



GSEU

GEOLOGICAL SERVICE | FOR EUROPE

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How to access groundwater quantitative and chemical status assessments of European groundwater bodies



www.geologicalservice.eu

EU GREEN WEEK 27.8.2024, 9 – 12.00




Contents:



- Groundwater, the largest available freshwater resource, in a global and European perspective
- Brief introduction to groundwater quantitative and chemical status assessment according to EU directives and how to access guidance documents
- How to access groundwater status assessments reported by EU member states via the EEA website and the WISE Freshwater Information System for Europe etc.

European Environment Information and Observation Network


What is Eionet?

The European Environment Information and Observation Network (Eionet) is a partnership network of the  European Environment Agency (EEA) and its 38 member and cooperating countries. EEA and Eionet gather and develop data, knowledge, and advice to policy makers about Europe's environment.

Overall, Eionet consists of the EEA and circa 400 national institutions from 38 countries, with expertise in environmental issues, and eight centres of thematic expertise contracted by the EEA, called European Topic Centres (ETCs).

The EEA is responsible for developing Eionet and coordinating its activities together with  National Focal Points (NFPs) in the countries. The NFPs are the country institutions appointed to serve as the primary link between the EEA and the country. NFPs facilitate and coordinate networks of national experts involved in national activities related to the  EEA work programme.

Eionet for the future

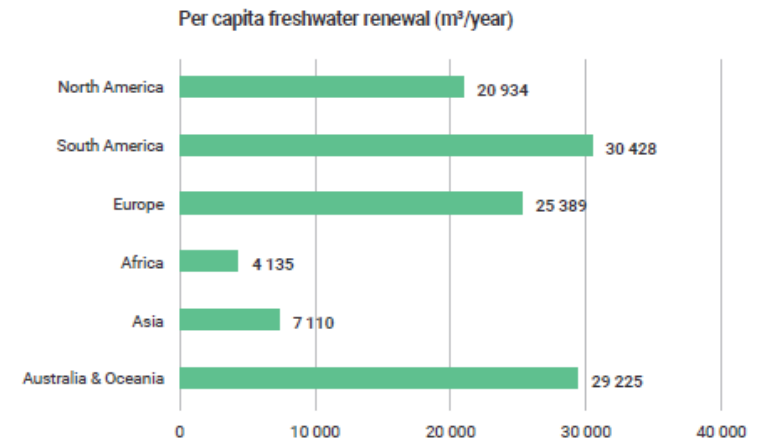
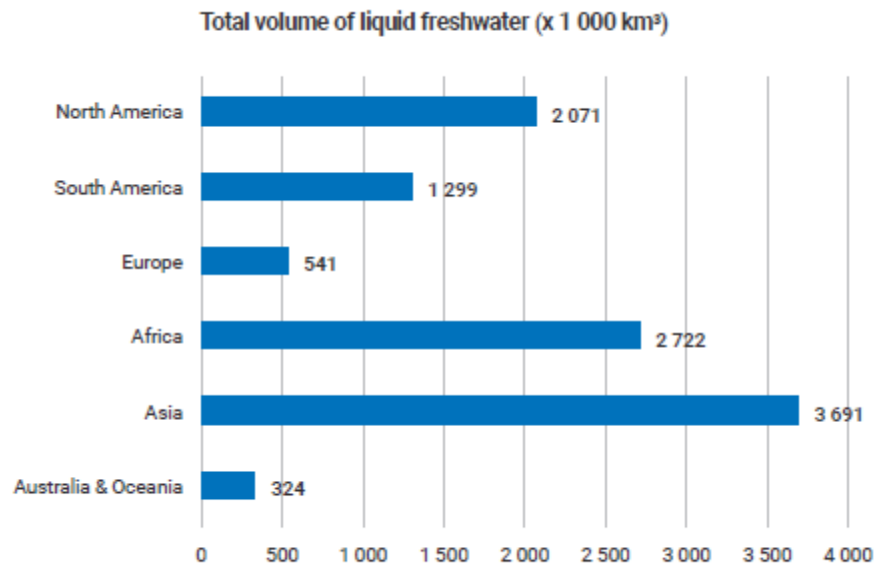
The  EEA-Eionet Strategy for 2021-2030 gives the direction for EEA and Eionet in this decade. The joint task of EEA and Eionet is to give EU policy makers and the public the best available knowledge to reach the targets on environment and sustainability.

<https://www.eea.europa.eu/en/about/working-practices/docs-register/eea-eionet-strategy-2021-2030>





