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**Second River Basin Management Plans - Member State: Czech Republic**

*Accompanying the document*

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**on the implementation of the Water Framework Directive (2000/60/EC) and the Floods  
Directive (2007/60/EC)  
Second River Basin Management Plans  
First Flood Risk Management Plans**

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## Acronyms and definitions

EQS Directive	Environmental Quality Standards Directive
FD	Floods Directive
Km	Kilometre
km <sup>2</sup>	Kilometre squared
KTM	Key Type of Measure
PoM	Programme of Measures
QA/QC Directive	Quality Assurance / Quality Control Directive
RBD	River Basin District
RBMP	River Basin Management Plan
WFD	Water Framework Directive
WISE	Water Information System for Europe
Annex 0	Member States reported the structured information on the second RBMPs to WISE ( <u>Water Information System for Europe</u> ). Due to the late availability of the reporting guidance, Member States could include in the reporting an Annex 0, consisting of a short explanatory note identifying what information they were unable to report and the reasons why. This Annex was produced using a template included in the reporting guidance. If Member States reported all the required information, this explanatory note was not necessary.

## **Foreword**

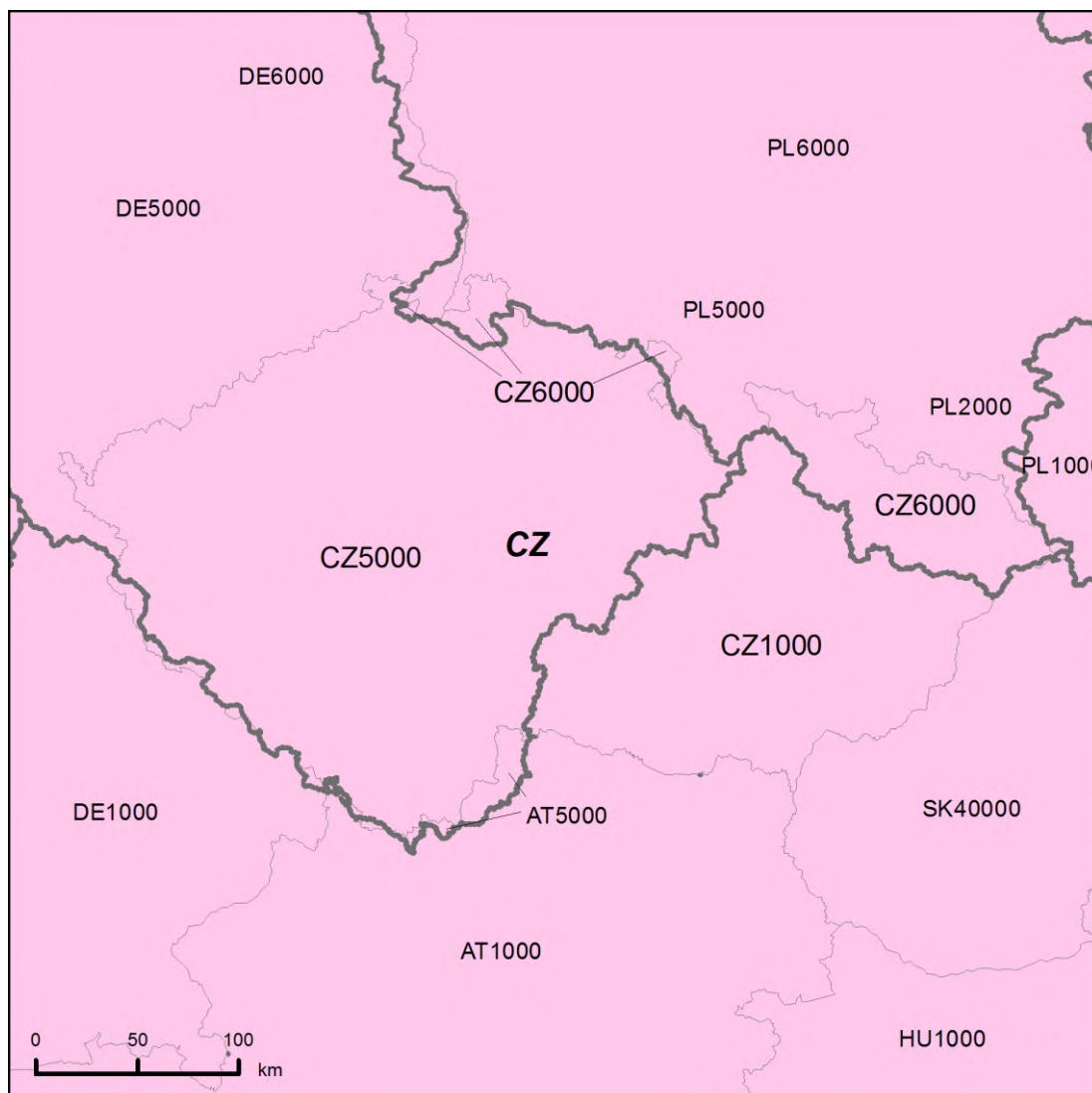
The Water Framework Directive (WFD) (2000/60/EC) requires in its Article 18 that each Member State reports its River Basin Management Plan(s) (RBMPs) to the European Commission. The second RBMPs were due to be adopted by the Member States in December 2015 and reported to the European Commission in March 2016.

This Member State Assessment report was drafted on the basis of information that was reported by Member States through the Water Information System for Europe (WISE) electronic reporting.

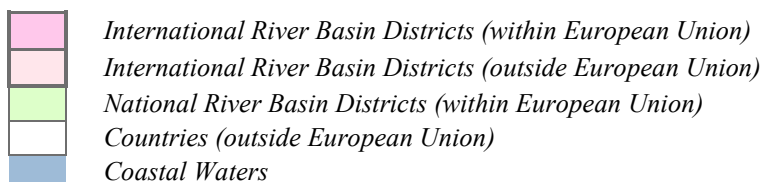
The Member State Reports reflect the situation as reported by each Member State to the European Commission in 2016 or 2017 and with reference to River Basin Management Plans (RBMP) prepared earlier. The situation in the Member States may have changed since then.

## General Information

*Map A Map of River Basin Districts in the Czech Republic*



*Source: WISE, Eurostat (country borders)*



The total area of the Czech Republic is 78,866 kilometres squared (km<sup>2</sup>) and the population is 10.5 m. Manufacturing is still a major economic activity, especially the production of cars, machine tools, and engineering products. Iron and steel industries are important in Moravia in

the east of the country. Arable land, other agricultural land and forests cover approximately 39 %, 15 % and 33 % of the country area, respectively. The main crops are maize, sugar beet, potatoes, wheat, barley and rye. The territory of the Czech Republic lies in three international river basin districts (RBDs): Danube River basin, Elbe River basin and Oder River basin.

The information on areas of the national river basin districts including sharing countries is provided in Table A.

**Table A Overview of the Czech Republic's River Basin Districts**

RBD	Name	Size (km <sup>2</sup> )	Countries sharing borders
CZ_1000	Dunaj (Danube)	21681	AT, PL, SK
CZ_5000	Labe (Elbe)	49936	AT, DE, PL
CZ_6000	Odra (Oder)	7248	DE, PL

*Source: River Basin Management Plans reported to WISE 2016*

The share of the Czech Republic in the respective international RBDs is 2.7 % (Danube), 33.7 % (Elbe) and 5.9 % (Oder) (Table B).

**Table B Transboundary river basins by category and % share in the Czech Republic**

Name international river basin	National RBD	Countries sharing borders	Co-ordination Category	
			1	
			km <sup>2</sup>	%
Danube	CZ_1000	AT, PL, SK	21681	2.7
Elbe	CZ_5000	AT, DE, PL	49936	33.7
Oder	CZ_6000	DE, PL	7248	5.9

*Source: WISE electronic reports*

**Category 1: International agreement, permanent co-operation body and international RBMP in place.**

**Category 2: International agreement and permanent co-operation body in place.**

**Category 3: International agreement in place.**

**Category 4: No co-operation formalised.**



## **Status of second river basin management plan reporting**

All three RBMPs of the Czech Republic (National Danube River Basin Management Plan, National Elbe River Basin Management Plan, National Odra River Basin Management Plan) were published on 22 December 2015. Documents are available from the European Environment Agency (EEA) EIONET Central Data Repository <https://cdr.eionet.europa.eu/>.

## **Key strengths, improvements and weaknesses of the second River Basin Management Plan(s)**

The main strengths and shortcomings of the second RBMP of the Czech Republic are as follows:

- **Governance and public consultation**
  - An important degree of international coordination has been followed for all three RBDs. It is also noted that all river monitoring sites are part of an international monitoring network of a river convention.
  - Public participation has been strengthened as well as the active engagement of stakeholders in preparing the RBMPs compared to the first planning cycle.
  - A national advisory body, the Commission for Water Planning, supports coordination and harmonisation among the Czech Republic's RBDs.
- **Characterisation of the RBD**
  - Type specific reference conditions have been established for all relevant biological quality elements in 32 out of 35 water types, for all relevant physicochemical quality elements in all river types, but only for some relevant hydromorphological quality elements for rivers. For lakes, type-specific reference conditions have not been established in any type for any of the hydromorphological quality elements<sup>1</sup>. The typology was directly tested for one biological quality element: fish<sup>2</sup>.
  - For groundwater bodies, further characterisation work has been undertaken since the first planning cycle with the inclusion of the assessment of linkages with surface water bodies.

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<sup>1</sup> The Czech Republic has no natural lakes designated as individual water bodies. All water bodies in category lake were designated as HMWB (= dams and ponds) and AWB (mining pits). Type specific reference conditions (= maximal ecological potential) were established within the relevant methodology for physico-chemical parameters and BQEs phytoplankton, fish and macrophytes.

<sup>2</sup> The Czech Republic highlighted that for other biological quality elements the typology was modified within the development of updated assessment methodologies to best match the distribution of biological communities. Furthermore, the typology was modified (merging types or dividing into sub-types) for all biological quality elements in rivers in the second RBMPs, to best match the distribution of biological communities.

- For both surface and groundwater bodies, the significance of pressures has been defined in terms of thresholds and is linked to the potential failure of objectives (surface waters) and to the verified failure of good status (groundwater). Nonetheless, it is noted that the largest share of surface water bodies are reported to be affected by unknown significant anthropogenic pressures.
- There are also gaps in the apportionment of pressures, as no information was found in the RBMPs on which activities/sectors are contributing significantly to the failure of good chemical status in surface waters and to the different impacts causing failure of good ecological status/potential.
- Inventories of emissions including all 41 Priority Substances have been established in 9 of the 10 subunits. The other subunit (CZDUN covering 16 surface water bodies), does not have an inventory for any of the Priority Substances). In accordance with the Guidance Document, Tier 1 of the methodology was applied for substances deemed not relevant at sub unit level, and higher tiers (Tier 1+2 or 1+2+3) were applied for relevant substances. The data quality was very uncertain or not reported.
- **Monitoring, assessment and classification of ecological status**
  - A change in the monitoring strategy led to a higher proportion of surface water bodies and a higher number of sites in operational monitoring and lower number in surveillance monitoring, compared to the first RBMPs. The reduction of the coverage of surveillance monitoring is particularly notable for water bodies in good and high ecological status, which are especially under-represented.
  - In river water bodies, all biological quality elements and all general physico-chemical quality elements are monitored. In lake water bodies, some biological quality elements are not monitored. Hydromorphological quality elements are not monitored at all.
  - 85 River Basin Specific Pollutants were reported to be monitored, but no specific methodology for their selection has been reported. The frequency of surveillance and operational monitoring for some River Basin Specific Pollutants was less than the minimum recommended frequency at some sites. Environmental Quality Standards for 90 substances have been derived, but not in accordance with the Technical Guidance n° 27.

- Monitoring data has been used to assess the ecological status/potential of the vast majority of surface water bodies. However, classification is not based on the full range of quality elements and no methodology was developed to implement the non-deterioration principle. Up to 11 % of surface water bodies were classified with no biological quality elements. No surface water body was classified on the basis of hydromorphological quality elements and the assessment methods for hydromorphological quality elements are only partly developed for rivers and not developed for lakes. Standards have been reported for the relevant general physicochemical quality elements in lakes and rivers and are reported to be linked to the good-moderate status boundary of the relevant sensitive biological quality elements in lakes, but not in rivers.
- Especially for lakes, the Czech Republic has not developed fully compliant assessment methods (but it is noted that there are no natural lakes, only heavily modified water bodies and artificial lakes).
- There may be an issue with comparability of ecological status/potential classification for a large proportion of surface water bodies due to the lack of intercalibration of national water body types, as around 50 % of river water bodies (mostly natural) are reported not to have a corresponding intercalibration type<sup>3</sup>.
- Concerning the achievement of objectives, all lake water bodies are expected to achieve good ecological status/potential by 2027, but a significant share of river water bodies are not. Approximately 20 % of rivers and lakes are not expected to achieve good chemical status until after 2027.
- **Monitoring, assessment and classification of chemical status in surface water bodies**
  - Between the two RBMPs, there was a small decrease in the proportion of surface water bodies with good chemical status (from 70 to 69 %).
  - This change in status may at least partly result from a more accurate assessment: between the two RBMPs, there has been an increase in the number of sites and water bodies monitored for Priority Substances and an increase in the number of Priority

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<sup>3</sup> This is linked to the conclusion of the Central Baltic Geographical Intercalibration Group that some very common medium river national types in higher altitudes than lowland could not be assigned to any CB GIG type.

Substances monitored. Metals are now monitored in the dissolved fraction, as required by the directive, and biota standards have been applied.

- However, the number of monitoring sites still appears very limited for some Priority Substances. The Czech Republic highlighted that priority substances were only monitored in surface water bodies subject to the corresponding pressure. However it is unclear whether all relevant pressures have been sufficiently characterised, as unknown anthropogenic pressures are the most significant pressures on river water bodies failing to achieve good chemical status in all three RBDs.
- 50-60 % of monitoring sites and water bodies were monitored for chemical status. Expert judgment was used to classify a significant proportion of water bodies (only 0.4 % are in unknown status). Most of the classifications are given a medium level of confidence. The basis for this expert judgement is not entirely clear, as it seems not all significant pressures have been identified for all water bodies (see paragraph above).
- 41 Priority Substances were monitored in water (but not in all RBDs). All substances identified as discharged were monitored in each RBD. The monitoring frequencies met the recommended minimum frequencies for surveillance and operational monitoring at some but not all sites. It is not entirely clear how compliance was assessed for non-monitored substances.
- Mercury, hexachlorobenzene and hexachlorobutadiene were monitored in biota in rivers only, at the recommended minimum frequency. The number of sites monitored appeared to be very limited. Fluoranthene, Pentabromodiphenylether and benzo(a)pyrene were also monitored in biota.
- The Czech Republic did not report any monitoring for long-term trend assessment.
- **Monitoring, assessment and classification of quantitative status of groundwater bodies**
  - Concerning the assessment of groundwater bodies, the number of quantitative monitoring sites increased significantly, now covering almost the entire country area.
  - The number of groundwater chemical monitoring sites has increased significantly.

- However, the number of groundwater bodies with unknown quantitative status has increased since the first RBMPs, which is related to the change in methodology for calculating available groundwater resources.
- Only water balance assessment has been considered in quantitative status assessment, thus not all environmental objectives have been taken into account.
- **Monitoring, assessment and classification of chemical status of groundwater bodies**
  - Concerning chemical status assessments, some pesticides have now more stringent threshold values than 0.1 micrograms per litre.
  - Although several groundwater bodies are linked to surface waters, no groundwater body is linked to groundwater dependent terrestrial ecosystems. Groundwater associated aquatic ecosystems and groundwater dependent terrestrial ecosystems were not reported to be considered in the status assessment. Czech Republic clarified however, that groundwater dependent terrestrial ecosystems had been reported as protected areas.
- **Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential**
  - A national methodology on heavily modified water bodies' designation is in place for rivers and reservoirs. However, it is not detailed enough on all relevant aspects. Especially, for the assessment of significant adverse effects, no criteria are provided. Most of heavily modified rivers are designated due to flood protection and for this use, it is reported that there is currently no better environmental option. A better environmental option was not applied for reservoirs due to the multiple water uses.
  - Good ecological potential is reported as defined using the Common Implementation Strategy approach (approach based on biological quality elements as illustrated in Common Implementation Strategy approach Guidance No 4) and new methods for good ecological potential have been developed at national level for rivers and reservoirs. Although good ecological potential is reported as defined in terms of biology, details on the biological quality elements used are provided for rivers but not explicitly for reservoirs.

