Delineation of water bodies

The dashboards below provide an overview of different results related to the delineation of water bodies. In addition, further information is provided in in chapter 1 of the EEA report European waters – assessment of status and pressures 2018, and in section 2.2 Characterisation of surface waters and section 3.2 Characterisation of groundwater of the WFD 2016 reporting guidance.

The following dashboards are available (2018/07/16)

Surface water bodies

- Number or size: overview table; table by category
- Change in the delineation of surface water bodies in the 2nd and 1st RBMPs: overview table; chart by category; country comparison chart; chart by country and category
- Natural, artificial or heavily modified water bodies: overview table; chart by category; country comparison chart; chart by country and category
- Proportion of natural, artificial or heavily modified water bodies: map by country; map by RBD; map by country and RBD
- Heavily modified water bodies: physical alterations; and designated water uses
- Broad types: table by country ; overview table ; overview chart

Groundwater bodies

- Number and size: overview table
- Change in the delineation of groundwater bodies in the 2nd and 1st RBMPs: overview table ; chart by geological formation ; country comparison chart ; chart by geological formation and country

Surface water bodies: Number and size and Groundwater bodies: Number and size

In the context of the WFD, the water environment includes groundwater, rivers, lakes, transitional, and coastal waters out to one nautical mile (12 nautical miles for chemical status). These waters are divided into units called water bodies.

Water bodies should be delineated at a size that allows the identification and quantification of significant pressures and the classification of status (detailed guidance is provided in CIS Guidance Document No. 2: Identification of Water Bodies[1]). Chapter 2 and 3 of the 2016 WFD reporting guidance[2] describe the reporting of observations at water body level, including characterization of water bodies (name, codes, categories, natural or size).

If a water body has WISEEvolutionType ´unchanged´ or ´changedcode´ (see following section) indicating that the water body is unchanged EEA has used the information reported on size (length or area) reported with the second RBMPs for both first and second RBMPs.

Ideally, groundwater bodies should be represented with three-dimensional information on their extent, i.e. volume, and location. However, this information is rarely available from Member States. Hence, the results presented is based on information of the size and location of the polygons that represent the projection areas of the groundwater bodies at the terrain surface, in accordance with the WFD 2016 reporting guidance.

[1] CIS Guidance Document No. 2: Identification of Water Bodies: https://circabc.europa.eu/sd/a/655e3e31-3b5d-4053-be19-15bd22b15ba9/Guidance%20No%202%20-%20Identification%20of%20water%20bodies.pdf
[2] http://cdr.eionet.europa.eu/help/WFD/WFD_521_2016

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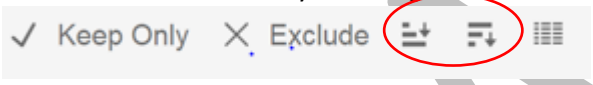
Three dashboard tables present overview of water bodies delineated by Member States.

- Surface water bodies: Number or size: overview table; table by category
- Groundwater bodies: Number and size: overview table

It is possible to use the following filters (left panel): Management plan (RBMP); Measure (number of water bodies/size (km I km^2); Water body (unchanged, changed); Category (*only for surface waters:* rivers, lakes, transitional, coastal and territorial waters); Type (*only surface waters:* natural, heavily modified, artificial); Aquifer type (*only groundwater bodies:* porous, fissured, fractured, other); Productivity (*only groundwater:* high, medium, low, other); Country; River Basin District (RBD); Sub-unit.

Main features:

- The tabular dashboards present in top the EU results and below the results per Member State.
- Moving the mouse over the results will show the data label (full country names, number of water bodies etc.)
- Moving the mouse to NUT0 (column with Member States) a [+] will appear and clicking on [+] will drill down to RBDs. On euRBDCode column a new [+] will appear, and by clicking on [+] it will drill down to sub-units. If a RBD has not identified sub-units RBDcode and SubunitCode are generally equal.
- Columns can be sorted by selecting a column and right click on ascending or descending sort.



Change in the delineation of surface water bodies from the first RBMPs to the second RBMPs

Member States reported for groundwater and surface water bodies reported the WISEEvolutionType, that indicate changes or nochanges in water body delineation from the first to the second RBMPs.

The following WISEEvolutionType is possible: aggregation, change, changeBothAggregationAndSplitting, changeCode, changeExtendedArea, changeReducedArea, creation, deletion, noChange, splitting.

Data at water body level can be compared between if the water body WISEEvolutionType, is reported as

- 'noChange',
- 'changeCode' (meaning a change in the identifier, but no change in the delineation) or
- 'change' (minor change in the geometry or other attribute with no relevance to the real-world delineation of the area of management).

Water bodies that were deleted in the second RBMP will appear with WISEEvolutionType ´deleted´ in 1st RBMP, and water bodies that were new in 2nd RBMPs will appear with WISEEvolutionType ´created´ in 2nd RBMP.

Two tabular dashboards present overview of change in water body delineation for surface and groundwater bodies, respectively.

- Surface water bodies overview table;
- Groundwater bodies: overview table

Main features:

- The table default setting is overview by 'Unchanged' (nochange, changecode or change) and 'Other' water bodies.

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- By clicking on [+] close to 'unchanged' the table can be drill down to underlying WISEEvolution types. The high number of columns may make some results invisible (##) and it may be necessary to select only 1st or 2nd RBMPs, or moving the mouse over the (##) to see the results as pop-ups. Alternatively the cross-tabs may be downloaded.
- Sorting Member States by percentage 'Unchanged' water bodies indicate the Member States with the majority of surface water bodies redelineated (e.g. Croatia and Denmark) and groundwater bodies (e.g. Denmark, Poland, Romania).

Six chart dashboards present overview of change in water body delineation for surface and groundwater bodies, respectively.