Available freshwater on the continents

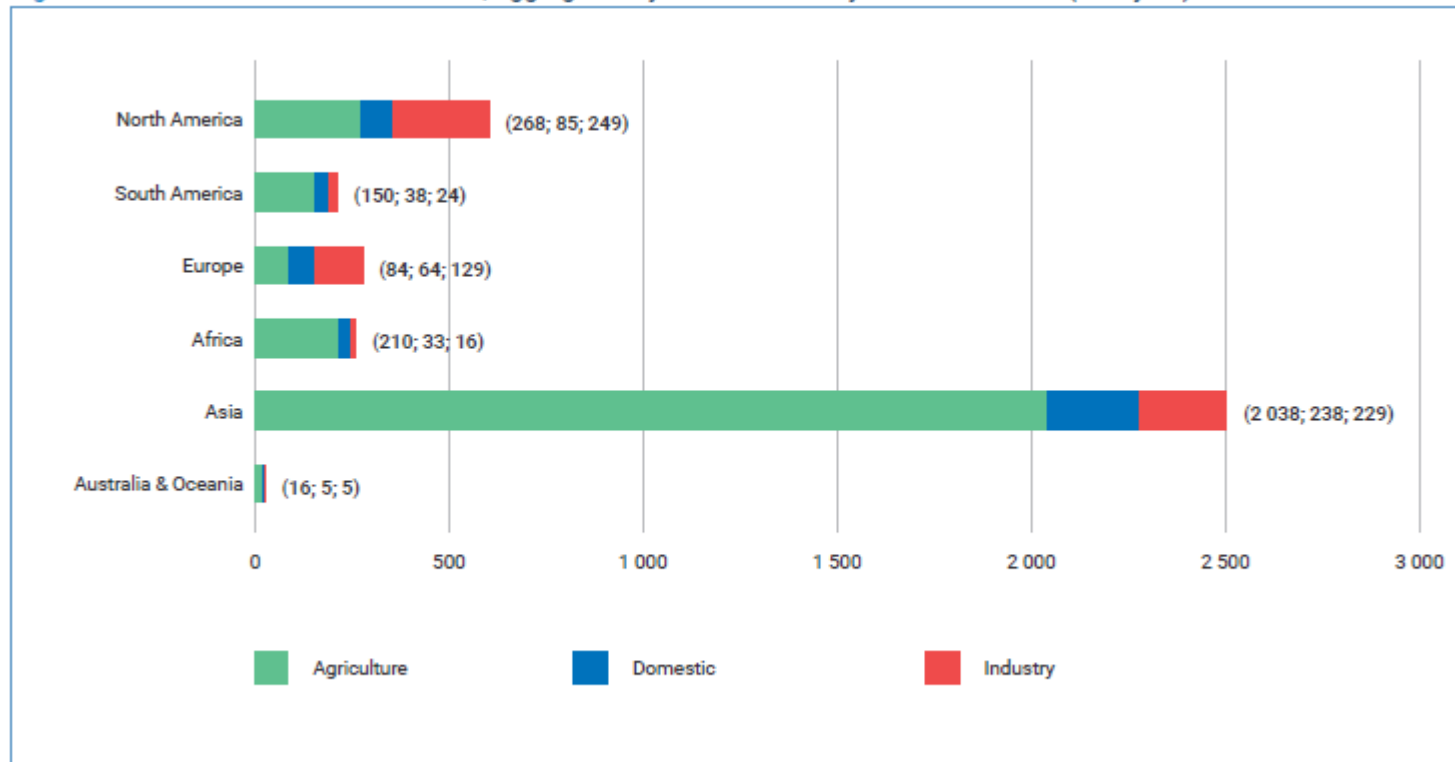


⁵ Source: <https://www.unwater.org/publications/un-world-water-development-report-2022>



Freshwater use by agriculture, households and industry

Figure 3 Freshwater withdrawal in 2017, aggregated by continent and by water sector use (km³/year)



Source: Based on data from Aqunstat (n.d.).



Groundwater and UN SDGs

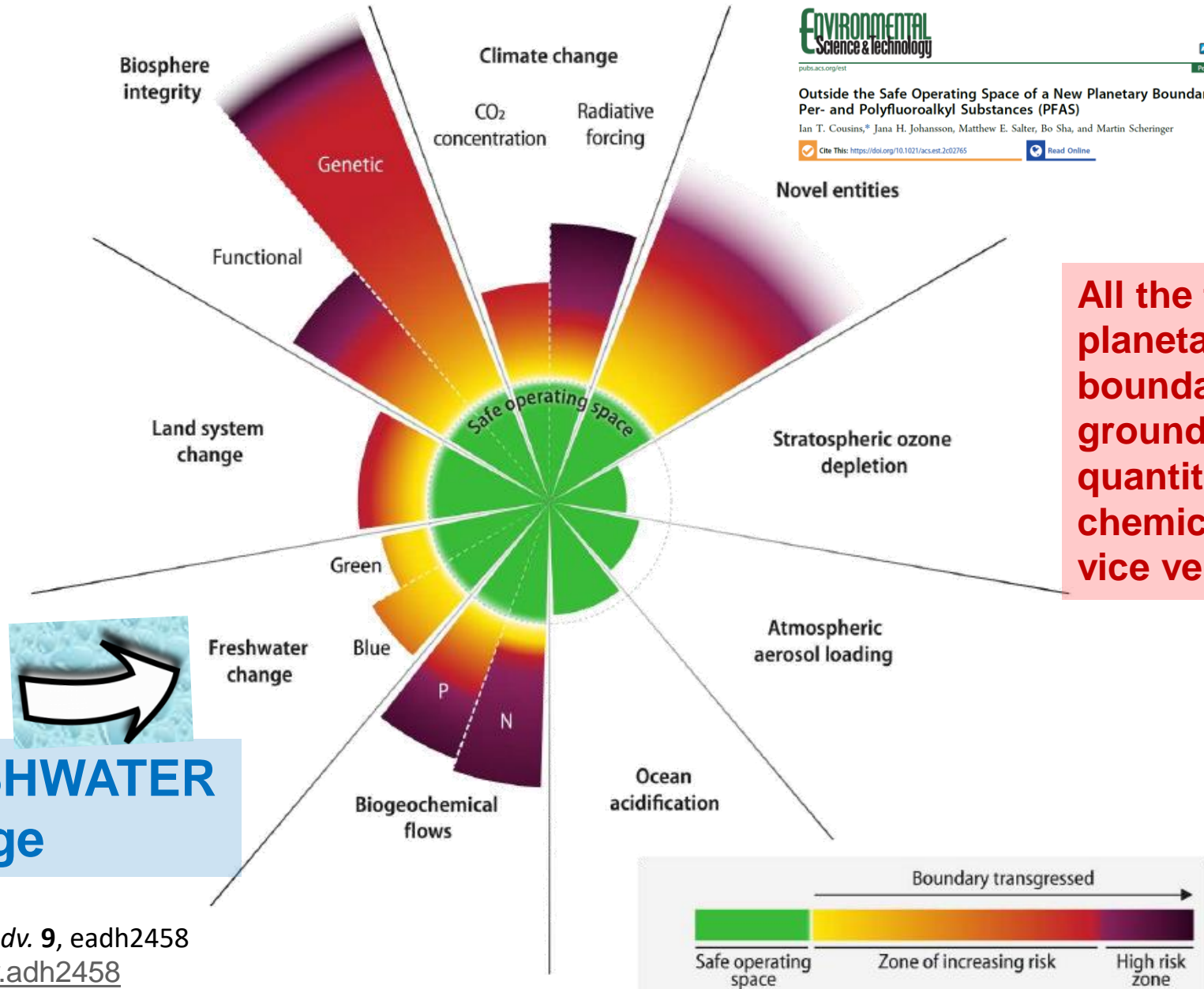


Although only one SDG target makes explicit reference to groundwater in its wording (Target 6.6), no less than 53 targets appear to be interlinked with groundwater



Source: <https://www.unwater.org/publications/un-world-water-development-report-2022/>

Earth beyond six of nine Planetary Boundaries



ENVIRONMENTAL
Science & Technology
pubs.acs.org/est
Perspective

Outside the Safe Operating Space of a New Planetary Boundary for Per- and Polyfluoroalkyl Substances (PFAS)
Ian T. Cousins,* Jana H. Johansson, Matthew E. Salter, Bo Sha, and Martin Scheringer

Cite This: <https://doi.org/10.1021/acscst.2c02765> [Read Online](#)

All the transgressed planetary boundaries impact groundwater quantitative and chemical status or vice versa



Groundwater status assessments in EU

- The European Union (EU) has established several requirements for its member states to ensure the good status of water bodies under the **Water Framework Directive (WFD)** and the **Groundwater Directive (GWD)**, which were adopted in 2000 and 2006, respectively.

