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Evaluation of impacts regarding water bodies

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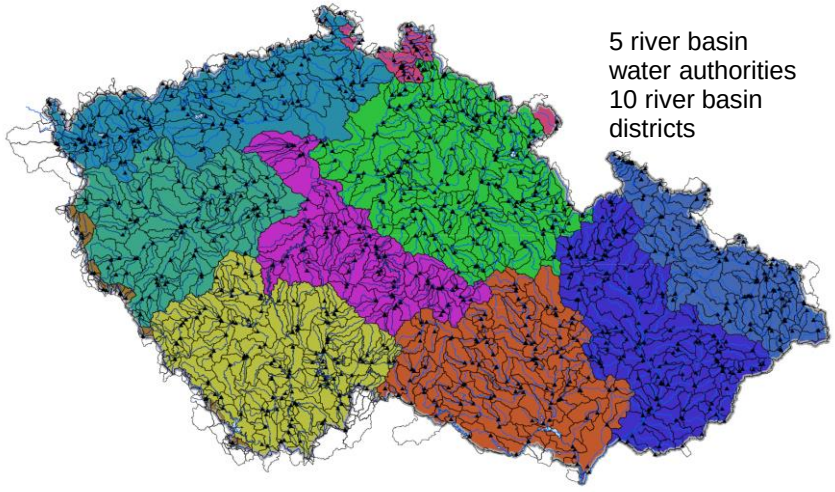
TGM Water Research Institute, p.r.i. and Water Framework Directive implementation

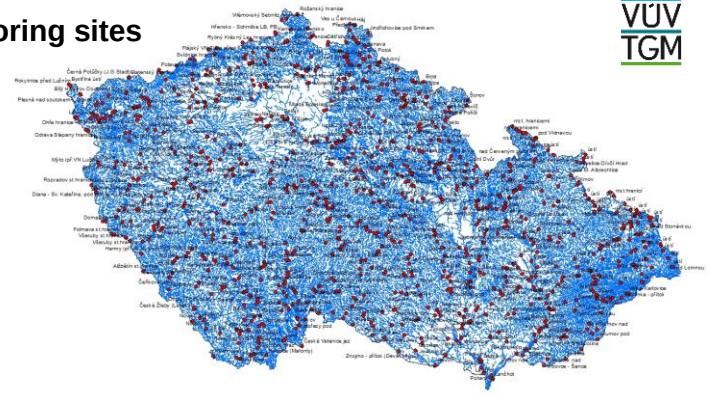
- Expert support for monitoring and assessment of surface waters and groundwater
- Cooperation on the preparation of River Basin Management Plans
- Processing reports for the European Commission
- Providing international intercalibration of assessments methods
- Expert Support for Information System ARROW

River basin districts and water bodies



5 river basin water authorities
10 river basin districts

Monitoring sites



Number of water bodies – the river category – 1044
Number of water bodies – the lake category – 77
Number of heavily modified water bodies – the river category – 91
Number of heavily modified water bodies – the lake category – 77

Water Framework Directive requirements

Monitoring of ecological status

Quality elements for the classification of ecological status:

- Biological elements – aquatic flora (phytobenthos/phytoplankton/macrophytes), benthic invertebrates and fish fauna
- Hydromorphological elements
- Chemical and physicochemical elements

Monitoring of chemical status

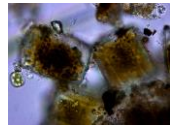
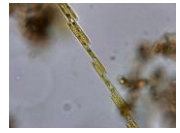
- Priority substances and other dangerous substances

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ L 327, 22.12.2000, p. 1–73

Biological quality elements

- benthic invertebrates


- phytobenthos and phytoplankton

- macrophytes


- fish


All BQEs have an approved method of sampling and an approved method of ecological status assessment compliant with Water Framework Directive

Typology of surface waters

• Natural variability of biological communities

• Rivers – geographical area, altitude, catchment area, geology, river slope

• Reservoirs – altitude, average depth, retention time

Physico-chemical and chemical parameters

- Type specific limits for temperature conditions, oxygen balance, salinity, acid neutralizing capacity, nutrients conditions
- For all parameters were set limits for high and good status boundary and good – moderate boundary
- Compliance with environmental quality standards (EQS) for specific synthetic and non-synthetic substances that are specific to the water body or sub-basin

Hydromorphological monitoring

- The assessment reflects a hierarchical principle, i.e. basic evaluation is performed on each mapped section from which a value is derived for a whole water body
- The assessment is based on a set of a total of 17 indicators, which assess key aspects of the hydromorphological quality zones: river channel, river bottom, river banks and inundation zones, including the characteristics of flow and hydrological regime

Chemical status

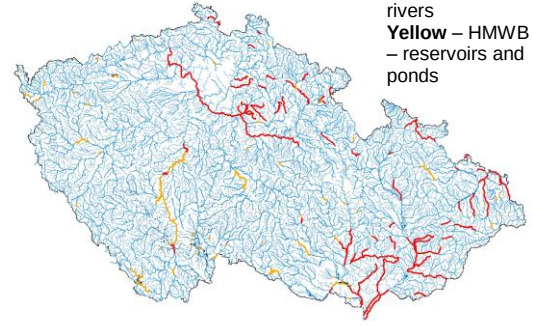
Within the revision of Directive 2008/105 / EC (Directive 2013/39 / EC) there has been a tightening of targets for good chemical status of many substances - metals, PAHs and others.