- Surface water bodies : chart by category; country comparison chart; chart by country and category
- Groundwater bodies: chart by geological formation ; country comparison chart ; chart by geological formation and country

Main features:

- The chart dashboards are split into a top chart on delineation in 2nd RBMPs and a bottom chart with delineation in second RBMPs.
- By using the country comparison charts differences in delineation of water bodies by Member States can be illustrated.

Natural, artificial or heavily modified water bodies

In the case of water bodies that have undergone significant hydromorphological alteration, the WFD allows Member States under certain conditions to designate surface waters as heavily modified water bodies, with the environmental objective being 'good potential' rather than status. For artificial water bodies, there is a similar objective.

Overall, 17 % of European water bodies were designated as heavily modified (13 %) or artificial (4 %) water bodies during the second RBMPs. Around 30 % of transitional water bodies and 14 % and 10 % of rivers and lakes, respectively, were designated as heavily modified. The main reasons for designating European water bodies as heavily modified are land drainage, urban infrastructure and agriculture, as well as water regulation and flood protection measures.

One tabular and three chart dashboards present overview of designation of natural, heavily modified and artificial surface water bodies. In addition, there are three interactive map dashboards that present the proportion of

- Natural, artificial or heavily modified water bodies: overview table; chart by category; country comparison chart; chart by country and category
- Proportion of artificial or heavily modified water bodies: map by country; map by RBD; map by country and RBD

Main features

- The tabular dashboard present overview of number (default) or percentage of natural, heavily modified or artificial water bodies by category. By using the filters 1st or 2nd RBMPs can be chosen, number of water bodies can be changed to size, and % (pane) will illustrate the percentage within the category.
- Moving the mouse to NUT0 (column with Member States) a [+] will appear and clicking on [+] will drill down to RBDs.
- To sort Member States or RBDs by proportion heavily modified water bodies the selection has to be downloaded in Excel (*EEA will look for a solution so this sorting can be implemented on the dashboards*).

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- The chart dashboards present bar charts of the designation of waterbodies. By using the filters different aspects can be illustrated. The country comparison chart illustrates differences in designation of water bodies by Member States.
- Differences in designation of water bodies by Member States and RBDs are also illustrated by the interactive maps.

With the 2nd RBMPs Member States have for heavily modified water bodies reported the physical alteration[3] that has resulted in the designation of the surface water body as a HMWB and the water use for which it has been designated.

The main reasons (water uses) for designating European water bodies as heavily modified are land drainage, urban infrastructure and agriculture, as well as water regulation and flood protection measures.

Two tabular dashboards present overview of the data reported in relation to physical alteration and water use.

- Heavily modified water bodies: physical alterations; and designated water uses

Main features

- The two tables present at the top EU and at the bottom Member State or RBD overview of the results on physical alteration and water use. The percentage column is in relation on the selected number of water bodies and a heavily modified water body may have more than one physical alteration or water use. Therefor the sum of percentages may be higher than 100 %.
- Remark that both tables start default without physical alteration or water use reported as 'missing' or 'unpopulated'. These may be added to have the full overview of heavily modified water bodies.
- By selecting specific physical alteration (or water uses), for example, 'weirs/ dam/ reservoirs' it is possible to get an overview of Member States that have identified the specific physical alteration.

Broad types

National types of rivers and lakes have been defined in each Member State according to the WFD Annex II Systems A or B, including a variety of typology factors, e.g. altitude, size and geology. The typology factors have been used to establish national types that have different reference conditions for one or more of the quality elements that should be used to assess ecological status according to the WFD Annex V. The analysis of the first RBMPs reported in 2010 showed that Member States have reported altogether 1599 river types and 673 lake types.

A set of broad river types and broad lakes types have been developed in dialogue with the countries through the WFD-CIS ECOSTAT working group (ETC-ICM 2015[4]). These have been further aggregated from 20 to 12 aggregated broad river types and from 15 to 8 aggregated broad lake types by merging related types based on similarities in typology factors, e.g. altitude, geology, size or region.

[3] In the context of designation, physical alterations mean any significant alterations that have resulted in substantial changes to the hydromorphology of a surface water body such that the surface water body is substantially changed in character. In general, these hydromorphological characteristics are long-term and alter both the morphological and hydrological characteristics.

[4] EEA ETC-ICM 2015, European Freshwater Ecosystem Assessment: Cross-walk between the Water Framework Directive and Habitats Directive types, status and pressures. http://icm.eionet.europa.eu/ETC_Reports/FreshwaterEcosystemAssessmentReport_201509

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The proportion of classified water bodies that could be linked to one of these broad types is 68 % of river water bodies and 69 % of lake water bodies.

Three dashboards present results on assigning broad types and aggregated broad types.

- Broad types: table by country ; overview table ; overview chart

Main features

- The dashboard 'table by country' presents either for rivers (default) or lakes an overview of the broad types on EU (top) or Member States level (bottom). Member States may drill down to RBD level by clicking on [+] on NUTS0.
- The broad types RW-00 and LW-00 present the number of water bodies national types not assigned to broad types.
- The full names of broad types and aggregated broad types are available in the filters.
- By selecting specific broad types/aggregated broad types e.g. 'RW-00 not assigned' or 'RW-01 Very large rivers' in the filters an overview of the occurrence of this broad type in countries is presented.
- Holding the mouse over the 'Broad type' column a [+] appear and results on national types assigned to the particular broad type are presented.
- The overview table presents an overview of the number of Member States, number of water bodies and the length in km (for rivers) and area in km^2 (for lakes). For example 13 Member States have 'RW-01 Very large rivers' and the number of water bodies and river length are 442 and 17 663 km, respectively. Similar information is presented in the overview chart.

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