[Link to the Water Framework Directive in all EU languages](#)

[Link to the Groundwater Directive in all EU languages](#)

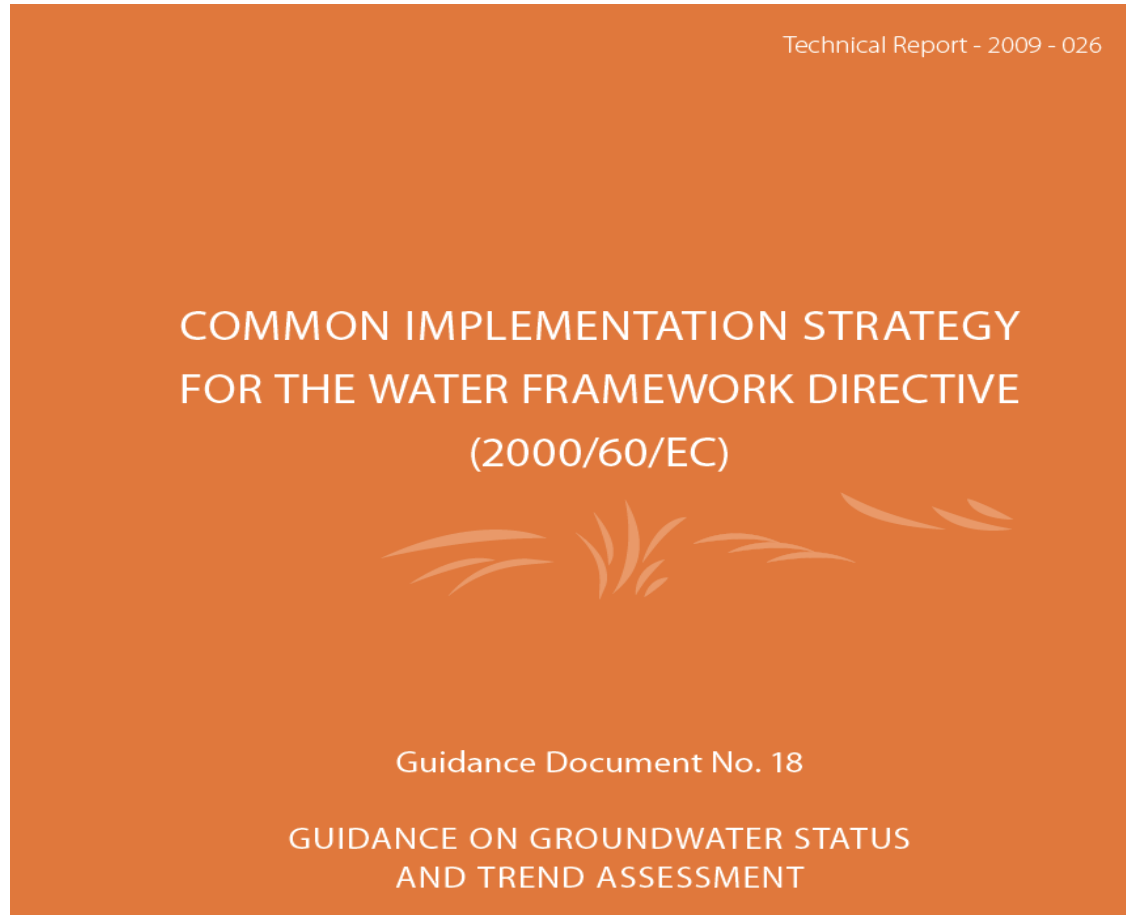
[Link to CIS Working Group Groundwater documents on CIRCABC](#)



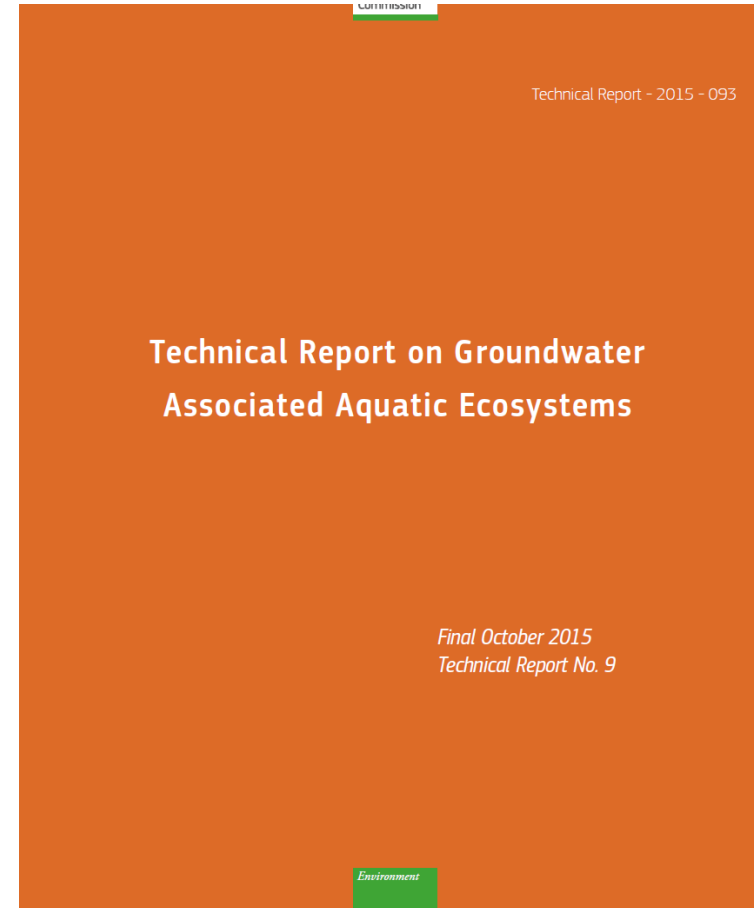
Exampels of guidance and technical reports regarding groundwater status assessments:

link to: [CIS guidance documents](#)

[Link to guidance no. 18 on CIRCABC](#)



[Link to technical report no. 9, 2015 on CIRCABC](#)





EU MS have to conduct groundwater quantitative and chemical status assessment in three RBMPs to ultimately ensure good status in 2027 at the latest