- **Environmental objectives and exemptions**

- Environmental objectives for ecological and chemical status of surface water bodies have been reported in all RBDs as well as for chemical and quantitative status of groundwater. A significant share of water bodies is expected to achieve its objectives beyond 2027.
- Drivers, pressures and pollutants leading to exemptions are reported.
- Justifications for exemptions have been provided at water body level. Criteria have been developed for the application of exemptions with regard to technical feasibility and disproportionate costs. A significant number of Article 4(5) exemptions is applied for the first time, whereas the distinction between the difference in the criteria used to justify Article 4(4) and Article 4(5) exemptions are not clear.
- Article 4(7) exemptions have not been applied in the second RBMP, indicating that the impacts of all new modifications on water status have been assessed and no potential deterioration of the status of water bodies was identified. Further information is needed to evaluate whether all the required WFD assessments relevant in relation to Article 4(7) have been performed.

- **Programme of Measures**

- Concerning the achievement of measures so far, it is noted that a large number of measures from the first RBMPs were not implemented due to lack of funds, land property issues, technical, legal or natural conditions. New legislation required to implement the Programme of Measures in the first cycle has now been adopted for the second cycle. In the second RBMPs, however, only a limited number of pressures are reported to be tackled by Key Types of Measures (KTMs) and a clear financial commitment has not been secured for the implementation of the measures from three of the five relevant sectors identified.
- Although a combination of a qualitative and quantitative cost-effectiveness analysis has been carried out, concrete information of this assessment was only found for measures related to wastewater plants and sewage systems.

- A major gap is the lack of reporting of operational KTMs to address hydromorphological pressures. National measures are mapped against KTMs relevant to hydromorphology, but it is not clear why such measures are not reported as operational for the second planning cycle; this might be an indication that no actions are going to be implemented. In addition, the assessment of significant hydromorphological pressures seems incomplete, as pressures from water flow regulation and morphological alterations are reported as not assessed.
- No KTMs have been reported as linked to individual River Basin Specific Pollutants or Priority Substances. However KTMs have been reported to tackle several chemical pressures.
- In the case of diffuse agricultural pollution which affects 61 % of groundwater bodies and 22 % of surface water bodies, only two national supplementary measures are identified to tackle this pressure. Basic measures are applied but there are differentiated general binding rules (Article 11(3)(h) of the WFD) for addressing diffuse pollution from agriculture at source in different parts of the RBDs. No information was available in the RBMPs on the use of mandatory or voluntary measures.
- Management objectives for nutrient pollution and a gap assessment for nitrogen have been undertaken in all RBDs, but for phosphorus only in some RBDs.
- The overall level of ambition and expected progress resulting from the Programme of Measures of the second RBMPs is low with only small reductions in the gaps to achievement of objectives in the second cycle. No analysis of the gap to reach good chemical status has been made and consequently it is not clear if and how measures to address pollution, beyond basic measures, have been identified (or if they should have been identified).
- **Measures related to abstractions and water scarcity**
  - Water quantity pressures were not reported as relevant for the Czech Republic. The RBMP does not include a water resource allocation and management plan. Yet, some river basins have been reported to be affected by significant abstractions. No information was provided on uses responsible for water consumption.



- There is a concession, authorisation, and/or permitting regime to control surface and groundwater abstractions and water impoundment.
- Measures on Article 11(3)(c) and 11(3)(f) have been implemented in the previous cycle.
- **Measures related to pollution from agriculture**
  - Only two national supplementary measures are identified to tackle diffuse agricultural pollution, which affects 61 % of groundwater bodies and 22% of surface water bodies. Basic measures are applied but there are differentiated general binding rules (Article 11(3)(h) of the WFD) for addressing diffuse pollution from agriculture at source in different parts of the RBDs. No information was available in the RBMPs on the use of mandatory or voluntary measures. According to information subsequently provided by the Czech Republic, both mandatory and voluntary measures related to pollution from agriculture were introduced within the national supplementary measure CZE208002.
  - Management objectives for nutrient pollution have been set in all RBDs, but quantification was only done in the Elbe RBD.
  - Safeguard zones have been established for abstractions.
  - Implementation of basic measures according to Article 11(3)(h) for the control of diffuse pollution from agriculture at source is ensured in all RBDs.
- **Measures related to pollution from sectors other than agriculture**
  - The Czech Republic reported the application of more than one thousand basic measures linked to KTM1 to construct or upgrade urban waste water treatment plants.
  - The Czech Republic reported only a limited number of pressures related to chemical pollution to be tackled by KTMs. Measures were linked to KTMs, in particular KTM 15 and KTM16. KTMs 15 and 16 were not among them, and no KTMs were linked to individual pollutants.
  - Little progress has been achieved in analysing the gap to achieve WFD objectives, nor in identifying supplementary measures.

- **Measures related to hydromorphology**
  - National hydromorphological measures have been linked to KTMs. However, these KTMs have not been reported as explicitly tackling specific types of pressures. The Czech Republic also explained it was not able to quantify and report the gap indicators for this type of measures. At the same time, according to information provided by the Czech authorities during the assessment, the reported hydromorphological measures are planned for implementation in the second cycle and they are funded from the EU's Operational Programme Environment.
  - Ecological flows have been derived and implemented for some water bodies. A new methodology for ecological flow should have been finished at the end of 2016, thus the setting of the ecological flow is in progress. A minimum flows methodology exists and is implemented and measures related to the present minimum flows are applied; however, the minimum flows methodology does not cover all relevant biological aspects.
- **Economic analysis and water pricing policies**
  - Concerning the economic analysis and water pricing policies, little progress has been noted since the first planning cycle. Cost recovery calculations remain limited. Water pricing policies have not been modified to show how 'adequate incentives' are provided.
  - No detailed information on the application of the polluter pays principle was reported.
  - A narrow definition of water services has been used.
  - Article 9(4) has not been used.
- **Considerations specific to Protected Areas (identification, monitoring, objectives and measures)**
  - The Czech Republic has not set objectives for the different types of protected areas, and there are some gaps in the monitoring reported.
  - Monitoring sites are specifically reported as associated with protected areas only for the Habitats and the Nitrates Directives. For the other protected areas (Birds, Urban

Wastewater Treatment and Bathing Water Directives), no associated monitoring sites are reported.

- No data are reported on monitoring sites of groundwater associated with Protected Areas, except for nutrient sensitive areas under the Nitrates Directive.
- **Adaptation to drought and climate change**
  - Climate change has been assessed and taken into account in the RBMPs.
  - A National Climate Change Strategy has been developed and adopted in October 2015, but it could not be fully included in the second RBMPs.

## Recommendations

- The Czech Republic should further ensure good coordination between the public administration and other stakeholders to improve the planning and implementation of Programmes of Measures and to monitor their effectiveness.
- The Czech Republic should continue to improve international cooperation, including inter alia to ensure that information is provided regarding how designation of heavily modified water body has been coordinated, ensure that the definition of ecological potential and the approach to exemptions is harmonised as well as ensure that coordination of river basin specific pollutants and setting of environmental quality standards is further improved.
- Further work is needed for the apportionment of all pressures/impacts among different sources.
- The Czech Republic needs to continue its work on inconsistencies between the measures that are planned and the significant pressures identified at the water body level.
- Monitoring should be strengthened to ensure that the number of water bodies monitored is sufficient and that there is appropriate coverage of all relevant quality elements. In particular, operational monitoring of lakes should be improved and better linked with the pressures and impacts analysis. Hydromorphological quality elements should be monitored in all water categories.
- The Czech Republic should use a clear and transparent method for the selection of River Basin Specific Pollutants and ensure that Environmental Quality Standards meet the minimum requirements for the protection of freshwater and marine ecosystems from possible adverse effects, as well as of human health, following the requirements of the WFD and the Directive on Environmental Quality Standards.
- The reliability of the assessment of ecological status/potential should be improved by developing WFD compliant assessment methods for all quality elements in all types of water bodies. In particular, further work is needed to develop assessment methods for hydromorphological elements, and to link physico-chemical boundaries to the good/moderate status boundary of the relevant sensitive biological quality elements in rivers.

- Monitoring should be performed in a way that provides sufficient temporal resolution and spatial coverage in particular in biota, to reach sufficient confidence in the assessment for all water bodies, in combination with a robust methodology to assess the status of non-monitored water bodies. This methodology should be based on a thorough assessment of pressures. If a different matrix or reduced frequencies are used, the corresponding explanations should be provided.
- Trend monitoring should be performed in sediment and/or biota, to ensure that all the relevant substances specified in Directive 2008/105/EC are monitored in a way that provides sufficient temporal resolution and spatial coverage.
- The Czech Republic needs to continue improving the monitoring and status assessment of groundwater, and further establish links with associated aquatic ecosystems and dependent terrestrial ecosystems, which affect the degree of confidence in assessments. It should ensure that all core parameters are monitored and that operational monitoring is applied to groundwater bodies at risk.
- The Czech Republic should ensure that in those river basins affected by significant abstractions (e.g. Danube, Elbe) key measures are applied to tackle pressures.
- The improvement and subsequent application of the approach for the designation of HMWB should be completed focusing, inter alia, on the establishment of clear criteria and a transparent assessment framework for significant adverse effects of restoration measures and better environmental options for all relevant water categories and uses.
- The Czech Republic should complete the improvement and subsequent application of the methodology for the definition of ecological potential for the different relevant water categories and uses, including a clear set of mitigation measures, assessment framework for significant adverse effects of mitigation measures and the establishment of objectives for the biological quality elements.
- A significant number of water bodies are expected to achieve the WFD objectives only beyond 2027 and exemptions according to Article 4(5) are widely applied. This is an issue of concern unless a thorough justification of Article 4(4) and 4(5) exemptions is ensured. Criteria need to be further developed and made transparent in the RBMPs, clearly distinguishing between the justifications for Article 4(4) and 4(5).
- A thorough assessment of planned new modifications in line with the requirements of the WFD and as further specified by the Judgment of the European Court of Justice in

case C-461/13 should be ensured. The use of exemptions under Article 4(7) needs to be based on a thorough assessment of all the steps as requested by the WFD. Information on the application of Article 4(7) needs to be reported in the RBMPs.

- The Czech Republic should ensure that the RBMPs clearly identify the gap to good status, and that the Programmes of Measures are designed and implemented to close that gap. In particular, it should ensure that gaps are filled for all significant pressures, especially for hydromorphological pressures, and that KTMs are reported for tackling Priority Substances, River Basin Specific Pollutants and significant abstraction pressures.
- The Czech Republic should demonstrate that a clear financial commitment exists for the implementation of the measures.
- In the third RBMPs, the basin-wide impact on ecological status of mitigation measures aimed at agricultural water pollution sources (nutrients, agri-chemicals, particulate matter) should be quantified. RBMPs should identify:
  - the reduction in pollutant load needed to achieve WFD objectives;
  - the extent to which the measures already taken under the ND and UWWTD contribute to the load reduction;
  - which additional measures should be taken to achieve fully the objectives.
- The Czech Republic should continue to review and develop the strategy for the delivery of WFD objectives, in cooperation with the farming community and Czech CAP delivery authorities, to ensure the third RBMP is technically feasible and all relevant policies and instruments (e.g. RDP, CAP Pillar 1, ND etc.) contribute significantly to RBMPs. It should ensure measures to address agricultural hydromorphological pressures, including a gap assessment, are considered in the strategy. An expert and effective advisory service should support the implementation of the measures in the strategy.
- Work towards an ambitious approach to combat chemical pollution should continue, by ensuring that adequate measures are in place. This means that basic measures to combat pollution should be clearly identified to allow accurate assessment of the need for supplementary measures. For instance, information should be provided on the level of compliance and on the time needed to reach full compliance with the Urban

Wastewater Treatment Directive (91/271/EEC Article 15 and following), and, based on this, on any supplementary measures required to reach good status.

- The Czech Republic should ensure that the methodology to define the ecological flows covers all relevant biological aspects and is hence compatible with the WFD objectives of good ecological status or potential.
- The Czech Republic should continue the work on restoration of river continuity in all RBDs. More detailed information should be provided on the specific measures to tackle hydromorphological pressures. Quantification and reporting of the gap indicators for the hydromorphological measures is also needed.
- The Czech Republic should continue prioritising the use of green infrastructure and/or natural water retention measures that generally provide a range of environmental (improvements in water quality, flood protection, habitat conservation, etc.), social and economic benefits compared to grey infrastructure.
- Cost recovery for water use activities having a significant impact on water bodies should be applied or any exemptions using Article 9(4) justified. It should be transparently presented how financial, environmental and resource costs have been calculated and how the adequate contribution of the different users is ensured. The water-pricing policy should also be transparently presented and a transparent overview provided of estimated investments and investment needs.
- The Czech Republic should continue its work on Protected Areas and make sure to set objectives for the different types of Protected Areas. Moreover, it should expand monitoring sites to cover all relevant Protected Areas.

## **Topic 1 Governance and public participation**

### **1.1 Assessment of implementation and compliance with WFD requirements in second cycle**

#### **1.1.1 Administrative arrangements – river basin districts**

In the Czech Republic three different levels of plans were prepared: (i) international plans for the Danube, Elbe and Oder RBDs (A Plans), co-ordinated by the respective International River Basin Commissions, (ii) national plans for the national Danube, Elbe and Oder RBDs (B Plans), co-ordinated by the Ministry of Agriculture and the Ministry of Environment, and (iii) 10 sub-basin plans (C Plans), co-ordinated by the River Boards, state enterprises and Regional Authorities.

The Czech Republic is situated within three international river basin districts. Due to the state border geography, small parts of basin districts (Danube and Oder RBDs) are located separately from the main catchment area and in the first cycle plans they were subjoined to the Elbe RBD, which resulted in preparation of eight sub-basin plans (C Plans). However, the national plans (B Plans) include all relevant parts of RBDs, including these small separate areas.

#### **1.1.2 Administrative arrangements – competent authorities**

The following competent authorities are reported: Ministry of Agriculture of the Czech Republic, Ministry of Environment of the Czech Republic (both responsible for status assessments and monitoring, preparation of Programme of Measures and RBMPs, pressure and impact analysis, public participation and reporting to the European Commission) as well as 14 regional authorities, which are responsible for the implementation of measures, preparation of Programme of Measures and preparation of the RBMP.

#### **1.1.3 River Basin Management plans – structure (subplans, SEA)**

Strategic Environmental Assessments were carried out for all three RBMPs.

Sub-plans have been prepared for all three RBDs covering the following issues, illustrated in Figure 1.1: Agriculture, Chemical industry, Chemical pollution, Climate change, Nutrient enrichment, Hydromorphology and migration permeability, Rural planning, Water Scarcity and droughts.



**Figure 1.1** *Issues, sectors, sub-basins or water categories supplemented by more detailed sub-plans for the second cycle.*

RBD	Agriculture	Chemical industry	Hydropower	Transport	Water Scarcity and droughts	Climate change	Coastal erosion	Rural planning	Urban planning	Nutrient enrichment	Chemical pollution	Other: Hydromorphology, migration continuity
CZ1000	✓	✓			✓	✓	n/r	✓		✓	✓	✓
CZ5000	✓	✓			✓	✓	n/r	✓		✓	✓	✓
CZ6000	✓	✓			✓	✓	n/r	✓		✓	✓	✓

*Source: WISE electronic reports.*

Key:

✓	Covered by sub-plans
n/r	Not relevant in Member State

#### 1.1.4 Public consultation

For all three RBDs, the RBMPs were available for consultation for the requisite six months. Stakeholders were actively involved by authorities in all three RBDs. This appears to include stakeholders in the following areas: agriculture, consumer groups, energy, fisheries, industry, local/regional authorities, navigation (and ports), Non-Governmental Organisations/nature protection and water supply.

