>	The resultEQRValue is reported, although the corresponding Classification procedure is missing or is being retired.	3

Rows per page  ⏪ ⏩  Go to  of  Total: 3052 records (total errors: 261)

Mistake made up for testing

Reported to WFD 2022?

Prefilled CP not imported

Prefilled CP not imported

Note: Clicking anywhere in the Validations table will take you to respective set of records in the data table



- Test reporting: Inspect the different validation outcomes

lassificationSystem	phenomenonTimeReferenceYear	parameterSamplingPeriod	resultEcologicalStatusClassValue
	2019	2021-05-24--2021-05-24	1

- I try correcting the mistake in the imported data (before release)

lassificationSystem	phenomenonTimeReferenceYear	parameterSamplingPeriod	resultEcologicalStatusClassValue
	2021	2021-05-24--2021-05-24	

- Re-run Validation, wait for completion...



- Test reporting: Inspect the different validation outcomes

Validate Show validations QC rules Dashboards Manage copies Refresh

BiologyEQRData BiologyEQRDataByWaterBody BiologyEQRClassificationProcedure CP\_reference

Import table data Export table data Delete table data Show/Hide columns Validation filter The parameterS... Filter by value

ClassificationSystem	phenomenonTimeReferenceYear	parameterSamplingPeriod	resultEcologicalStatusClassValue
	2021	2021-05-24--2021-05-24	1

- Why is there still a BLOCKER sign?
- Try Refresh...

ClassificationSystem	phenomenonTimeReferenceYear	parameterSamplingPeriod	resultEcologicalStatusClassValue
	2021	2021-05-24--2021-05-24	1

- BLOCKER sign is gone
- NB: Correct the mistake also at the source



- WISE-2 QC rules: 168 records

Ranging from simple rules...

QC rules <span style="float: right;">✕</span>								
BiologyEQ RData	parameterNaturalAW BHMWB	FC42	Field cardinality	Checks if the field is missing or empty	The value must not be missing or empty		FIELD	<b>BLOCKER</b>
BiologyEQ RData	parameterNaturalAW BHMWB	FC44	Field cardinality	Checks if the field is missing or empty	The value must not be missing or empty		FIELD	<b>BLOCKER</b>
BiologyEQ RData	phenomenonTimeReferenceYear	FC49	Field cardinality	Checks if the field is missing or empty	The value must not be missing or empty		FIELD	<b>BLOCKER</b>
BiologyEQ RData	phenomenonTimeReferenceYear	FT50	Field type NUMBER - INTEGER	Checks if the field is a valid NUMBER - INTEGER	The value is not a valid integer number		FIELD	<b>BLOCKER</b>
BiologyEQ RData	resultNumberOfSamples	FT53	Field type NUMBER - INTEGER	Checks if the field is a valid NUMBER - INTEGER	The value is not a valid integer number		FIELD	<b>BLOCKER</b>
BiologyEQ RData	resultEQRValue	FT64	Field type NUMBER - DECIMAL	Checks if the field is a valid NUMBER - DECIMAL	The value is not a valid integer or decimal number		FIELD	<b>BLOCKER</b>
BiologyEQ RData	resultNormalisedEQRValue	FT68	Field type NUMBER - DECIMAL	Checks if the field is a valid NUMBER - DECIMAL	The value is not a valid integer or decimal number		FIELD	<b>BLOCKER</b>
BiologyEQ RData	parameterNCSWaterBodyType	FC86	Field cardinality	Checks if the field is missing or empty	The value must not be missing or empty		FIELD	<b>BLOCKER</b>
BiologyEQ RData	monitoringSiteIdentifierScheme	FC92	Field cardinality	Checks if the field is missing or empty	The value must not be missing or empty		FIELD	<b>BLOCKER</b>

Rows per page  ⏪ ⏩ 1 2 3 4 5 ▶ ⏭ Go to  of 17 Total: 168 records

Download QCs



- WISE-2 QC rules: 168 records

... to more complex rules

QC rules <span style="float: right;">✕</span>							
Biology EQRClassificationProcedure	11f_boundaryChanges	Class boundary test - changes	Tests whether the class boundaries of previously reported Classification procedures are now different. The EEA will use the most recent class boundaries to re-calculate normalised EQR values also in the previously reported data.	Some of the reported class boundaries are different than previously reported.	<pre>SELECT d.* FROM dataset_19248."biologyeqrclassificationprocedure" as d INNER JOIN dataset_19248."cp_reference" as r ON d."countrycode" = r."countrycode" AND d."parameterwaterbodycategory" = r."parameterwaterbodycategory" AND d."parameterncswaterbodytype" = r."parameterncswaterbodytype" AND d."parameternaturalawbhmwb" = r."parameternaturalawbhmwb" AND d."observedpropertydeterminandbiologyeqrcode" = r."observedpropertydeterminandbiologyeqrcode" WHERE d."countrycode" = '{%R3_COUNTRY_CODE%}' AND ( d."parameterboundaryvalueclasses12" &lt;&gt; r."parameterboundaryvalueclasses12" OR d."parameterboundaryvalueclasses23" &lt;&gt; r."parameterboundaryvalueclasses23" OR d."parameterboundaryvalueclasses34" &lt;&gt; r."parameterboundaryvalueclasses34" OR d."parameterboundaryvalueclasses45" &lt;&gt; r."parameterboundaryvalueclasses45" )</pre>	RECORD	WARNING
Biology EQRClassificationProcedure	12b_relation_retired_has EQR_pastDF	Relation test - retired classification procedure - EQR data from past dataflows	Tests if any of the BiologyEQRClassificationProcedure records flagged for retirement (resultObservationStatus = 'Z') have any associated valid BiologyEQRData or BiologyEQRDateByWaterbody records reported in the past.	This retired classification procedure is associated with valid EQR data from past dataflows.	<pre>SELECT d.* FROM dataset_19248."biologyeqrclassificationprocedure" as d INNER JOIN dataset_19248."cp_reference" as r ON d."countrycode" = r."countrycode" AND d."parameterwaterbodycategory" = r."parameterwaterbodycategory" AND d."parameterncswaterbodytype" = r."parameterncswaterbodytype" AND d."parameternaturalawbhmwb" = r."parameternaturalawbhmwb" AND d."observedpropertydeterminandbiologyeqrcode" = r."observedpropertydeterminandbiologyeqrcode" WHERE d."countrycode" = '{%R3_COUNTRY_CODE%}' AND d."resultobservationstatus" = 'Z' AND r."haseqrdata" = 1</pre>	RECORD	WARNING
					SELECT d.* FROM dataset_19248."biologyeqrclassificationprocedure" as		





Thank you