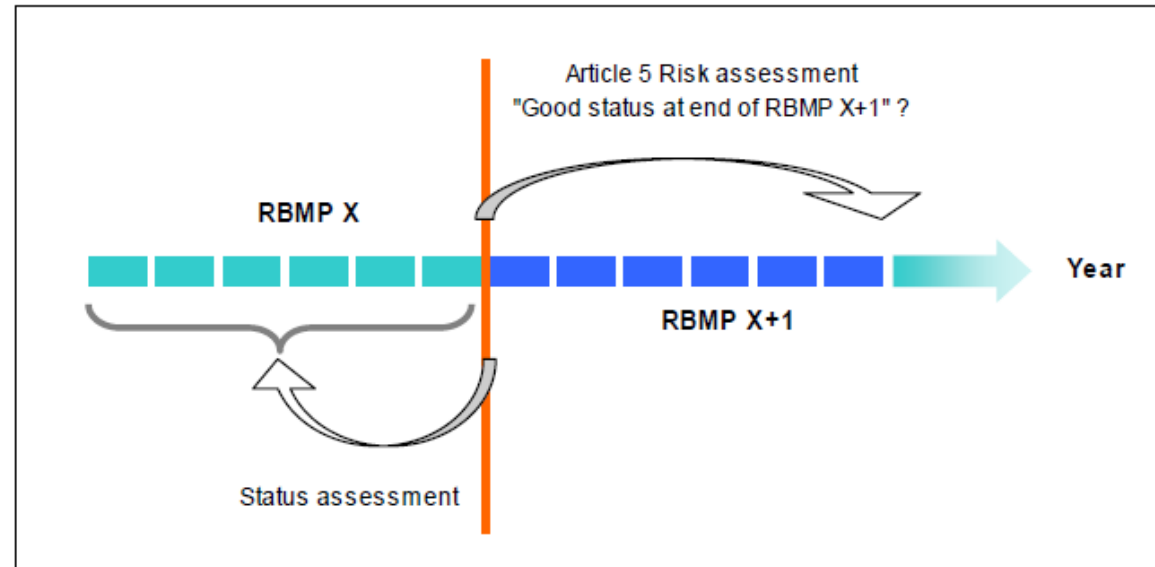
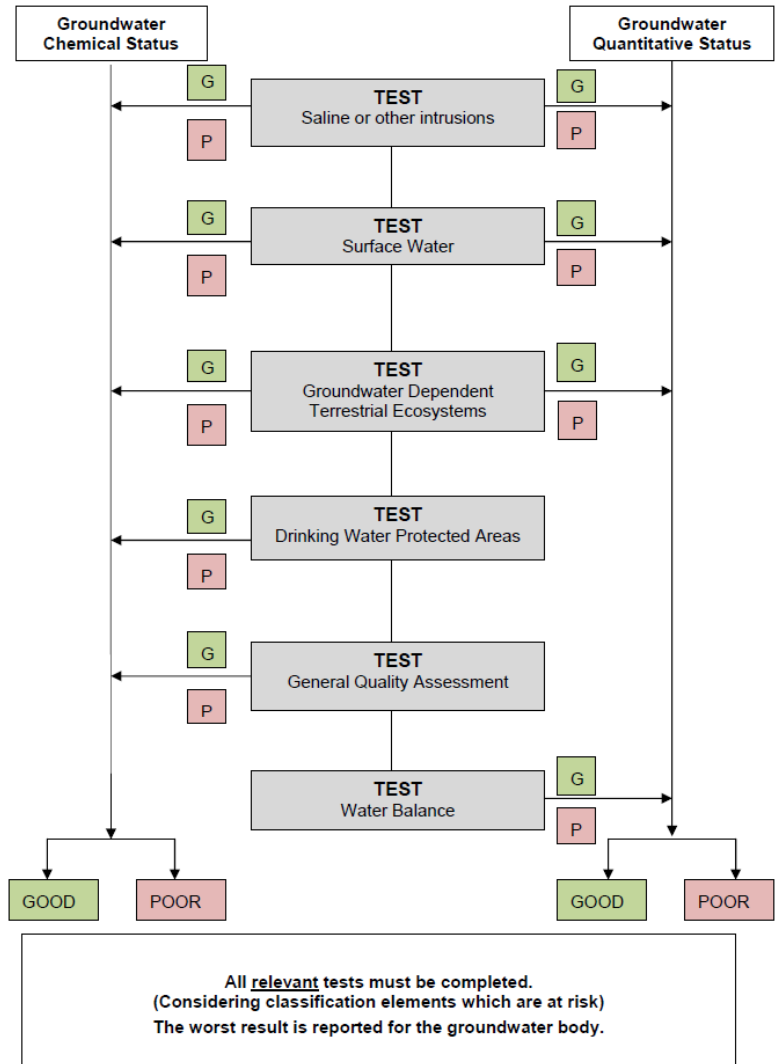
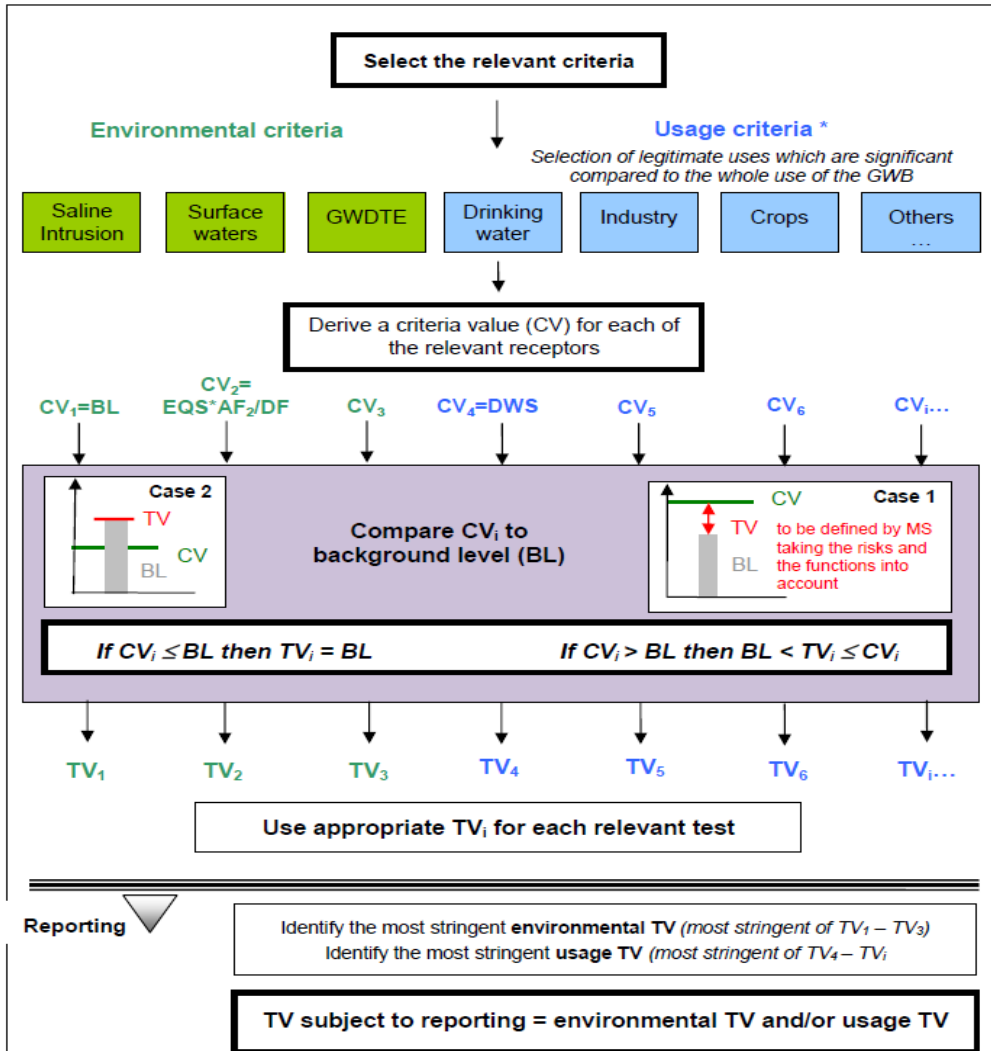


Figure 2: Risk assessment looks into the future whereas status assessment looks back on the performance.