The mechanisms used for active involvement of stakeholders in the development of the RBMPs were via the establishment of advisory groups and involvement in drafting.

In all three RBDs, issues raised by stakeholders and impacts on the RBMPs included changes to selection of measures, adjustment of specific measures, addition of new information and few other changes which are not specified.

### **1.1.5 Integration with the Floods Directive and the Marine Strategy Framework Directive**

Joint consultation was held on the RBMPs and Flood Risk Management Plans (the latter being established under the Floods Directive (FD)<sup>4</sup>).

It can be noted that the fact that RBMPs reviewed refer to the objective of reducing pollution flows to marine waters and meeting international objectives in the area of nutrient reduction, is a positive step for a land-locked country.

### **1.1.6 International coordination and co-operation**

All three Czech RBDs are part of international RBDs. For all three, international agreements are in place and RBMPs and Programme of Measures have been prepared for the overall international RBD. Moreover, there was international co-ordination on public participation.

The Czech Republic cooperated under the international commissions for these three IRBDs as well as bilaterally with neighbouring Member States. For example, the ecological status assessment of transboundary surface water bodies between the Czech Republic and Germany is coordinated by experts of the bilateral German-Czech boundary water commission and its standing committees for Transboundary Waters (for further information see the reports on international coordination on the WFD).

## **1.2 Main changes in implementation and compliance since first cycle**

Stakeholders were more actively involved in the preparation of the second RBMPs: via advisory groups and also in drafting. A broad range of stakeholder groups appear to have been involved. This active engagement was not reported for the first planning cycle. The active engagement of stakeholders indicates that the Czech Republic has responded to the Commission recommendation for good coordination between the public administration and other stakeholders.

The list of competent authorities in the second RBMP is somewhat different from the previous plan (according to information from the Pressures & Measures study<sup>5</sup>). The Pressures & Measures study is more detailed than the information on competent authorities in the second RBMP and therefore a direct comparison with the first cycle plan has not been possible.

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<sup>4</sup> Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007 <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060>

<sup>5</sup> See <http://ec.europa.eu/environment/archives/water/implrep2007/background.htm>

### 1.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Different levels of plans should be better harmonized and cross-referenced in the second RBMP cycle.*

Assessment: The assessment of the second RBMPs did not provide information on improved harmonization and cross-referencing among different levels (international RBMPs, national RBMPs, and regional sub-plans). The Czech Republic informed however that coordination and harmonization at the national level was done via a special advisory committee, the Commission for Water Planning (*Komise pro plánování v oblasti vod*). Moreover, a background document reported to WISE outlines the approach for the coordination of water body typology in each of the three international RBDs. Consequently, this recommendation has been fulfilled.

- Recommendation: *Ensure good coordination between public administration and other stakeholders to improve the planning and implementation of the Programme of Measures and to monitor their effectiveness.*

Assessment: Stakeholders were more actively engaged in the preparation of the second RBMPs: stakeholders were actively engaged via advisory groups and were also involved in drafting. A broad range of stakeholder groups appear to have been involved. This active engagement was not reported for the first planning cycle. No information was found in the second RBMPs regarding coordination for the planning and implementation of the Programme of Measures and monitoring of their effectiveness. The requirements of this recommendation were partially fulfilled.

- Recommendation: *Responsibilities for the implementation of the measures including its financing, is identified for some specific measures (building and reconstruction of urban wastewater treatment plants and specific hydromorphology measures). However, other types of measures are not linked to any responsible authority. More transparency is needed in this field.*

Assessment: There are two competent authorities whose main roles are reported to be the implementation of measures and the preparation of the Programme of Measures: the Ministry of Agriculture and Ministry of the Environment of the Czech Republic.

The Czech Republic informed that competent authorities for implementation of measures are listed in the RBMPs and in the detailed summaries of the measures (*listy opatření*). The Ministry of Agriculture and the Ministry of Environment are the competent authorities for implementation of national-level measures. Other bodies – including municipalities, regional authorities, river boards and private companies – are identified as responsible for implementation of local measures.

With regard to financing, a clear financial commitment (e.g. approved budget or financial mechanism by the Parliament, Ministry of Finance or other financial responsible authority) was reported not to have been secured for the implementation of all components of the Programme of Measures. In all RBDs, a clear financial commitment had been secured for flood protection and urban development, but not for agriculture and industry measures. The Czech Republic informed that hydromorphological measures are funded from the Operational Programme Environment, under the EU Cohesion Policy.

It is concluded that this recommendation has been fulfilled.

## Topic 2 Characterisation of the River Basin District

### 2.1 Assessment of implementation and compliance with WFD requirements in second cycle

#### 2.1.1 Delineation of water bodies and designation of heavily modified and artificial water bodies

There has been a reduction in the number of river water bodies in the Danube and Oder RBDs (12 % and 5 %) and an increase (3 %) in the Elbe (Table 2.1). Fewer lakes were delineated in the second cycle in the Oder (seven instead of eight, 13 %) and more in the two other RBDs (increases by 31 % and 4 %). All but four of the 77 identified lakes were designated as heavily modified: the other four were artificial, three more than had been designated in the first cycle (Figure 2.1). There has been a significant decrease in the number of river water bodies designated as heavily modified from 16 % in the first to 9 % in the second cycle (especially in two of the three RBDs) accompanied by increases in the number of natural river water bodies.

Data on the uses and physical alterations of heavily modified water bodies was not part of the first cycle reporting but the uses and alterations extracted from the first RBMPs are included in those reported in the second RBMPs; more uses and physical alteration types were reported in 2016 than had been the case previously. All designated heavily modified water bodies had at least one water use and at least one physical alteration reported.

The minimum size criteria for rivers in the first RBMPs were tributaries with a Strahler order of greater than four and for lakes a minimum surface area of 0.5 km<sup>2</sup>. The criteria used in the second RBMPs were 10 km<sup>2</sup> catchment area for rivers and 0.5 km<sup>2</sup> surface area for lakes.

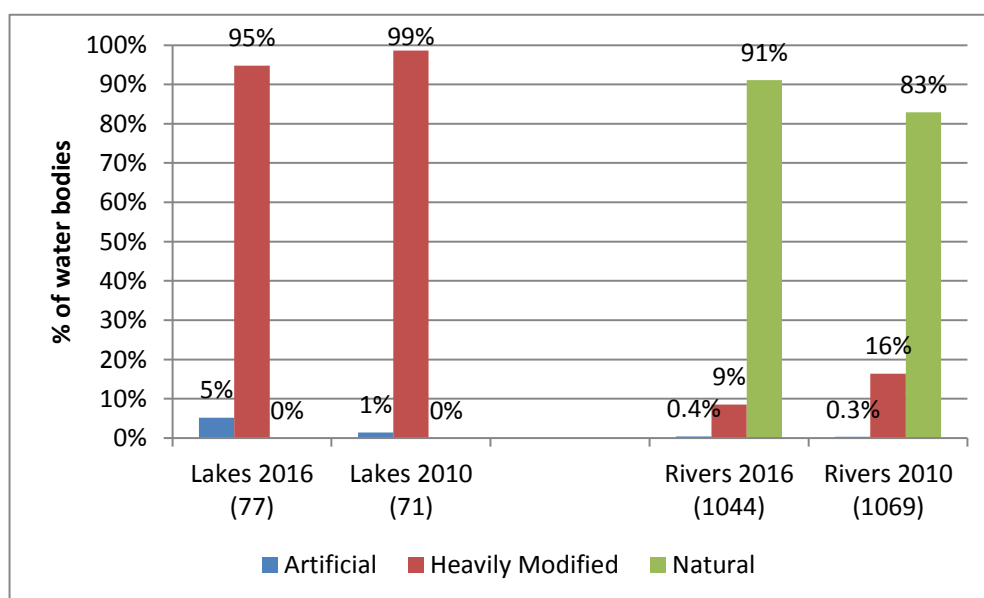
**Table 2.1** *Number and area/length of delineated surface water bodies for the second (2016) and first (2010) cycles.*

Year	RBD	Lakes		Rivers	
		Number of water bodies	Total area (km <sup>2</sup> ) of water bodies	Number of water bodies	Total length of water body (km)
2016	CZ1000	21	60	277	4,905
2016	CZ5000	49	196	636	11,358
2016	CZ6000	7	19	131	1,879
2016	Total	77	275	1,044	18,142
2010	CZ1000	16	51	316	5,207

Year	RBD	Lakes		Rivers	
		Number of water bodies	Total area (km <sup>2</sup> ) of water bodies	Number of water bodies	Total length of water body (km)
2010	CZ5000	47	178	615	11,418
2010	CZ6000	8	20	138	1,971
2010	Total	71	249	1,069	18,596

Source: WISE electronic reports

**Figure 2.1** Proportion of surface water bodies in the Czech Republic designated as artificial, heavily modified and natural for the second and first RBMPs. Note that the numbers in parenthesis are the numbers of water bodies in each water category.



Source: WISE electronic reports

**Table 2.2** Size distribution of surface water bodies in the second (2016) and first (2010) RBMPs.

Year	RBD	Lake area (km <sup>2</sup> )			River length (km)		
		Minimum	Maximum	Average	Minimum	Maximum	Average
2016	CZ1000	0.45	14.69	2.86	1.84	69.05	17.71
2016	CZ5000	0.36	45.03	4	1.69	69.89	17.86
2016	CZ6000	0.51	8.51	2.75	1.83	45.84	14.34
2016	CZ	0.36	45.03	3.58	1.69	69.89	17.38
2010	CZ1000	0.45	14.68	3.2	0.1	87.64	16.48
2010	CZ5000	0.28	45.04	3.79	0.21	105.5	18.57
2010	CZ6000	0.47	8.4	2.46	0.1	45.83	14.28
2010	CZ	0.28	45.04	3.51	0.1	105.5	17.4

Source: WISE electronic reports.

**Table 2.3** *Number and area of delineated groundwater bodies for the second (2016) and first (2010) RBMPs.*

Year	RBD	Number	Area (km <sup>2</sup> )		
			Minimum	Maximum	Average
2016	CZ1000	54	25.07	2569.40	434.91
2016	CZ5000	100	12.47	5832.37	564.72
2016	CZ6000	20	20.69	2775.71	406.14
2016	Total	174	12.47	5832.37	506.21
2010	CZ1000	54	25.07	2568.94	435.75
2010	CZ5000	99	12.5	5786.70	570.41
2010	CZ6000	20	20.7	2776.20	406.27
2010	Total	173	12.5	5786.70	509.4

*Source: WISE electronic reports.*

Table 2.4 summarises the information provided by the Czech Republic on how water bodies have evolved between the two cycles. The majority of changes were changes in the codes of groundwater, lake and river water bodies but there were also aggregation, creation and deletion of water bodies.

**Table 2.4 Type of change in delineation of groundwater and surface water bodies between the two cycles**

Type of water body change for second cycle	Groundwater Body	Lake Water Body	River Water Body
Aggregation		1	61
Splitting	2	23	125
Aggregation and splitting		1	30
Extended area			1
Creation		6	5
Deletion		1	16
Change in code	172	46	822
Total water bodies before deletion	174	78	1060
Delineated for second cycle (after deletion from first cycle)	174	77	1044

Source: WISE electronic reports

173 groundwater bodies were identified in the first cycle. One of these (in the Elbe RBD) was subsequently split into two giving 174 groundwater bodies for the second cycle. There have been some changes in the reported characteristics of groundwater bodies in that they were reported to be layered in the first but not in the second cycle. The other reported characteristics of groundwater bodies (main geological formation of the aquifer type and linkages to terrestrial ecosystems) were the same as reported in the first cycle. However, in 2010 no linkages were reported with surface water bodies whereas in the second cycle, 40 % of groundwater bodies were reported to be linked with surface water bodies. Therefore, further groundwater characterisation work has been undertaken since the first cycle; this is further discussed in Chapters 5 and 6.

### 2.1.2 Identification of transboundary water bodies

Transboundary river water bodies have been identified in all international RBDs. However, no transboundary groundwater bodies have been identified.

### 2.1.3 Typology of surface water bodies

There has been a significant decrease in the number of types of rivers and lakes reported in the second compared to the first cycle; for example 54 river types were reported in the Danube RBD in the first cycle compared to 11 in the second cycle (Table 2.5). Though there were shared lake types between the three RBDs in the second cycle, the river type codes were specific to each RBD. An assessment of the description of the types shows that there may be 51 different types of rivers and lakes. In the first cycle, the typology had been derived using



abiotic criteria which had not been validated against biological data, and it was expected that the typology would be revised and WFD compliant type-specific reference conditions would be used for the second RBMPs.

**Table 2.5** *Number of Surface water body types at RBD level for the first and second cycles. Note that the total is not the sum of the types in each RBD as some types are shared by RBDs*

RBD	Rivers		Lakes		Transitional	Coastal
	2010	2016	2010	2016		
CZ_1000	54	11	10	7	0	0
CZ_5000	35	15	22	13	0	0
CZ_6000	31	9	8	5	0	0
TOTAL	89	35	33	16	0	0

*Source: WISE electronic reports.*

The Czech Authorities indicated during bilateral meetings with the European Commission on the first RBMPs that they would be refining their typology for the second cycle, including making it biologically relevant. Assessment of the second RBMPs and relevant background documents showed that the typology has been made biologically relevant for some, but not for all. Types and the typology were only tested for one biological quality element: fish<sup>6</sup>.

#### **2.1.4 Establishment of reference conditions for surface water bodies**

For rivers, type specific reference conditions have been established for all relevant biological quality elements in 32 out of 35 water types (Table 2.6). Only three river water body types had some biological quality elements established. Type specific reference conditions have been established for all relevant physicochemical quality elements in all river types but only for some of the relevant hydromorphological quality elements. For lakes, type-specific reference conditions have not been established in any type for any of the hydromorphological quality elements. Most lakes are heavily modified water bodies as they are reservoirs/impoundments which were originally rivers<sup>7</sup>; this is discussed further in Chapter 7 of this report. The remainder are artificial, and type specific reference conditions for hydromorphological quality elements would be required for the definition of maximum and good ecological potential. Type

<sup>6</sup> The Czech Republic highlighted that for other biological quality elements the typology was modified within the development of updated assessment methodologies to best match the distribution of biological communities. Furthermore, the typology was modified (merging types or dividing into sub-types) for all biological quality elements in rivers in the second RBMPs, to best match the distribution of biological communities.

<sup>7</sup> The Czech Republic has no natural lakes designated as individual water bodies. All water bodies in the category, lake, were designated as HMWB (= dams and ponds) and AWB (mining pits). Type specific reference conditions (= maximal ecological potential) were established within the relevant methodology for physico-chemical parameters and BQEs phytoplankton, fish and macrophytes.

specific reference conditions for some but not all biological quality elements, and for all relevant physicochemical quality elements, have been established.

**Table 2.6** *Percentage of surface water body types with reference conditions established for all, some and none of the biological, hydromorphological and physicochemical quality elements. Numbers in parenthesis are the number of types in each category*

Water category	Water types	Biological quality elements	Hydromorphological quality elements	Physicochemical quality elements
Lakes (16)	All			100%
	Some	100%		
	None		100%	
Rivers (35)	All	91%		100%
	Some	9%	100%	
	None			

Source: WISE electronic reports

Most national types (heavily modified and natural) have been intercalibrated. However, around 50 % of river water bodies are reported not to have a corresponding intercalibration type: most of these are natural river water bodies<sup>8</sup>. A question arises as to if and how the ecological status of these water bodies has been intercalibrated (this is discussed further in Chapter 3 of this report on the assessment and classification of ecological status/potential).