Definition of unwadable rivers

• Large lowland rivers of 8th and 9th stream order, under normal flow unwadable in the entire cross section
• Different methodology for assessment the biological communities

Heavily Modified and Artificial Water Bodies - HMWB

Water bodies are defined as <u>heavily modified or artificial</u> if in these water bodies irreversible hydro-morphological changes are considered that must be preserved for water use



Red – HMWB – rivers
Yellow – HMWB – reservoirs and ponds

<u>Water use</u> - navigation, drinking water supply, power generation, flood protection, irrigation, water withdrawals for industry, fish farming, recreation and individually considered natural, cultural or historical values.

Ecological potential of Heavily Modified Water Bodies

- The evaluation is based on the assessment of natural water bodies (i.e. on the assessment of ecological status) but the limits of selected biological metrics for biological components macroinvertebrates, fish and phytoplankton are adjusted because there is such use of water bodies that does not enable to achieve good ecological status but only ecological potential
- evaluation of biological elements phytobenthos and macrophytes remains consistent with the evaluation of natural water bodies
- in the evaluation of the physico-chemical parameters limit values are adjusted for parameters affected by hydromorphological status and describing temperature conditions (water temperature measured in the field), oxygen balance (oxygen saturation and BOD5) and acid-base status (pH and KNK4.5)

River Basin Management Plans

• properly located monitoring sites
• properly set assessment methods, mainly biological
• link the important chain: stressors – water body status assessment – effective measures

Main stressors identified in RBMP

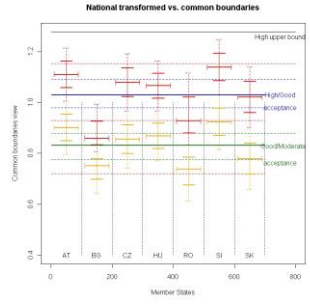
- Point sources of municipal pollution
- Atmospheric deposition
- Diffuse sources of municipal pollution
- Agriculture
- Morphological modifications
- Point sources of industrial pollution
- Fish farming

The challenge for the next planning cycles is to better specify natural background of some metals (e.g. nickel) based on concentrations in groundwater.

International intercalibration of assessment methods and approaches to the implementation of WFD

- Water Framework Directive establishes a process to ensure the comparability of biological monitoring results between Member States as an essential part of the ecological status classification

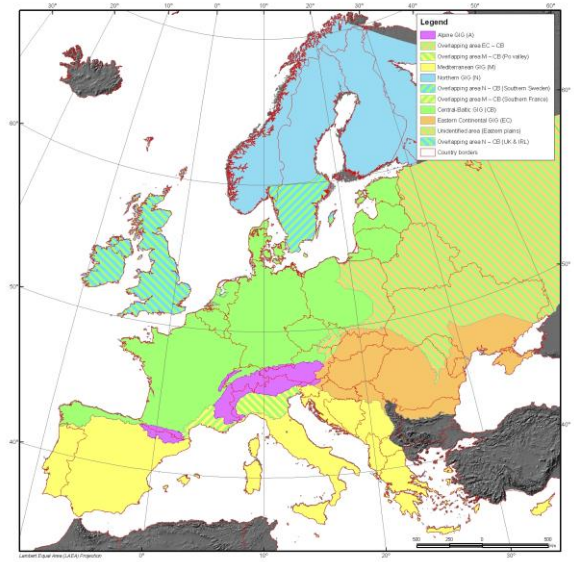
- Results of the monitoring and classification systems of the Member States are compared within the intercalibration network based on monitoring sites in each Member State



- Member States must translate the results of the intercalibration exercise into their national classification systems (Decision of the European Commission, 2013)

Geographical Intercalibration Groups (GIGs)

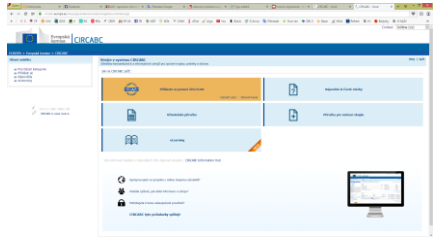
Geographical Intercalibration Group	Member States
Northern	**Finland** Ireland Norway Sweden United Kingdom
Central/Baltic	Austria Belgium Czech Republic Denmark Estonia France Germany Ireland Italy Latvia Lithuania Netherlands Poland Slovenia Slovakia Spain Sweden Luxemburg **United Kingdom**
Alpine	**Austria** France Germany Italy Slovenia Spain
Eastern Continental	Austria Bulgaria **Czech Republic** Greece Hungary Romania Slovakia Slovenia
Mediterranean	Cyprus France Greece Italy Malta **Portugal** Slovenia Spain



River Geographic Intercalibration Groups

European Commission - website

CIRCA - Communication & Information Resource Centre Administrator



https://circabc.europa.eu

Category: „Environment“

Interest group: WFD CIRCA: "Implementing the Water Framework Directive and the Floods Directive"

Thank you for your attention ☺

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