[Link to guidance no. 18 on CIRCABC](#)



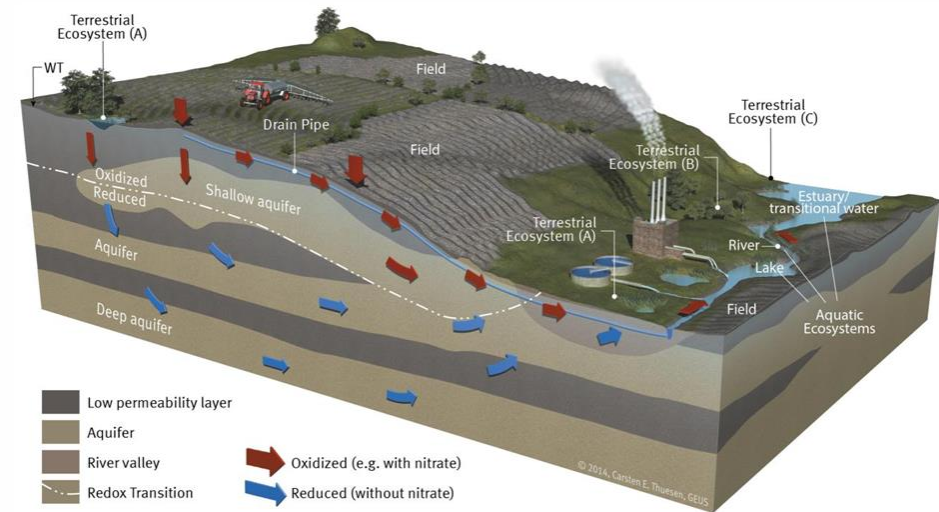
Status assessments have to be performed based on requirements of environmental (ecosystems etc.) and usage criteria (legitimate uses: drinking water etc.)



[Link to guidance no. 18 on CIRCABC](#)

Environmental criteria:

Groundwater-dependent terrestrial and associated aquatic ecosystems




[Link to technical report no. 9, 2015 on CIRCABC](#)





Access to groundwater status assessments by European member states via EEA and WISE Freshwater websites:

An official website of the European Union | How do you know? ▾

 **European Environment Agency**

Topics Analysis and data Countries Newsroom

Europe's changing climate and summer extremes

Heatwaves, floods, droughts and wildfires have become more common in Europe months. What about this summer?

[Read more on extreme weather and our key knowledge resources](#)

Image © Janez Zalaznik, WaterPIX /EEA

Environmental information systems ▾

- European Environment Agency website
- WISE marine - Marine information system for Europe
- WISE freshwater - Freshwater information system for Europe**
- BISE - Biodiversity information system for Europe
- FISE - Forest information system for Europe
- European Climate and health observatory
- ClimateADAPT
- European Industrial Emissions Portal
- Climate and energy in the EU
- Copernicus Land Monitoring Service
- Copernicus InSitu



WISE Freshwater / EEA information platforms

<https://water.europa.eu/freshwater>



Europe's Freshwater > Water Framework Directive > Groundwater chemical status

Groundwater provides a major source of drinking water for many EU citizens and provides the steady base flow of rivers and wetlands. Keeping groundwater free of pollution is vital for humans and river and wetland ecosystems. Once pollutants are in groundwater, recovery can take years or even many decades because of residence times and the slow degradation of pollutants.

To achieve good groundwater chemical status, EU Member States and Norway assess their groundwater bodies according to four criteria:

- Concentrations of pollutants do not exceed the standards set for groundwater
- Absence of saline intrusion in the groundwater body
- Pollution levels must not impact ecological or chemical status of surface waters
- Pollution levels must not cause significant damage to ecosystems and wetlands that depend directly on the groundwater body.

Other WFD pages:

- [Surface water ecological status](#)
- [Surface water chemical status](#)
- [Groundwater chemical status](#)
- [Groundwater quantitative status](#)



Europe's Freshwater > Water Framework Directive > Groundwater quantitative status

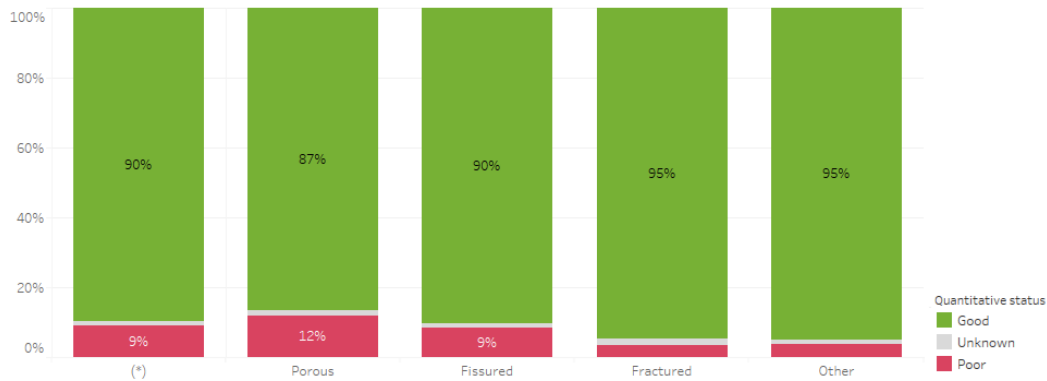
Groundwater quantitative status is one of two assessments made for groundwater under the Water Framework and the Groundwater Directives. The other assessment is groundwater chemical status. Groundwater aquifers provide around 42% of the total water abstraction in Europe, most of which is used for public water supply, agricultural activities, and industry. In Europe, about half of the drinking water is taken from groundwater, with many large cities depending on it for their water supply. Groundwater is also used for irrigation. There can be multiple uses affecting the quantitative status of a groundwater body.