In terms of type-specific reference conditions for the first RBMPs, there were no reliable reference conditions available and they had only been established in a few cases for rivers, using expert judgment, and had a limited scope.

### 2.1.5 Significant pressures on water bodies

It was reported that significant pressures from water flow regulation and morphological alterations and from water abstractions were not assessed in terms of surface waters, due to sufficient legislation and control of abstractions. In terms of pressures from water flow regulation and morphological alterations this seems to be inconsistent, as many water bodies have been designated as heavily modified and water bodies were reported to be subject to this type of significant pressure. The only other significant pressure was “natural background”.

The most significant pressures in the second cycle in terms of proportion of affected surface of water bodies were Anthropogenic pressure – Unknown (70% of surface water bodies), Point -

<sup>8</sup> The Czech Republic subsequently stated that these river water bodies (mainly in Elbe RBD) could not be intercalibrated due to lack of corresponding intercalibration types.

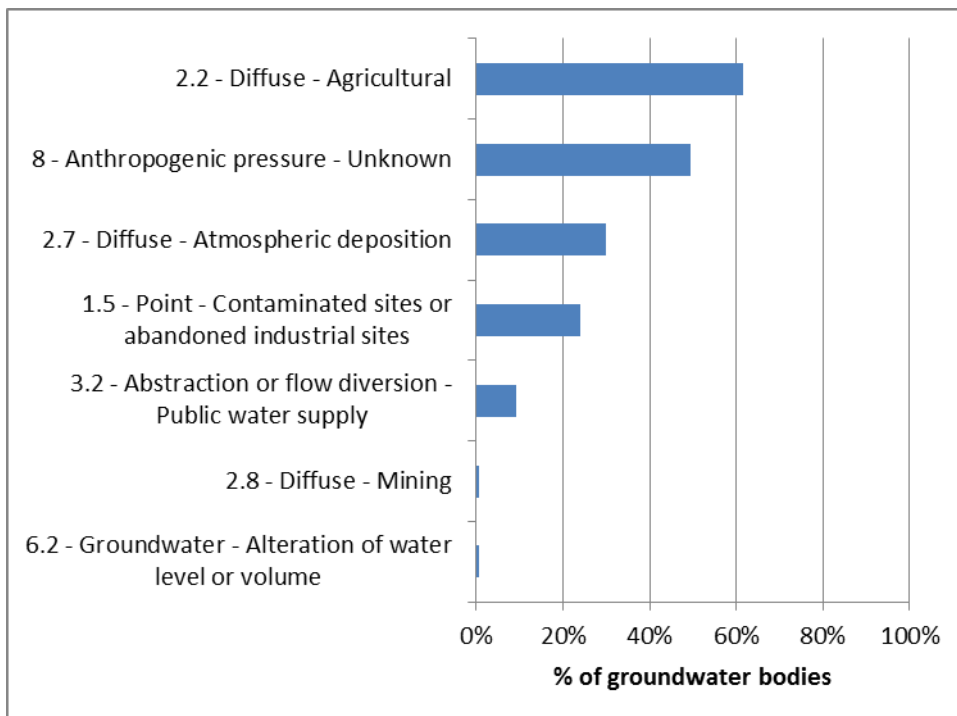
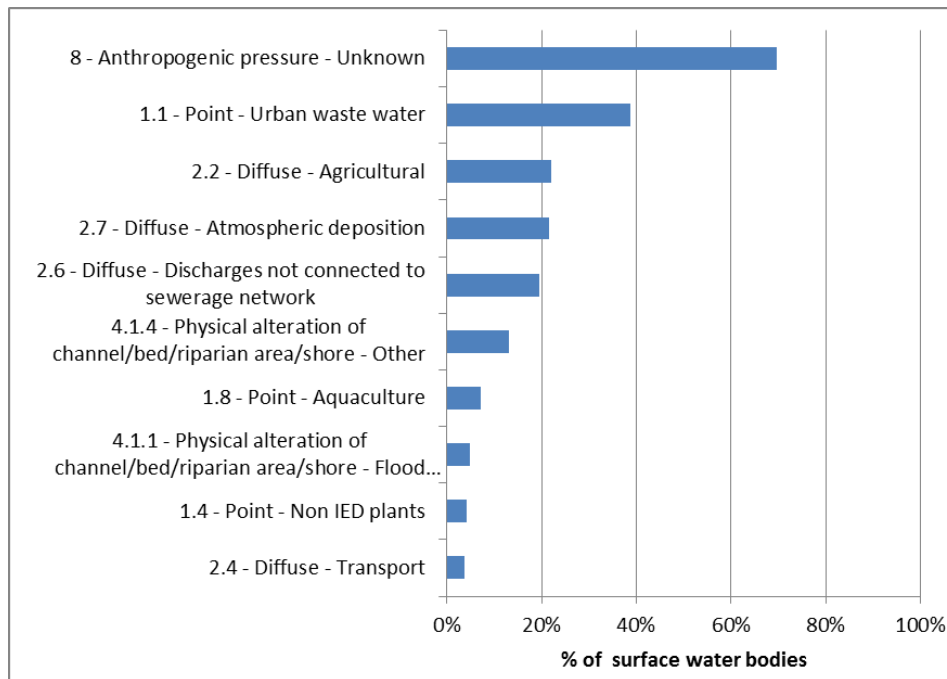
Urban waste water (38 %), Diffuse Agricultural (22 %) and Diffuse Atmospheric deposition (22 %). 31 different pressure types were reported for surface water bodies: the “top 10” pressures in relation to the largest proportion of affected water bodies are illustrated in Figure 2.2.

Seven different significant pressure types were reported to be affecting groundwater in the Czech Republic for the second cycle: Diffuse – Agricultural (61 % of groundwater bodies), Anthropogenic pressure – Unknown (49 %), Diffuse - Atmospheric deposition (30 %), Point - Contaminated sites or abandoned industrial sites (24 %) and Abstraction or flow diversion – Public water supply (9 %).

Because of the changes in the reporting of pressures between the two cycles, it is difficult to compare the pressures, and the numbers of affected water bodies. In general terms, for surface waters, similar point source, diffuse source pressures and pressures from hydromorphological alterations were reported in both cycles (Figure 2.3). Pressures from abstraction or flow diversion for Agriculture were reported to be significant for one water body in one RBD (the Elbe). Abstractions were not identified as significant pressures for any surface water bodies in the Czech Republic in the first cycle. Figure 2.3 shows an apparent decrease in the number of water bodies affected by hydromorphological pressures. The reason for this is unclear and could relate to differences in the aggregation of the data between cycles or changes to the methodology for defining significant pressures.

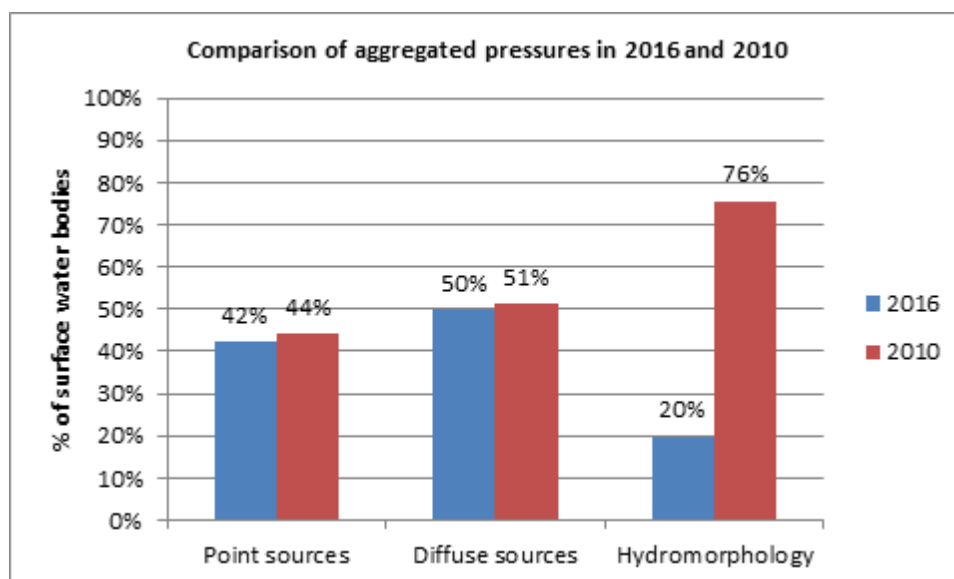
As for surface waters, it is difficult to compare the pressures on groundwater bodies, and the number affected, between the two cycles, also because in the first cycle pressures were only reported at an aggregated level. But in general terms the same broad types of pressures seem to have been reported for both cycles.

**Figure 2.2** *The 10 most significant pressures on surface water bodies and groundwater bodies for the second cycle*



Source: WISE electronic reports

**Figure 2.3** Comparison of pressures on surface water bodies in the first and second cycles. Pressures presented at the aggregated level. Note there were 1121 identified surface water bodies for the second cycle and 1140 for the first cycle.



Source: WISE electronic reports

### 2.1.6 Definition and assessment of significant pressures on surface and groundwater

In the first cycle, the tools that were used to define significant pressures from water flow regulation and morphological alterations, point sources and water abstractions were a combination of numerical tools and expert judgment. Expert judgment was used for agriculture and transport diffuse sources and a combination of numerical tools and expert judgment for abandoned industrial sites and atmospheric deposition. Expert judgment was used for other significant pressures e.g. introduced species and fishing.

The assessment of the second RBMPs and linked background documents provided information on the exclusion of pressures from the risk assessment of surface water bodies. Abstractions and flow diversions were not identified as significant pressures for surface water due to sufficient legislation and control of abstractions. Also morphological alterations could not be identified as a significant pressure (but an inventory of barriers and other morphological alterations was prepared) because of the unclear link between the pressures and the status of the biological quality elements.

In terms of groundwater, most pressures were considered as not relevant (e.g. hydromorphological alterations) or were assessed as non-significant (e.g. direct discharges to

groundwater). Diffuse pollution from transport is a significant pressure, which is included in the atmospheric deposition pressure category.

For the assessment of significant pressures on groundwater bodies, a combination of numerical tools and expert judgment was used for point source, diffuse source and water abstraction pressures, and expert judgment for artificial recharge and “other” pressures. There was no information available on these aspects from the first RBMPs.

For both surface water bodies and groundwater bodies significance of pressures has been defined in terms of thresholds and is linked to the potential failure of objectives (surface waters) and to the verified failure of good status (groundwater).

### **2.1.7 Significant impacts on water bodies**

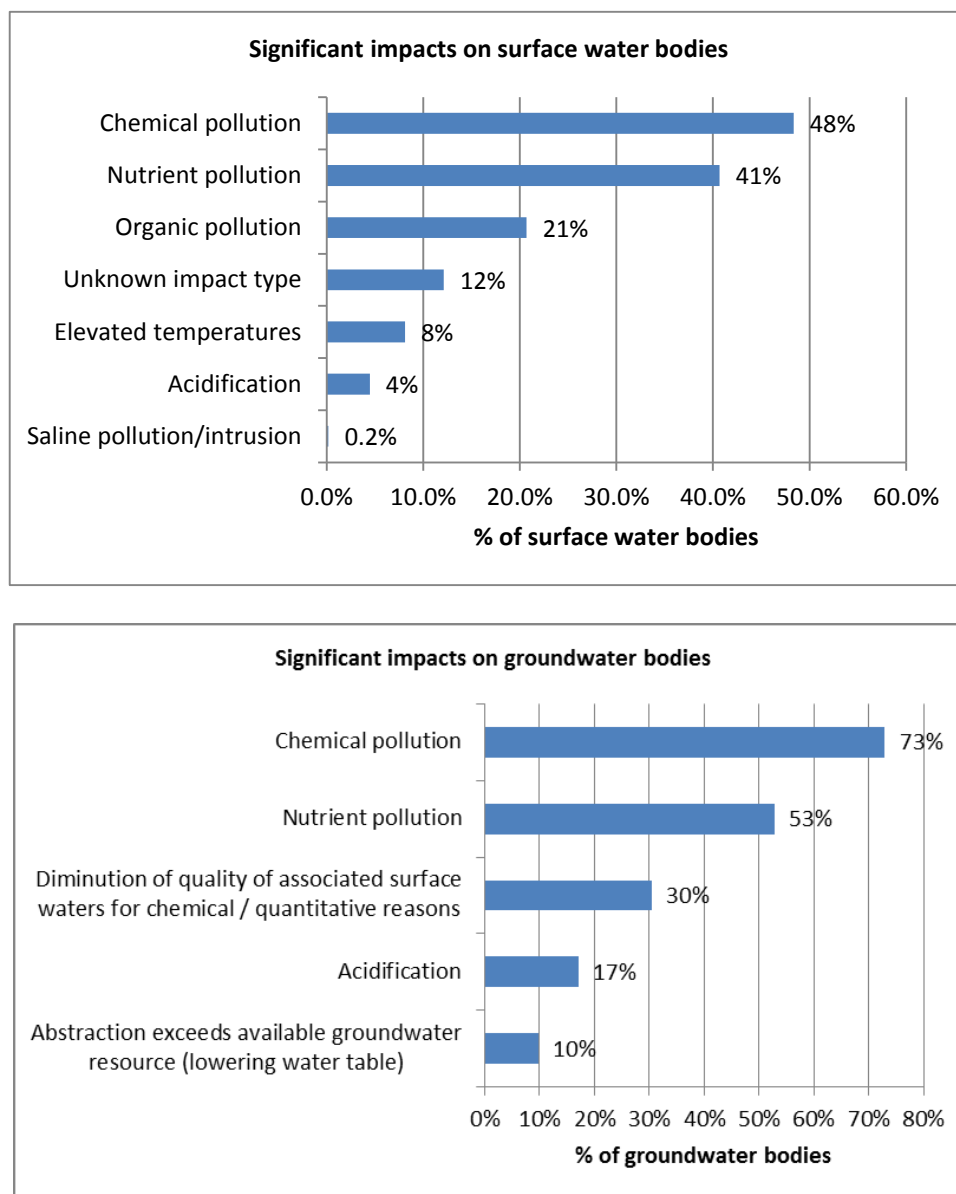
The reporting of impact types also changed between reporting cycles and as a result it is not possible to compare quantitatively the reporting of the impacts on groundwater bodies for the two cycles (Figure 2.4).

The types of impacts are more comparable between the two cycles in terms of surface water bodies (Figure 2.4). In terms of chemical pollution, there was an apparent increase in the second cycle in the number of impacted surface water bodies in all three RBDs, although in the first cycle the “equivalent” impact type was defined as “Contamination by Priority Substances or other specific pollutants”. The reasons for this apparent increase is not clear but could relate to improved monitoring or changes in the methodology for defining impacts. In contrast, the number of surface water bodies impacted by Nutrient pollution and Organic pollution decreased between the first and second cycles in all three RBDs. The most significant difference between the two cycles was in terms of ‘altered habitats due to hydrological changes’ and ‘altered habitats due to morphological changes (includes connectivity)’ which were not reported as an impact at all in the second RBMPs: in the first RBMPs, 56 % of surface water bodies were reported to be impacted by ‘altered habitats as a result of hydromorphological alterations.’ The data for the second cycle does not seem consistent with the degree of designation of heavily modified water bodies or with the reporting of significant hydromorphological pressures.<sup>9</sup>

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<sup>9</sup> The Czech Republic subsequently clarified that the reported data on impacts related to altered habitats due to hydrological and morphological changes is correct, as they could not identify cases in which surface water bodies were not in good status for biological quality elements due only to hydrological and/or morphological changes (and not other pressures).