Groundwater quantity and quality (chemical) status by geological formation/porosity type

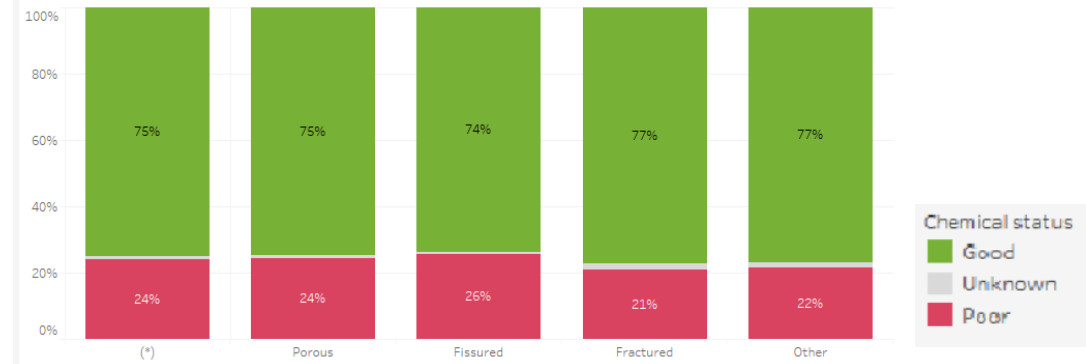
Groundwater bodies: Quantitative status (2nd RBMP), by geological formation

Groundwater bodies: Quantitative status, by geological formation (2nd RBMP)



Chemical status of groundwater bodies

Groundwater bodies: Chemical status, by geological formation (2nd RBMP)

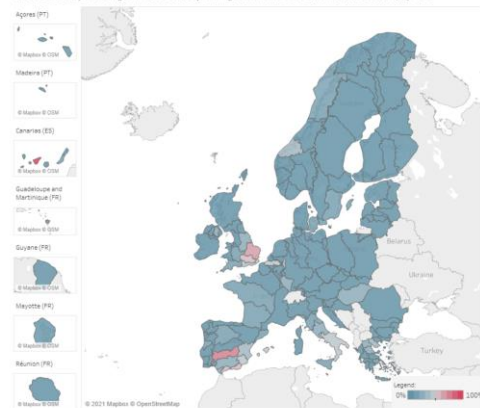


Chemical status
Good
Unknown
Poor

[Go to the expert dashboard →](#)

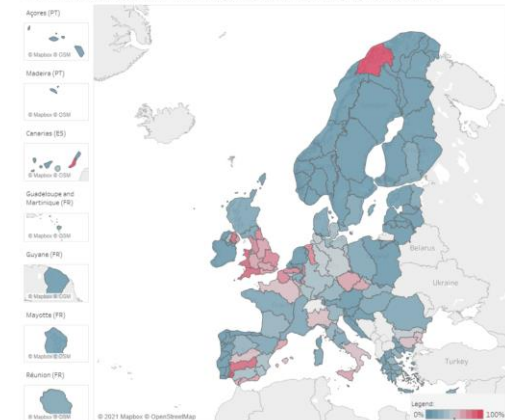
Water bodies failing to achieve good quantitative status, by RBD

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



[Go to the expert dashboard →](#)

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



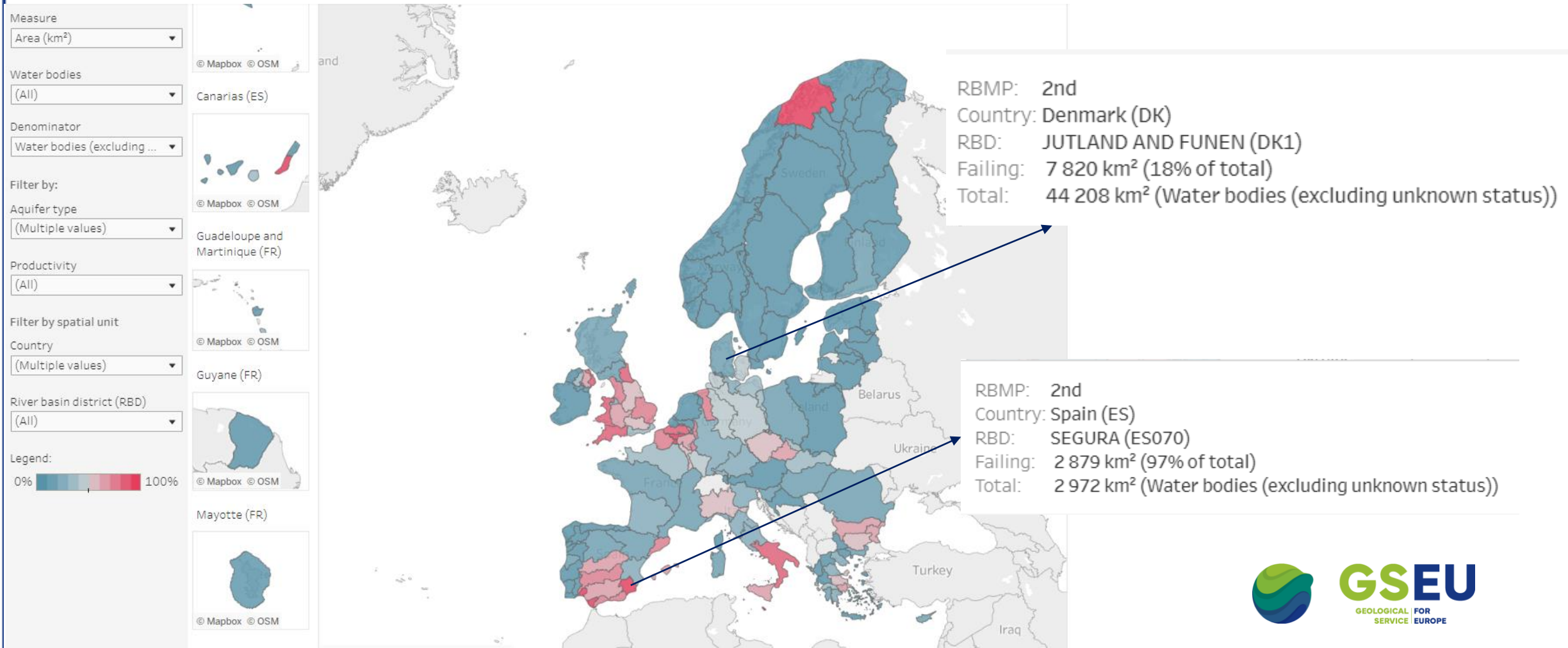
[Go to the expert dashboard →](#)