**Figure 2.4** *Significant impacts on surface water and groundwater bodies for the second cycle. Percentage of numbers of water bodies.*



Source: WISE electronic reports

### 2.1.8 Quantification and apportionment of pressures

For the first RBMPs, quantitative source apportionment was used mainly for nutrients and organic pollutants from point (discharges) and diffuse sources. It was not clear if quantitative apportionment was used for other types of impacts/pressures. For the second cycle, there was no information in the RBMPs on the apportionment of impacts/pressures between the

responsible activities/sectors that are causing failure of good ecological status/potential<sup>10</sup> or good chemical status in surface water bodies, nor for failure to reach good status for groundwater status; there was a reported lack of data, implying that a quantitative source apportionment has not been undertaken for the second RBMPs.

### **2.1.9 Groundwater bodies at risk of not meeting good status**

In the second RBMPs, almost all groundwater bodies in all RBDs were reported to be at risk. The pollutants putting groundwater bodies at risk of failing good chemical status have been reported for all RBDs.

### **2.1.10 Quantification of gap to be filled for pressures causing failure of status objectives**

The links between the pressures for which measures are planned and the significant pressures reported at the water body level are not always clear<sup>11</sup>. For example, in the Danube RBD, “abstraction or flow diversion – public water supply” has been reported at the groundwater body level, but this pressure does not seem to have been tackled in the programme of measures. Also in the Danube RBD, for surface waters, pressures Point - Storm overflows, Point - Non IED plants, Point – Other, Physical alteration of channel/bed/riparian area/shore - Flood protection and Physical alteration of channel/bed/riparian area/shore – Other were reported at the water body level but they also do not seem to be addressed in the programme of measures. There are similar examples in the other two RBDs.

Similarly, 20 Priority Substances are reported as causing failure of good chemical status of surface water bodies in the Czech Republic, and 41 River Basin Specific Pollutants as causing failure to achieve good ecological status/potential. No measures to tackle these substances causing failure seem to have been reported.

### **2.1.11 Inventories of emissions, discharges and losses of chemical substances**

Article 5 of the Environmental Quality Standards Directive 2008/105/EC<sup>12</sup> (EQS Directive) requires Member States to establish an inventory of emissions, discharges and losses of all Priority Substances and the eight other pollutants listed in Part A of Annex I EQS Directive for

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<sup>10</sup> The Czech Republic subsequently stated that the quantitative apportionment was used for nutrients and organic pollutants in the same way as in the first cycle.

<sup>11</sup> The Czech Republic subsequently explained that the significant pressures on surface water were defined as linked to the potential failure of objectives. Therefore, not all of them were reasons for failure and measures were not necessarily included in the programme of measures. This indicates that measures have been identified only to address pressures that are already causing failure of objectives and not all significant pressures.

<sup>12</sup> Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council



each RBD, or part thereof, lying within their territory. This inventory should allow Member States to further target measures to tackle pollution from Priority Substances. It should also inform the review of the monitoring networks, and allow the assessment of progress made in reducing (or suppressing) emissions, discharges and losses of Priority Substances.

In the first RBMPs, the Czech Republic had prepared an inventory of sources, including E-PRTR and non-E-PRTR facilities and diffuse sources of priority pollutants (e.g. pesticides, polycyclic aromatic hydrocarbons and heavy metals).

For the second RBMPs, the Czech Republic reported that all Priority Substances were included in inventories for 9 of the 10 sub-units in the Czech Republic. The other sub-unit (CZDUN Other tributaries of the Danube), covering only 16 surface water bodies, does not have an inventory for any of the Priority Substances.

The two-step approach defined in the Common Implementation Strategy Guidance Document n°28 has been followed for all substances considered in the inventories. In accordance with the Guidance Document, Tier 1 of the methodology was implemented for substances assessed as not relevant at subunit level. Higher tiers of the methodology were applied for substances relevant at sub-unit level (either a combination of Tier 1 (point source information) and Tier 2 (riverine load) or a combination of Tier 1, Tier 2 and Tier 3 (pathway-oriented approach)). The data quality was assessed as very uncertain for substances relevant at sub-unit level, and it was not reported for the other substances.

## **2.2 Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Links between status and responsible specific pressures should be made clear.*

Assessment: The Czech Republic has reported that for both surface water bodies and groundwater bodies significance of pressures has been defined in terms of thresholds and is linked to the potential failure of objectives (surface waters) and to the verified failure of good status (groundwater). The gaps to be filled to achieve objectives have been reported for some (but not all) pressures and the apportionment between different sources has not been carried out for all pressures/impacts. There is also no clear link between measures and individual substances causing failure. This recommendation has been partially fulfilled.

- Recommendation: *Ensure that the RBMPs clearly identify the gap to good status, and that the Programme of Measures is designed and implemented to close that gap. The identified impacts have to be clearly apportioned between the sources and sectors/drivers responsible for the pressures for all significant water management issues.*

Assessment: The gaps to be filled to achieve objectives have been quantified for some but not all pressures, and the Key Types of Measures to be made operational to fill the gaps have been reported. However, there are some inconsistencies in the pressures for which measures are planned and the significant pressures reported at the water body level<sup>13</sup>. Examples are discussed in Section 2.1.10. Therefore, it can be concluded that this part of the recommendation has been partially fulfilled.

The apportionment of impacts to all responsible pressures/sectors is missing: it is not clear whether all responsible pressures have been identified as some of the impacts could arise from more than one pressure. Information has not been found in any of the RBMPs assessed on which activities/sectors are contributing significantly to the failure of good chemical status in surface waters and to the different impacts causing failure of good ecological status/potential. This part of the recommendation has not been fulfilled.

- Recommendation: *Present in the second RBMPs a clear assessment of the number of water bodies failing to reach good status due to agriculturally derived pressures because diffuse sources of pollution from nitrogen and pesticides were identified as the main significant pressures from agriculture in the Czech Republic.*

Assessment: Measures including “Reduce nutrient pollution from agriculture” and “Reduce pesticides pollution from agriculture” have been reported to tackle significant diffuse pressures from agriculture. The indicator of the gap to be filled has been reported in terms of number of water bodies failing environmental quality standards for pesticides originating from diffuse agricultural sources, for nitrogen or pesticides originating from diffuse agriculture sources and the load of nitrogen to be reduced to achieve objectives. This recommendation has been fulfilled.

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<sup>13</sup> The Czech Republic subsequently explained that the significant pressures on surface water were defined as linked to the potential failure of objectives. Therefore, not all of them were reasons for failure and measures were not necessarily included in the programme of measures. This indicates that measures have been identified only to address pressures causing failure of objectives and not all significant pressures.

## **Topic 3 Monitoring, assessment and classification of ecological status in surface water bodies**

### **3.1. Assessment of implementation and compliance with WFD requirements in second RBMPs**

#### **3.1.1. Monitoring of ecological status/potential**

##### *Monitoring programmes*

Article 8(1) of the WFD requires Member States to establish monitoring programmes for the assessment of the status of surface water and of groundwater in order to provide a coherent and comprehensive overview of water status within each RBD.

The Czech Republic reported separate operational and surveillance monitoring programmes for surface waters (lakes and rivers) in each RBD.

##### *Monitoring sites*

Table 3.1 compares the number of monitoring sites used for surveillance and operational purposes between the first and second RBMPs and Table 3.2 gives the number of sites used for different purposes for the second RBMPs.

There has been a decrease in the number of surveillance monitoring sites from the first to second RBMP in rivers and lakes in the Danube and the Elbe: there are only small differences in the Oder. The number of sites in operational monitoring of rivers in the Danube has almost doubled from the first to the second RBMP with a smaller increase in the Elbe and a small decrease in the Oder. There are fewer surveillance monitoring sites in the second RBMP compared to the first in lakes in Danube and Elbe, and fewer sites used for operational monitoring in all three RBDs. Overall in the Czech Republic there has been an increase from 885 to 999 monitoring sites in rivers from the first to second RBMPs and a decrease from 76 to 62 sites in lakes.

There has been a decrease in the number of identified river water bodies and an increase in number of identified lake water bodies between the first and second RBMPs. In the first RBMPs, 10 % of river water bodies in the Czech Republic were included in surveillance monitoring, this decreased to 8 % in the second RBMPs. 38 % of lake water bodies were included in surveillance monitoring in the first RBMPs and only 10 % for the second. For operational monitoring, 65 % of river water bodies in the Czech Republic were included in the first RBMPs, increasing to 95 % in the second: the biggest increase occurred in the Danube where the number increased from 127 (40 %) in the first RBMPs to 271 (98 %) in the second.

92 % of lakes were included in operational monitoring in the first RBMPs, decreasing to 78 % for the second (Figure 3.1).

**Table 3.1** *Number of sites used for surveillance and operational monitoring for the second and first RBMPs. Note that for reasons of comparability with data reported in 2010, the 2016 data does not take into account whether sites are used for ecological and/or chemical monitoring.*

	Rivers		Lakes	
	Surv.	Op	Surv.	Op
<b>second RBMP</b>				
CZ_1000	26	272	0	16
CZ_5000	48	596	3	39
CZ_6000	11	129	5	7
<i>Total by type of site</i>	85	997	8	62
<i>Total number of monitoring sites</i>	999		62	
<b>first RBMP</b>				
CZ_1000	32	137	6	22
CZ_5000	67	528	16	41
CZ_6000	12	170	5	13
<i>Total by type of site</i>	111	835	27	76
<i>Total number of monitoring sites</i>	885		76	

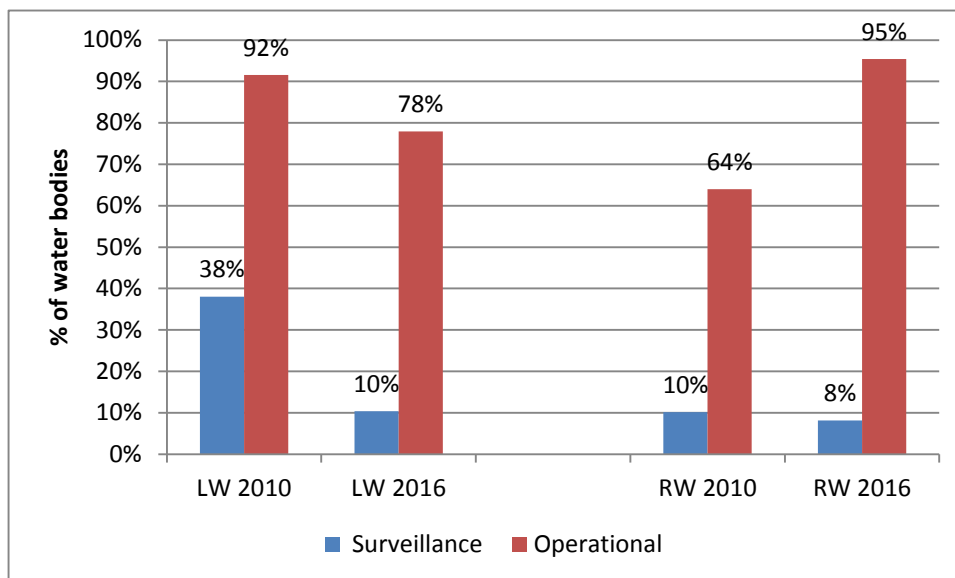
*Source WISE electronic reports*

**Table 3.2** *Number of monitoring sites in relevant water categories used for different purposes in the Czech Republic.*

Monitoring Purpose	Lakes	Rivers
CHE - Chemical status	35	589
ECO - Ecological status	62	999
HAB - Protection of habitats or species depending on water - WFD Annex IV.1.v	12	278
INT - International network of other international convention		81
NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv		326
OPE - Operational monitoring	62	999
QUA - Quantitative status		
RIV - International network of a river convention (including bilateral agreements)		69
SOE - EIONET State of Environment monitoring		134
SUR - Surveillance monitoring	8	85
<b>Total sites irrespective of purpose</b>	<b>62</b>	<b>999</b>

*Source: WISE electronic reports*

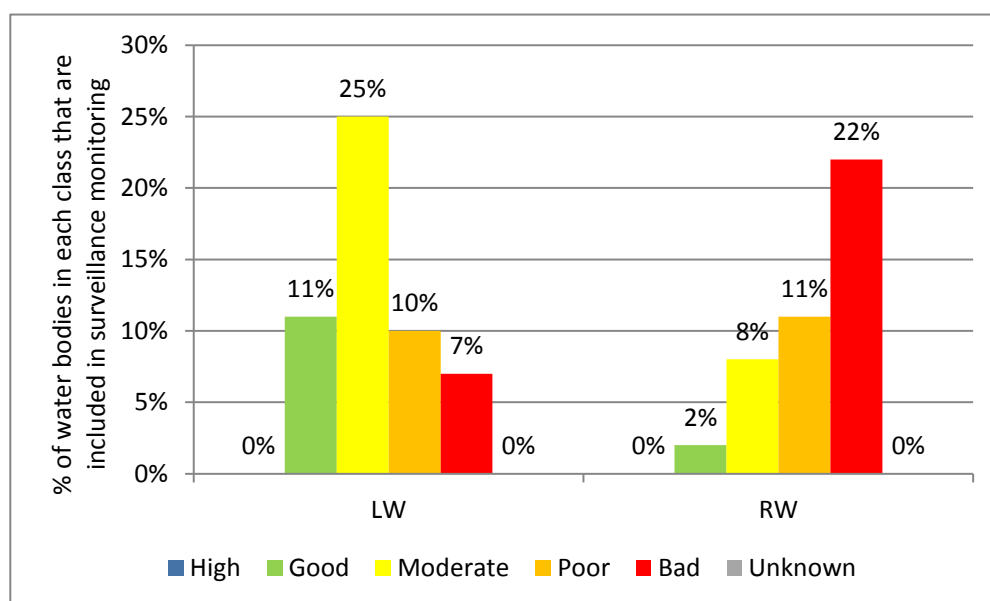
**Figure 3.1** *Percentage of water bodies included in surveillance and operational monitoring for the first RBMPs (2010) and second RBMPs (2016). Note no differentiation is made between water bodies included in ecological and/or chemical monitoring.*



*Source: WISE electronic reports*

Surveillance monitoring should include “sufficient surface water bodies to provide an assessment of the overall surface water status within each catchment or sub-catchments within the river basin district”. Overall in the Czech Republic, only 2 % of the river water bodies classified as good ecological status/potential are included in surveillance monitoring compared to 22 % at bad status/potential (Figure 3.2). The four river water bodies classified as high status/potential are not included in surveillance monitoring.

**Figure 3.2 Proportion of water bodies in each ecological status/potential class that are included in surveillance monitoring. Note: Standard colours and class descriptors for ecological status based on WFD Annex V, Article 1(4)2(I) used for illustration purposes.**



Source: WISE electronic reports.

### **Transboundary surface water body monitoring**

All three RBDs reported that there are river monitoring sites that are part of the international network of a river convention (including bilateral agreements) and/or of the international network of other international conventions.

### **Quality elements monitored (excluding River Basin Specific Pollutants)**

Ecological status or potential is assessed on the basis of the results from the monitoring of a range of quality elements. These are primarily biological quality elements with supporting hydromorphological and chemical and physico-chemical quality elements. This latter group comprises some general physico-chemical parameters and River Basin Specific Pollutants. Some of the quality elements are specific to the different surface water categories (rivers, lakes, transitional and coastal waters).

Table 3.3 illustrates the quality elements used for the monitoring of lakes and rivers for the second RBMP: no differentiation is made between purposes of monitoring.

In terms of surveillance monitoring, none of the lakes included in surveillance monitoring were monitored for all the required biological quality elements nor for all the general physico-chemical quality elements. No lakes in the Danube RBD are included in surveillance

monitoring. Phytoplankton is sampled for surveillance purposes in lakes in both the Elbe and the Oder RBDs, and fish is sampled in lakes in the Oder RBD. Aquatic flora, phytobenthos and benthic invertebrates are not monitored for surveillance purposes in lakes: this is a significant gap in the surveillance monitoring of lakes.

In contrast, all of the required biological quality elements are included in some river water bodies in all three RBDs. All required biological quality elements were included in surveillance monitoring in 73 % of river water bodies in the Danube, 59 % in the Elbe and 55 % in the Oder. All required general physico-chemical quality elements were monitored in all river water bodies included in surveillance monitoring in the Danube and the Elbe, but only in 73 % of river water bodies in the Oder. In terms of operational monitoring, the biological quality element phytoplankton is predominantly used in lakes: 100 %, 92 % and 100 % of lakes used it in operational monitoring in the Danube, the Elbe and the Oder, respectively. The only other biological quality element to be used in operational monitoring of lakes is fish, in 38 %, 35 % and 29 % of lakes used it for operational monitoring in the Danube, the Elbe and Oder, respectively. All the relevant biological quality elements are used in operational monitoring of rivers with benthic invertebrates being the most used (95 %, 84 % and 95 % in the Danube, the Elbe and the Oder, respectively). The least applied biological quality element (of those relevant) for operational monitoring of rivers was macrophytes (17 %, 22 % and 13 % of rivers included in operational monitoring in the Danube, the Elbe and the Oder, respectively). This may reflect the distribution of the different types of pressures on rivers but may also indicate the predominance of biological quality elements that were used in monitoring before WFD implementation i.e. phytoplankton in lakes and benthic invertebrates in rivers.

Hydromorphological quality elements are not monitored in the second RBMP in any water body and unknown status is reported for each water body for these quality elements: this is a major gap in the monitoring and status assessment methods. Hydromorphological quality elements were reported to be monitored in the first RBMP though there was no status assessment method developed. Information found in the RBMPs and linked background documents indicated that the methods for hydromorphological quality element monitoring and assessment was finished at the end of first cycle, but had not been used yet: the reason for this is not known.

**Table 3.3** *Quality elements monitored for the second RBMPs in the Czech Republic (excluding River Basin Specific Pollutants). Note: quality elements may be used for surveillance and/or operational monitoring.*

Biological quality elements						Hydromorphological quality elements		
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Hydrological or tidal regime	Continuity conditions	Morphological conditions
Lakes	Yes	No	No	No	Yes	No		No
Rivers	Yes	Yes	Yes	Yes	Yes	No	No	No

General physico-chemical quality elements							
	Transparency conditions	Thermal conditions	Oxygenation conditions	Salinity conditions	Acidification status	Nitrogen conditions	Phosphorus Conditions
Lakes	Yes	Yes	Yes	No	Yes	No	Yes
Rivers		Yes	Yes	Yes	Yes	Yes	Yes

Source: WISE electronic reports

Annex V of the WFD provides guidance on the frequency of monitoring of the different quality elements. Surveillance monitoring should be carried out for each monitoring site for a period of one year during the period covered by a RBMP i.e. six years. For phytoplankton, this equates to twice during the monitoring year and the other biological quality elements once during the year. As a guideline, operational monitoring should take place at intervals not exceeding once every six months for phytoplankton and once every three years during the six year cycle for the other biological quality elements. Greater intervals may be justified on the basis of technical knowledge and expert judgement.

Of the seven biological quality elements used for the surveillance monitoring of rivers and lakes, all but phytoplankton in lakes, were sampled at least at the minimum guidance frequency at all of the sites where they were monitored. In contrast, of the seven biological quality elements used for operational monitoring of rivers and lakes, none was sampled at least at the recommended minimum frequency at all of the sites where they were monitored. The category with the smallest proportion of water bodies sampled at least at the minimum frequency is fish in rivers (18 % of sites) and that with the largest proportion is phytoplankton in lakes (86 % of sites).



### ***River Basin Specific Pollutants and matrices monitored***

85 River Basin Specific Pollutants were reported to be monitored in water in the Czech Republic.

44 River Basin Specific Pollutants cause failure of good ecological status/potential in at least one water body. In lakes, 59 River Basin Specific Pollutants are monitored, 9 of these cause failure of good ecological status/potential in at least one lake water body. Bisphenol-A is causing failure in one lake water body though it seems it is not monitored.

Copper was monitored in the largest number of water bodies in the Czech Republic (141 in the Elbe and 112 in the Danube). All substances were measured in water for status assessment.

69 % of river water bodies and 62 % of lake water bodies in the Czech Republic are monitored for at least one River Basin Specific Pollutant. In more than half of lake and river water bodies in the Danube and in the Oder, more than 11 River Basin Specific Pollutants are monitored.

Annex V of the WFD provides guidance on the frequency of monitoring of the different quality elements: once every three months is recommended for river basin specific pollutants. Surveillance monitoring should be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan i.e. six years. For river basin specific pollutants this would equate to four times for the surveillance year, and for operational monitoring to four times a year for each year of the cycle.

Of the 85 River Basin Specific Pollutants included in surveillance monitoring, 66 were sampled at least at the recommended minimum frequency at all of the sites where they were monitored. Of the 85 River Basin Specific Pollutants included in operational monitoring, two were sampled at least at the recommended minimum frequency at all of the sites where they were monitored, and five pollutants at none.

Annex V, section 1.3.4 of the WFD does not explicitly define the matrices to which the recommended minimum frequency of monitoring of River Basin Specific Pollutants (“Other Pollutants”) applies. Recommended monitoring frequencies are specified for Priority Substances in biota and sediment in Article 3(2)(c) of the EQS Directive: this is once per year for operational and surveillance monitoring purposes. For consistency this frequency of once per year has been applied to the monitoring of River Basin Specific Pollutants in biota/sediment.

Table 3.4 compares the number of sites used for the monitoring of River Basin Specific Pollutants for the two RBMPs. On the face of it, it would seem that there has been a decrease

in the number of sites used in lakes and rivers for the second RBMPs compared to the first. However, the data from both cycles may not be fully comparable as different definitions of the substances to be considered were used (in the first RBMP, some Member States sometimes reported more than just the river basin specific pollutants).

**Table 3.4** *Number of sites used to monitor River Basin Specific Pollutants reported in the second RBMP and non-priority specific pollutants and/or other national pollutants reported in the first RBMP. Note the data from both cycles may not be fully comparable as different definitions were used*

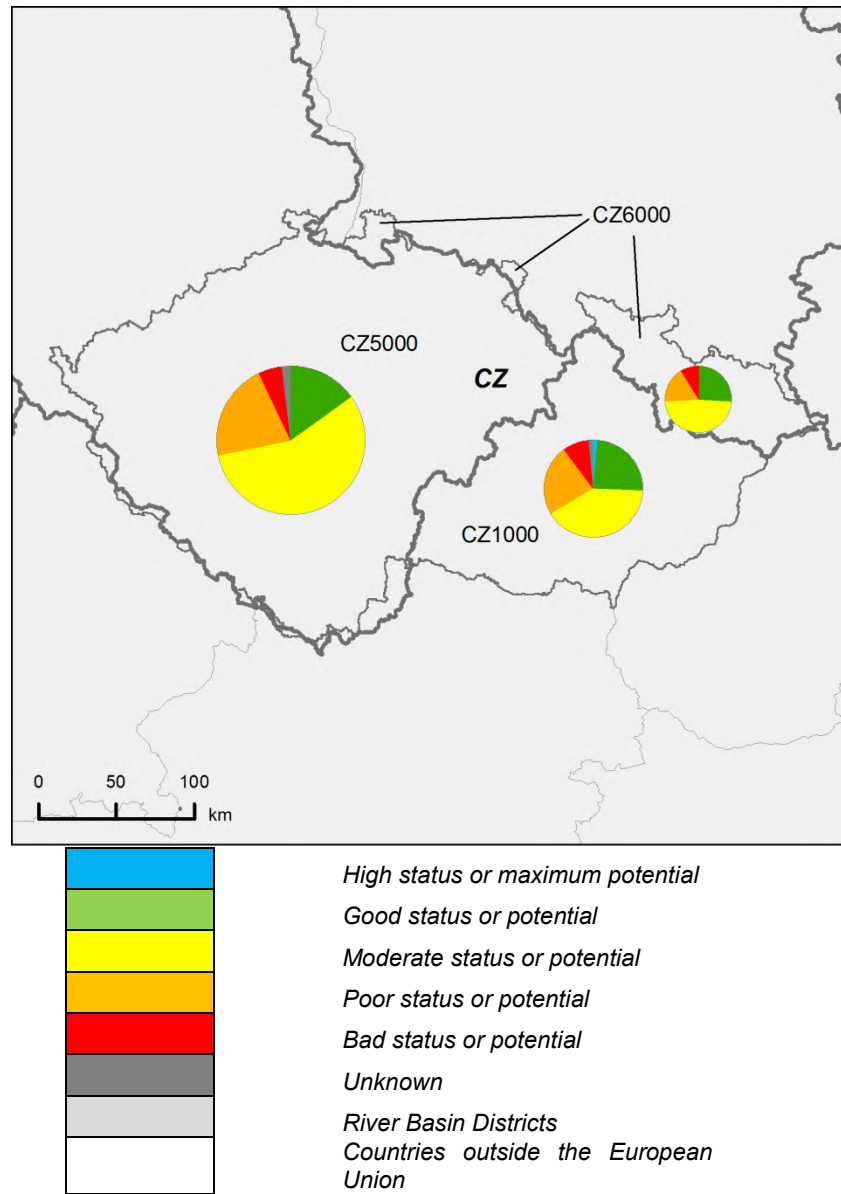
<b>RBMP</b>		<b>Lakes</b>	<b>Rivers</b>
second	Sites used to monitor River Basin Specific Pollutants	48	718
first	Sites used to monitor non-priority specific pollutants and/or other national pollutants	76	869

*Sources: WISE electronic reports*

### **3.1.2. Ecological Status/potential of surface water**

The ecological status/potential of surface water bodies in the Czech Republic for the second RBMP is illustrated in Map 3.1. This is based on the most recent assessment of status.

**Map 3.1** *Ecological status or potential of surface water bodies based on the most recently assessed status/potential of the surface water bodies. Note: Standard colours for ecological status based on WFD Annex V, Article 1.4.2(i).*

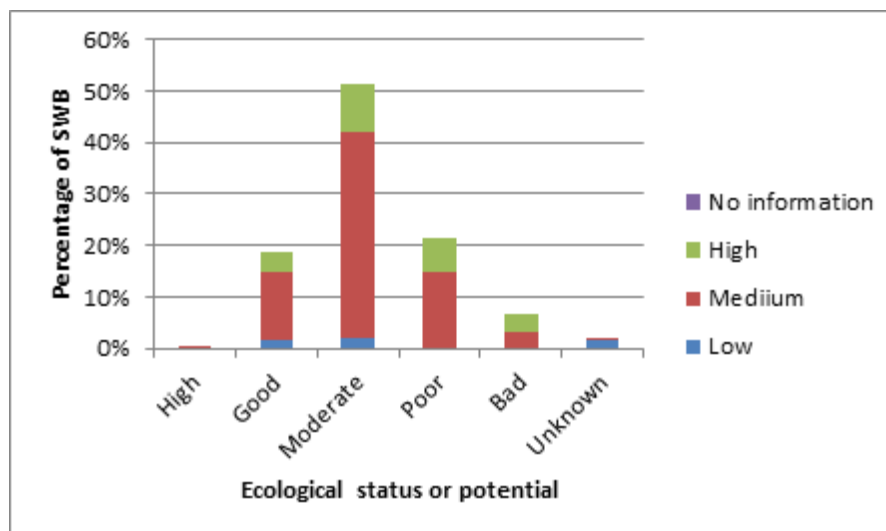


*Source: WISE, Eurostat (country borders).*

A detailed breakdown of ecological status/potential in each RBD and water category can be viewed in the WISE electronic reports.

Figure 3.3 shows the confidence in the classification of ecological status/potential. Most of the classifications are given a medium level of confidence. For the first RBMP, all classifications were given a low confidence indicating an improvement in assessment and classification for the second RBMPs.

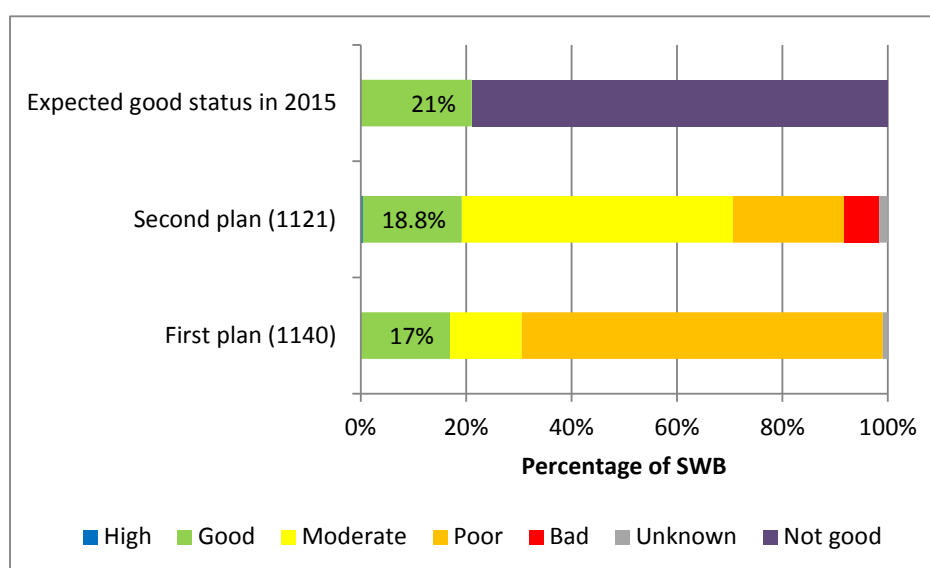
**Figure 3.3** *Confidence in the classification of ecological status or potential of surface water bodies based on the most recently assessed status/potential.*



Source: WISE electronic reports

Figure 3.4 compares the ecological status of surface water bodies in the Czech Republic in the first RBMP with that in the second RBMP, and that expected by 2015 according to the second RBMP.

**Figure 3.4** *Ecological status or potential of surface water bodies in the Czech Republic for the second RBMPs, for the first RBMPs and expected in 2015. The number in parenthesis is the number of surface water bodies for each cycle. Note: the period of the assessment of status for the second RBMPs was 2006 to 2013. The period of the assessment of status for the first RBMPs is not known.*

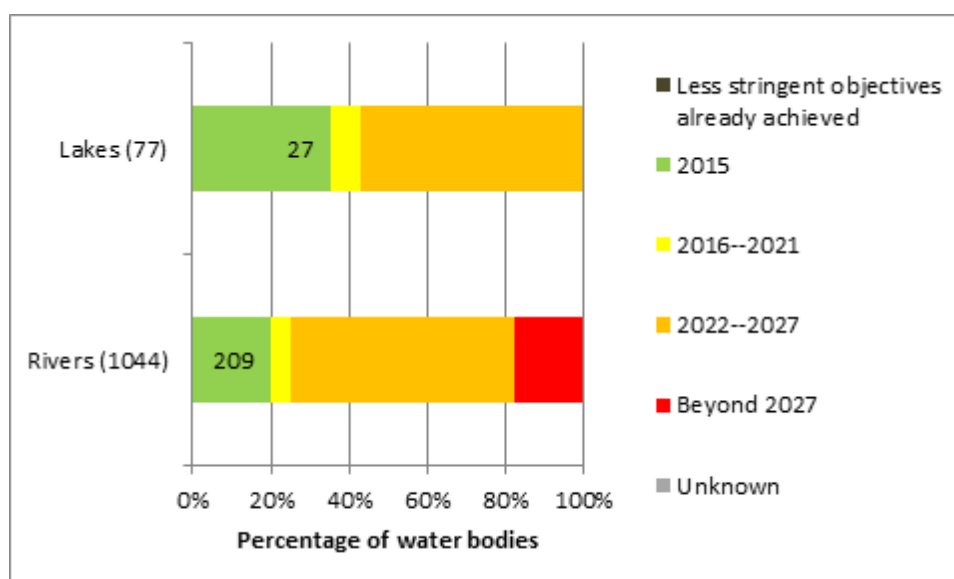


Source: WISE electronic reports

In the second RBMP, 19.2 % of surface water bodies were at good (18.8 %) or high status (0.4 %). In the first RBMP, 17 % of surface water bodies were at good or high status. Note that in the first RBMP 1140 surface water bodies were delineated compared to 1121 in the second and assessment methods changed: this adds some uncertainty to the validity of the comparison.