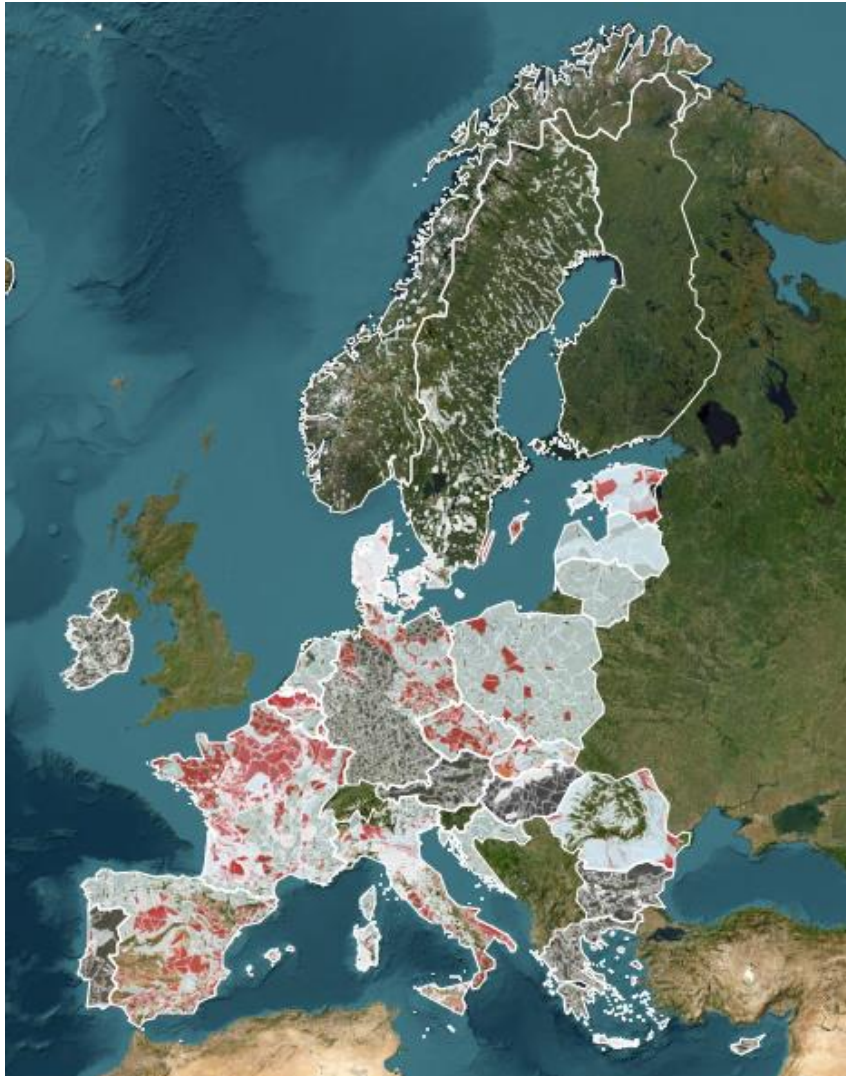
Groundwater bodies failing to achieve good chemical status

<https://water.europa.eu/freshwater/resources/metadata/dashboards/quantitative-status/groundwater-bodies-proportion-failing-to-achieve-good-status-by-rbd-map>





Europeanwaters.eu: New initiative by European journalists & media focusing on increasing the awareness about and discussing the status of European groundwater as reported by EU member states - <https://europeanwaters.eu/>



<https://journalismarena.eu/>



Arena for Journalism in Europe coordinated this project and wrote the European story.

Journalists: Zeynep Sentek, Jelena Prtoric, Sarah Pilz

Design and web: Dominik Heusel, Benedikt Hebeisen

<https://www.datadista.com/>

DATADISTA

Datadista in Spain collected, analysed and prepared the European data for each national partner, and designed the European map.

Journalists: Ana Tudela, Antonio Delgado

Project partners

Le Monde

Le Monde, France

Journalists: Raphaëlle Aubert, Léa Sanchez

Designers: Léa Girardot, Elsa Delmas

dS De Standaard

De Standaard, Belgium

Journalists: Ine Renson, Maxie Eckert

investico

onderzoeksjournalisten

Investico, the Netherlands

Journalist: Marieke Rotman

FACTA

Facta, Italy

Journalists: Elisabetta Tola, Marco Boscolo

Information

Dagbladet Information, Denmark

Journalist: Marie Saehl

REPORTERS UNITED

Reporters United, Greece

Journalists: Myrto Boutsis, Eurydice Bersi

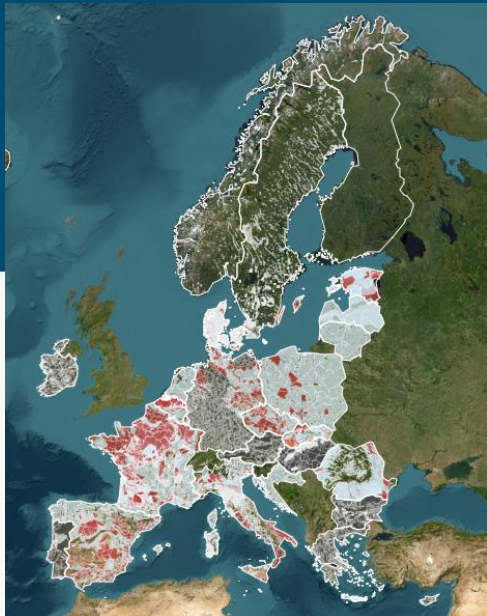


<https://europeanwaters.eu/>

[Under the surface](#) [About](#) [Data Methodology](#) [Map & Database](#) [Our Publications](#)

Under the Surface

The hidden crisis in Europe's groundwater



Arena for Journalism in Europe coordinated this project and wrote the European story.