Member States were asked to report the expected date for the achievement of good ecological status/potential. The information for the Czech Republic is shown in Figure 3.5.

**Figure 3.5** *Expected date of achievement of good ecological status/potential of surface water bodies in the Czech Republic The number in parenthesis is the number of water bodies in each category.*



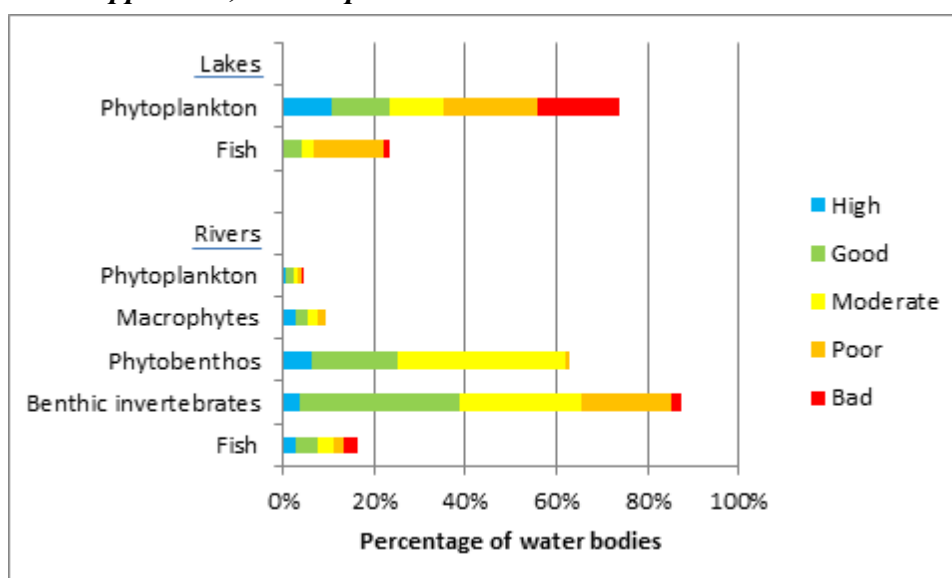
Source: WISE electronic reports

Around 20 % of rivers are expected to be at least good status/potential by 2015 but 100 % achievement is not expected until after 2027. For lakes, 35 % are expected to be at least good by 2015 with full achievement expected by the end of 2027.

### ***Classification of ecological status in terms of each classified quality element***

The classification is mainly based on a few quality elements: biological quality elements (benthic invertebrates and phyto-benthos), general physico-chemical quality elements and River Basin Specific Pollutants in rivers; biological quality element phytoplankton, general physico-chemical quality elements and River Basin Specific Pollutants in lakes. Figure 3.6 illustrates the biological quality elements used in the classification of ecological status/potential.

***Figure 3.6 Ecological status/potential of the biological quality elements used in the classification of lakes and rivers in the Czech Republic. Note that water bodies with unknown status/potential, and those that are monitored but not classified or not applicable, are not presented***



*Source: WISE electronic reports*

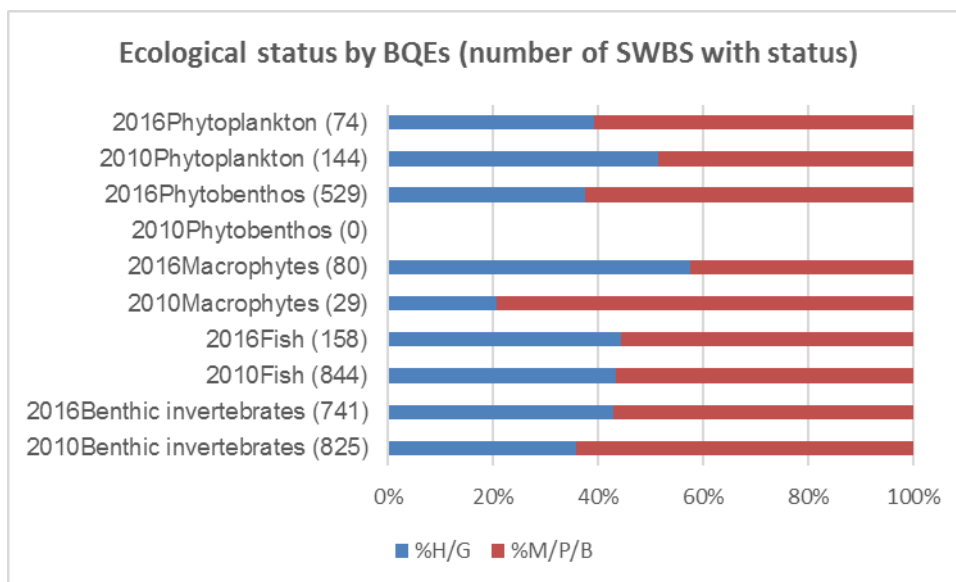
*A differentiated presentation of this data between ecological status and potential and including all types of quality element can be viewed [here](#)*

Figure 3.7 compares the classification of biological quality elements in terms of ecological status/potential for water bodies that have not changed from the first to the second RBMPs. It should be noted that this comparison should be treated with some caution as there are differences between the numbers of surface water bodies classified for individual elements and because the assessment methods changed.

Figure 3.8 and Figure 3.9 illustrate the basis of the classification of ecological status/potential of rivers and lakes in the Czech Republic for the second RBMP. 88 % of rivers and 68 % of lakes are classified using three of the four types of quality elements (biological; hydromorphological, general physico-chemical and River Basin Specific Pollutants) that might

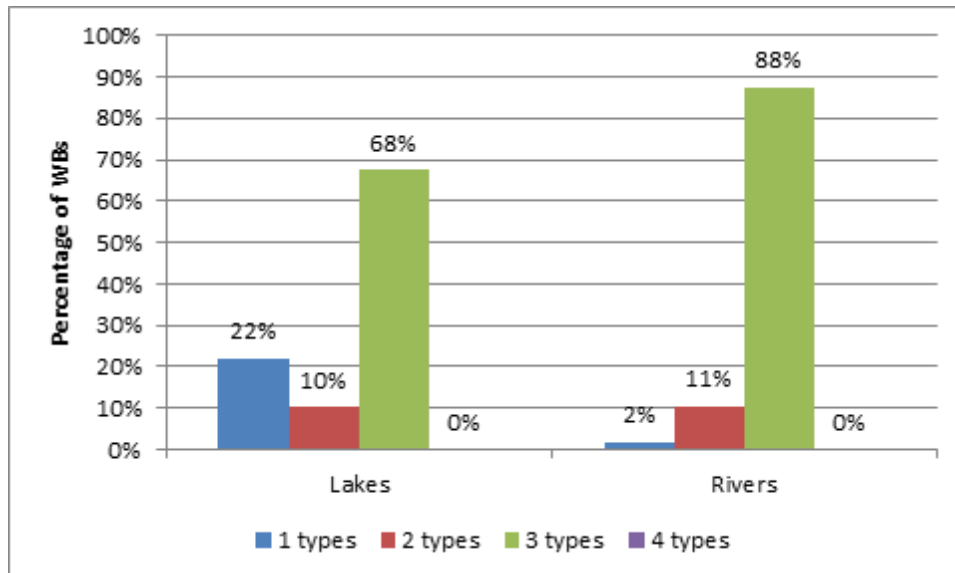
be used in the classification (Figure 3.8): no water body was classified according to hydromorphological quality elements (Figure 3.9).

**Figure 3.7 Comparison of ecological status/potential according to classified biological quality elements in rivers and lakes water bodies that have not changed from the first to the second RBMPs. Note that water bodies with unknown status/potential have been excluded from the presentation.**



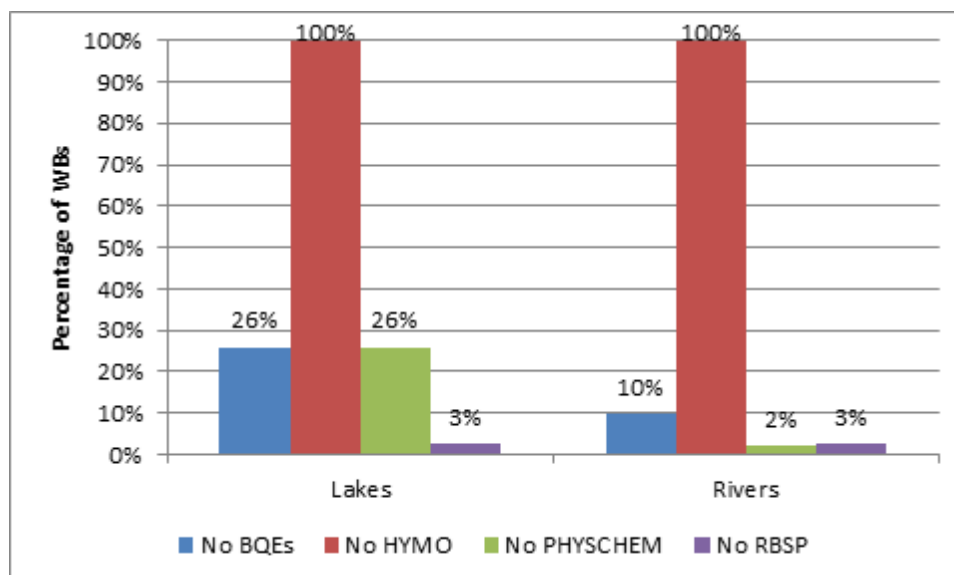
Source: WISE electronic reports

**Figure 3.8 The classification of the ecological status or potential of rivers and lakes in the Czech Republic using one, two, three or four types of quality element. Note: The four types are: biological; hydromorphological, general physico-chemical and River Basin Specific Pollutants**



Source: WISE electronic reports

**Figure 3.9** The percentage of river and lake water bodies where no biological quality element or no hydromorphological (HYMO) or no general physico-chemical (PHYSICHEM) or no River Basin Specific Pollutant (RBSP) has been used in the classification of ecological status or potential



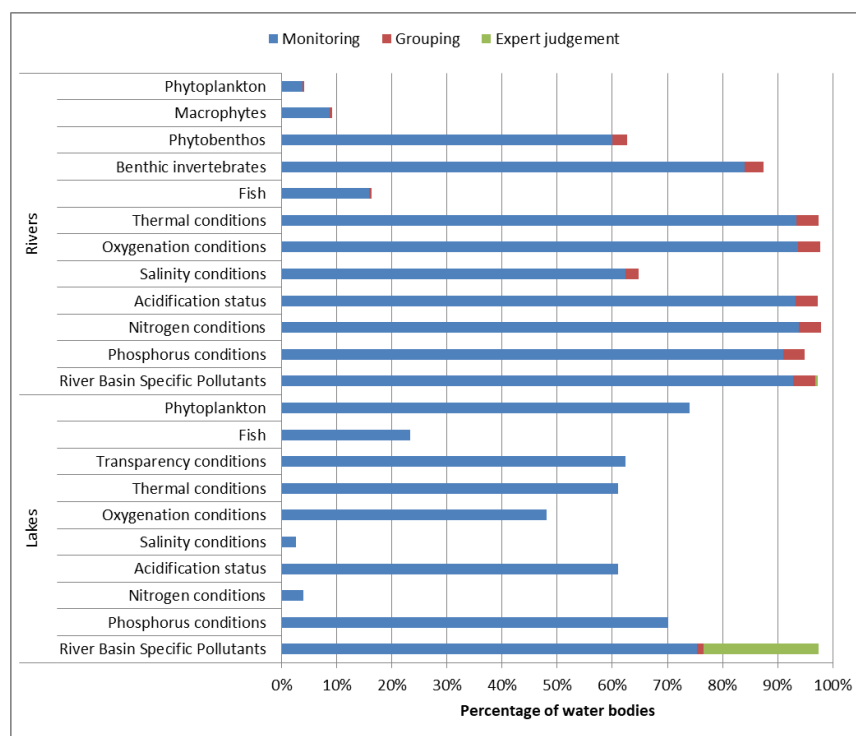
Source: WISE electronic reports

None of the biological quality elements were used in the classification of ecological status of 26 % of lakes and 10 % of rivers indicating weaknesses in the assessment methods for these water categories.

The basis of the classification of the individual quality elements is illustrated in Figure 3.10.



**Figure 3.10** *Basis of the classification of ecological status/potential. The percentages are in terms of all waterbodies in each category.*



Source: WISE electronic reports

Overwhelmingly, the results of monitoring have been used in the classification of rivers and lakes. Expert judgement was only used for the classification of River Basin Specific Pollutants in lakes and rivers. In lakes grouping has only been used for River Basin Specific Pollutants in one water body. Grouping has been used in classification to a small extent in rivers.

**Assessment methods and classification of biological quality elements**

There are now biological quality element assessment methods developed for lakes (reservoirs) for phytoplankton, macrophytes and fish, but not for benthic invertebrates. Reference conditions are only available for some water bodies in each type of lake (reservoir). However, even though it was reported that an assessment method for macrophytes was developed for all lake types, this quality element is not monitored in lakes and not used for the subsequent classification of lakes. The Czech Republic therefore has not developed fully compliant assessment methods for lakes. The new lake biological quality element assessment methods should be checked for compliance concerning intercalibration, as the information was not reported. There are no lake assessment methods for macroinvertebrates.

### ***Intercalibration of biological assessment methods and national classification systems***

Information in WISE indicates that most national surface water body types (heavily modified and natural) have been intercalibrated. However, around 54 % of river water bodies in the Czech Republic are reported not to have a corresponding intercalibration type: most of these are natural river water bodies. Most water bodies of the non-intercalibrated types have an ecological status classification and so the question arises as to how the status of these water bodies has been intercalibrated. The second RBMPs and background documents were examined for any information on how the results from the intercalibrated types have been translated to all other national types. The documents indicate that the national classification systems were checked against the intercalibration results and if necessary, updated (update was necessary only for fish in Central Baltic lakes). However, 42 % of rivers are not included in any intercalibration type (50 % calculated from reported data), but it was expected that the national methodologies were compliant with the intercalibration results also for the other Czech Republic rivers. The conclusion is that there may be a serious lack of comparability of ecological status/potential classification for a large proportion of water bodies in the Czech Republic<sup>14</sup>.

### ***Assessment methods for hydromorphological quality elements***

The assessment methods for hydromorphological quality elements are only partly developed in rivers, and not at all in lakes (reservoirs); no hydromorphological quality elements have been classified.

### ***Assessment methods for general physico-chemical quality elements***

Standards have been reported for the relevant general physico-chemical quality elements in lakes and are consistent with the good-moderate status boundary of the relevant sensitive biological quality elements. Standards have also been reported for all relevant general physico-chemical quality elements in rivers but are reported not to be consistent with the good-moderate status boundary of the relevant sensitive biological quality elements. For rivers this is an important issue as standards should be linked to the good-moderate status/potential classification boundaries of the biological quality elements.

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<sup>14</sup> The Czech Republic subsequently stated that water bodies with missing intercalibration type have no corresponding type.

### ***Selection of River Basin Specific Pollutants and use of Environmental Quality Standards***

According to the second RBMPs, the list of River Basin Specific Pollutants was elaborated by the Czech Republic on the basis of the pollutants in WFD Annex VIII that could be potentially discharged into or have entered the aquatic environment, but no details on the specific methodology could be found in the second RBMPs.

The Czech Republic reported Environmental Quality Standards for more substances than those monitored. None of the standards are reported to be derived in accordance with the 2011 Technical Guidance Document N° 27<sup>15</sup>. For the large majority of the substances the analytical methods used met the minimum performance criteria laid down in Article 4(1) of the QA/QC Directive (2009/90/EC)<sup>16</sup>. For the remaining substances, the analytical method met the criteria from article 4.2.