Journalists: Zeynep Sentek, Jelena Prtoric, Sarah Pilz

Design and web: Dominik Heusel, Benedikt Hebeisen

DATADISTA

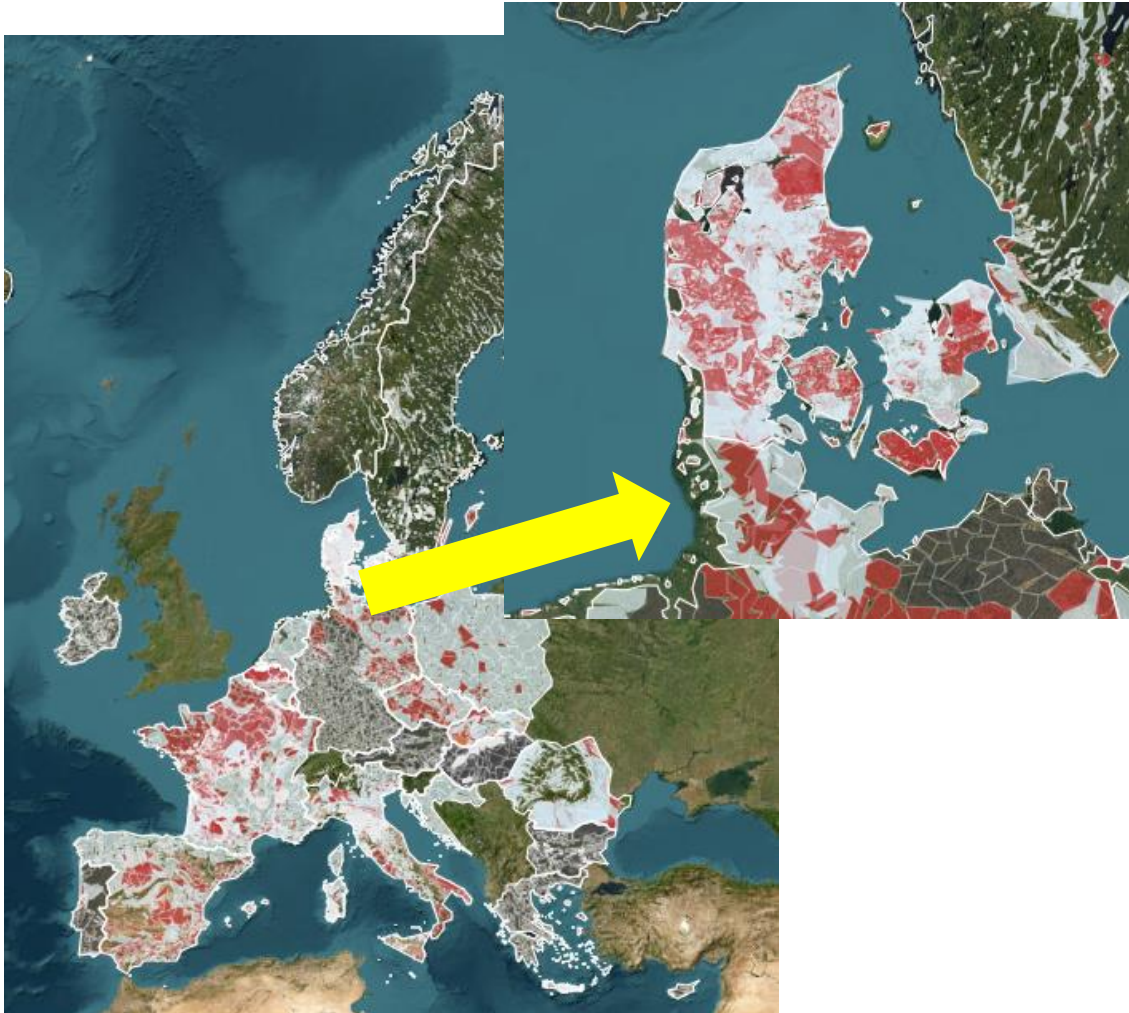
Datadista in Spain collected, analysed and prepared the European data for each national partner, and designed the European map.

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INTERACTIVE MAP: Know the status of the European Union groundwater

■ Good status ■ Poor status ■ Unknown status ■ Mandatory data not yet reported and/or disclosed





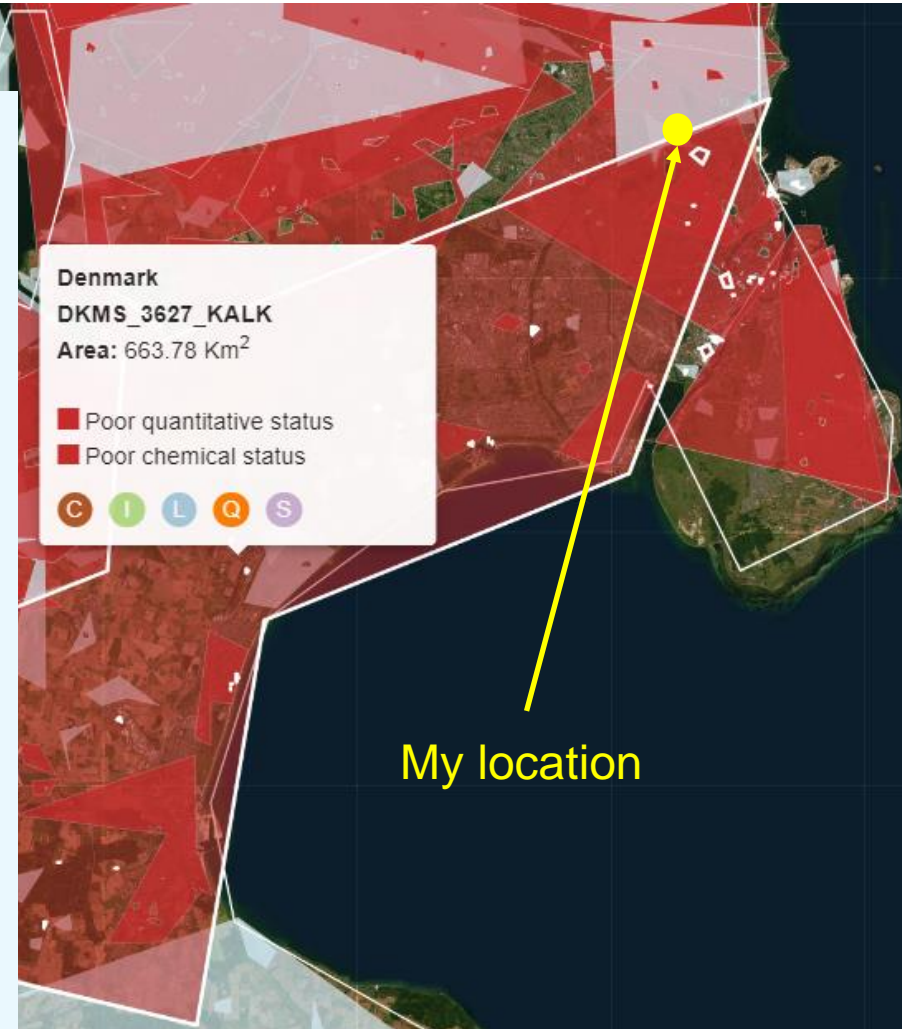
Examples of issues causing poor status

IMPACT DESCRIPTION OF THE RISK

- L** Groundwater level decrease (aquifer depth, water volume) due to extractions.
- N** Nutrient pollution, mainly from fertilizers and animal waste, above the legal limit (50 mg/l) or close to the limit with an upward trend.
- C** Chemical pollution other than nutrients (mainly pesticides but also metals, hydrocarbons, etc.) above the legal limit or close and with an upward trend.
- E** Impact on terrestrial ecosystems dependent on groundwater.
- M** Microbiological contamination.
- O** Organic contamination.

IMPACT DESCRIPTION OF THE RISK

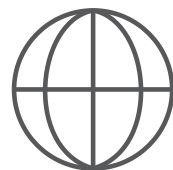
- Q** Decrease in surface water quality associated with chemical or quantitative impact.
- I** Alterations in the direction of water flow due to saline intrusion.
- S** Saline intrusion or contamination.
- T** Other types of significant impact.
- N** No significant impact.
- A** Acidification of water bodies.
- U** Unknown impact type.
- H** Altered habitats due to hydrological changes.
- Y** Altered habitats due to morphological changes (includes connectivity).





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