### ***Use of monitoring results for classification***

Overwhelmingly in the Czech Republic, monitoring data has been used to classify the status of the quality elements used to assess the overall ecological status/potential of surface water bodies: at least 94 % for all quality elements except for River Basin Specific Pollutants in lakes (77 %). Expert judgement and grouping was also used to classify 21 %, and 2 % of lakes, respectively, for River Basin Specific Pollutants. Grouping has at most been used for 6 % of water bodies classified according to the different quality elements. A comparison has been made between the numbers of water bodies classified using monitoring results with those directly monitored. By and large there is good agreement between the two, other than for macrophytes where 195 surface water bodies were directly monitored and subsequently only 90 classified.

### ***Overall classification of ecological status (one-out, all-out principle)***

The one-out-all-out principle has been used for assessing the overall classification of ecological status in all RBDs (information reported to WISE). The second RBMPs indicated that no methodology was developed for applying the no-deterioration principle, but that it would be prepared for the third RBMPs, if necessary. Also there is no information in the second RBMPs on how the spatial extent of any ecological impacts within water bodies has been taken into account when deriving the overall status of a water body.

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<sup>15</sup><https://circabc.europa.eu/sd/a/0cc3581b-5f65-4b6f-91c6-433a1e947838/TGD-EQS%20CIS-WFD%2027%20EC%202011.pdf>

<sup>16</sup><http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:201:0036:0038:EN:PDF>

### **3.2. Main changes in implementation and compliance since first RBMPs**

In the first RBMP, there were no assessment methods for biological quality elements in lakes (reservoirs), but now methods have been developed for phytoplankton, macrophytes (though macrophytes are not monitored in lakes and are not used in the classification of status of lakes) and fish in lakes (reservoirs), although reference conditions have only been set for some water bodies.

The confidence in the classification of ecological status/potential has improved since the first RBMP. For the first RBMP, all classifications were given a low confidence whereas for the second RBMP most of the classifications are given a medium level of confidence.

Overall ecological status has improved in all the RBDs since the first RBMP with considerably fewer water bodies in poor/bad status and more water bodies in moderate status. In the Danube there is also an increase in the number of good status water bodies, but only a minor increase is seen in the Elbe and a decrease in good status water bodies in the Oder. For biological quality element status, however, change is reported mainly for a few water bodies concerning benthic invertebrates and fish in rivers, and these changes are not consistent, due to changes in monitoring and assessment methods.

### **3.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Status assessment should be reliable. (The assessment of ecological status was simplified in the first plans with only benthic invertebrates and sometimes fish, and chlorophyll a used as biological quality elements in rivers. There were no biological assessment methods for lakes.)*

Assessment: Concerning the reliability of status assessment, there has been little progress on these recommendations for lakes which still do not have WFD compliant assessment methods. There has been progress in terms of the biological assessment methods but a major gap exists in terms of monitoring and assessment of hydromorphological quality elements. This recommendation has been partially fulfilled.

- Recommendation: *Focus better the operational monitoring of water bodies on verification of results from the pressures and impacts analysis, e.g. the link between impacts on water bodies and hydromorphological pressures should be addressed. A clear description should be provided on how the biological quality elements were*

*selected in relation to all potential pressures and impacts in both rivers and lakes (reservoirs), and in particular those arising from hydromorphological alterations where fish might be considered as one of the most sensitive biological quality elements to this pressure in rivers and lakes (reservoirs).*

Assessment: Some of the information to assess this recommendation is not available in WISE and would have to be sought from the RBMPs. Fish have been included in the monitoring of rivers and for a few lakes indicating some progress. No hydromorphological quality elements have been assessed in view of classification. This recommendation has been partially fulfilled.

- Recommendation: *Base the assessment of measures for River Basin Specific Pollutants on appropriate Environmental Quality Standards (EQS) in the second RBMPs cycle. (The identification of River Basin Specific Pollutants needs to be more transparent, with clear information on how pollutants were selected, how and where they were monitored, where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status)*

Assessment: There is still a lack of detailed information on how River Basin Specific Pollutants have been selected. However, progress is indicated by the reporting of monitored River Basin Specific Pollutants and related exceedances and also because River Basin Specific Pollutants have been used in the classification of rivers and lakes. The Czech Republic reported Environmental Quality Standards for more substances than those monitored, but none of the standards are reported to be derived in accordance with the 2011 Technical Guidance Document No 27. The analytical methods used for most substances meet the minimum performance criteria laid down in Article 4(1) of the QA/QC Directive (2009/90/EC), and for the others in Article 4(2). The one-out-all-out principle has been used for assessing the overall classification of ecological status in all RBDs. This recommendation has been partially fulfilled.

- Recommendation: *Czech Republic should report quality of lakes.*

Assessment: There were no biological assessment methods for lakes for the first plans. For the second RBMPs 57 lake water bodies were classified for phytoplankton and 18 using fish: no other biological quality elements were used. In the first RBMPs, 71 lake water bodies were identified, one of which was artificial and the remaining 70 were heavily modified water bodies. In the second RBMPs, 77 lake water bodies were identified, four artificial and the remaining 73 heavily modified water bodies that were

created by damming a river. Lakes were characterised into 17 types which were reported in the second RBMPs as being intercalibrated against three common intercalibration types. For the common intercalibration types given in the second intercalibration decision<sup>17</sup> (2013), L-CB1 and L-CB2, Czech Republic is not listed as a country sharing these types which have not been intercalibrated in the Czech Republic and L-CB3 is not included at all. 60 of the 77 lakes were classified in terms of good ecological potential, 17 had unknown status. In terms of this recommendation, the status of lakes has been reported for most lakes but potential has not been intercalibrated. The Czech Republic has made some progress but has not yet fulfilled this recommendation.

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<sup>17</sup> Commission Decision of 20 September 2013 establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, the values of the Member State monitoring system classifications as a result of the intercalibration exercise and repealing Decision 2008/915/EC. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013D0480>

## **Topic 4 Monitoring, assessment and classification of chemical status in surface water bodies**

### **4.1. Assessment of implementation and compliance with WFD requirements in second cycle**

#### **4.1.1. Monitoring of chemical status in surface waters**

##### *Monitoring sites and monitored water bodies used for monitoring of chemical status*

Member States have to implement surveillance and operational monitoring programmes in accordance with the requirements of the WFD and of the EQS Directive, for the assessment of ecological status/potential and chemical status of surface waters. Section 3.1.1 of this report summarises the characteristics of the surveillance and operational monitoring programmes in the Czech Republic for the second RBMP.

Surveillance monitoring programmes should allow Member States to supplement and validate the impact assessment procedure, to efficiently and effectively review the design of their monitoring programmes, and to assess the long-term changes in natural conditions and those resulting from widespread anthropogenic activity. For operational purposes, monitoring is required to establish the status of water bodies identified as being at risk of failing to meet their environmental objectives, and to assess any changes in the status of such water bodies resulting from the programme of measures.

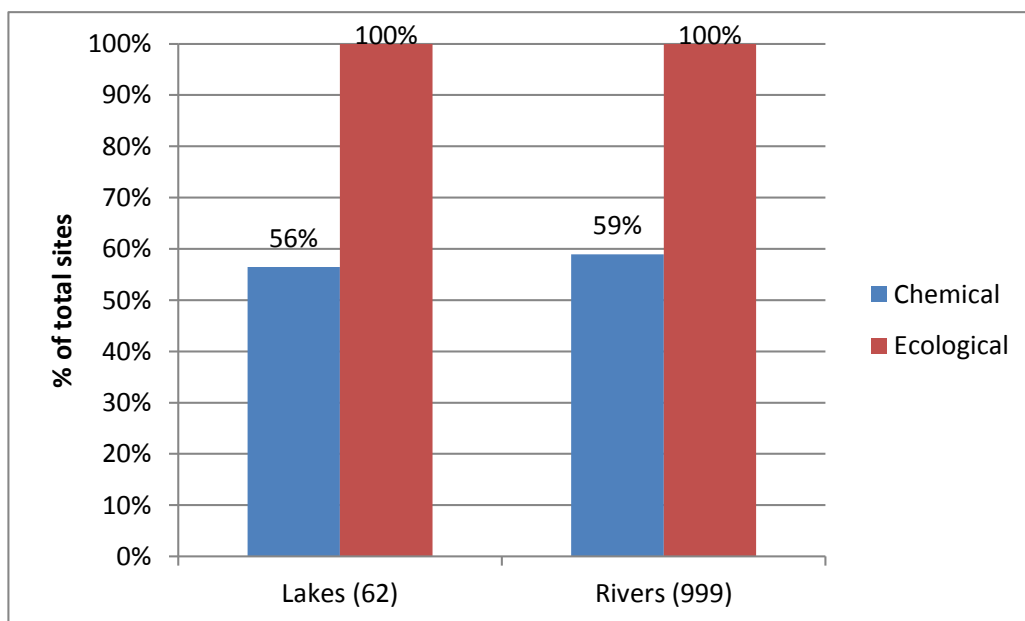
Section 3.1.1 of this report summarises the characteristics of the surveillance and operational monitoring programmes in the Czech Republic for the second RBMP.

Figure 4.1 summarises the proportion of sites used for the monitoring of chemical status in lakes and rivers for the second RBMP. In this figure, no distinction is made between sites used for surveillance and/or operational purposes. More detailed information can be found on the website of the European Environment Agency<sup>18</sup>.

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<sup>18</sup> <https://www.eea.europa.eu/publications/state-of-water>

**Figure 4.1** *Proportion of sites used for monitoring of chemical status and, for comparison, ecological status, in the Czech Republic. The number in parenthesis next to the category is the total number of monitoring sites irrespective of their purpose.*



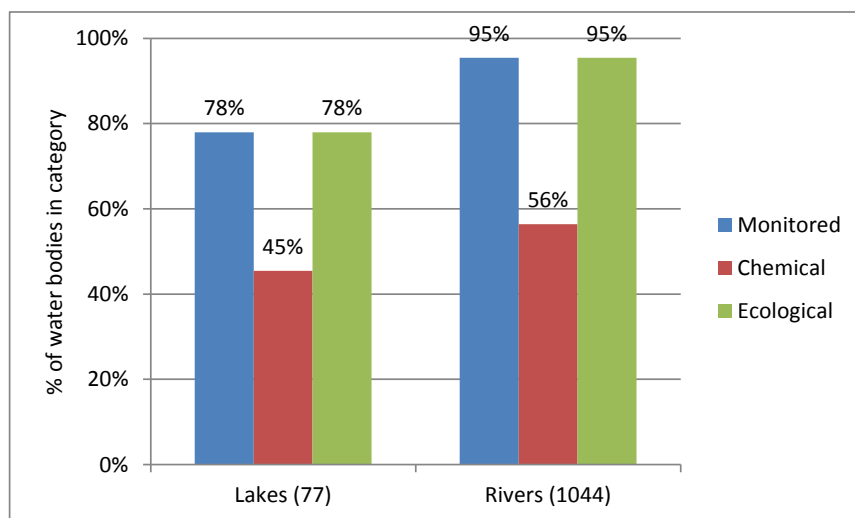
*Source: WISE electronic reports*

All sites are used for the monitoring of ecological status of rivers and lakes but only 59 % and 56 %, respectively, are used for the monitoring of chemical status. For the first RBMP, 57 sites in lakes and 520 sites in rivers were monitored for Priority Substances: the respective numbers for the second RBMP were 35 and 589.

Figure 4.2 summarises the proportion of water bodies monitored for chemical status in lakes and rivers for the second RBMPs. In this figure, no distinction is made between sites used for surveillance and/or operational purposes. Also given is the proportion of water bodies monitored for any purpose and, for comparison, those for ecological status.



**Figure 4.2** *Proportion of total water bodies in each category monitored, monitored for chemical status and, for comparison, monitored for ecological status, in the Czech Republic. The number in parenthesis next to the category is the total number of water bodies in that category.*



*Source: WISE electronic reports*

78 % of lake water bodies and 95 % of river water bodies were monitored for the second RBMPs. All of these were included in the monitoring of ecological status. For chemical status 45 % of lake and 56 % of river water bodies were monitored.

In two of the three RBDs almost all of the water bodies failing to achieve good chemical status are monitored for Priority Substances as part of operational monitoring; in the other (the Elbe RBD) far fewer are monitored; 38 % of rivers and 14 % of the lake water bodies failing to achieve good chemical status.

### ***Long-term trend monitoring and monitoring of Priority substances in water, sediment and biota for status assessment***

#### **Monitoring for status assessment**

##### Requirements

Article 8(1) of the WFD requires Member States to establish monitoring programmes for the assessment of the status of surface water in order to provide a coherent and comprehensive overview of water status within each RBD. The amount of monitoring undertaken in terms of priority substances, frequency and numbers of sites should be sufficient to obtain a reliable and robust assessment of the chemical status of all water bodies in the RBD. In terms of

surveillance monitoring, Member States are required to monitor all priority substances which are discharged into the river basin or sub-basin. For operational purposes, monitoring is required for those bodies of water into which priority list substances are discharged and/or where there is a risk of not achieving good chemical status for a substance.

### Spatial coverage

All priority substances (apart from Indeno(1,2,3-cd)pyrene) were monitored in the Elbe and Oder RBD. In the Danube RBD, Indeno(1,2,3-cd)pyrene, Endosulfan, tributyltin cation and Chloroalkanes C10-13 were not monitored, but all other substances were monitored. The Czech Republic subsequently clarified that Indeno(1,2,3-cd)pyrene was actually monitored.

The number of sites monitored for each substance ranged from 7 to about 80 for surveillance monitoring and from 8 to about 500 for operational monitoring.

The Czech Republic subsequently clarified that priority substances were only monitored in surface water bodies subject to the corresponding pressure. However, a significant number of water bodies failing to achieve good chemical status are subject to unknown anthropogenic pressures (from a quarter of water bodies to about half, depending on the RBDs), so it is unclear how far all relevant pressures have been thoroughly identified.

Five priority substances were reported to be monitored in biota (fish) in rivers (only): Hexachlorobenzene; Fluoranthene; Benzo(a)pyrene; Pentabromodiphenylether; Mercury and Hexachlorobutadiene. The Czech Republic reported to have monitored them in biota for status assessment. The highest number of sites monitored for biota in the Czech Republic as a whole is 21 for Benzo(a)pyrene and Fluoranthene, and the lowest number of sites (15) for Mercury, Hexachlorobutadiene and Hexachlorobenzene.

### Frequencies

The WFD indicates that, for the surveillance and operational monitoring of priority substances in water, the frequency of monitoring should be at least monthly for one year during the RBMP cycle and at least monthly every year, respectively. Monitoring in biota for status assessment should take place at least once every year according to the EQS Directive. In all cases greater intervals can be applied by Member States if justified on the basis of technical knowledge and expert judgement.

Only one substance (Chloroalkanes C10-13) was monitored at the minimum recommended frequency for surveillance monitoring. 30 substances were monitored at the recommended frequency at 80 % of the sites, cadmium at only 6 % of sites.

None of the substances monitored for operational monitoring were monitored at the recommended minimum frequency at all sites: the largest compliance rate (88 % of sites) was for Tributyltin and the lowest (no site) was for Chloroalkanes C10-13. The proportion of sites monitored at least at the recommended minimum frequency ranged from 25 % to 39 % of sites for 31 other substances. In general, fewer sites used for operational monitoring were sampled with the recommended minimum frequency compared to surveillance monitoring.

The Czech Republic subsequently mentioned that for the assessment of chemical status, monitoring frequencies in water ranged from 6 to 12 samples per year. Approximately 40 % of the results are evaluated for parameters with a frequency of 6 – 11 samples per year. Parameters monitored less than six times a year were used to assess status. The assessment of the chemical status for parameters monitored between 6 and 11 times per year was marked as moderately reliable. No explanation could be found for these reduced frequencies.

The sampling frequency in biota is once every year which is the recommended minimum frequency from the EQS Directive.

## **Monitoring for long-term trend assessment**

### **Requirements**

Article 3(6) of Directive 2013/39/EU (amending Article 3(3) of Directive 2008/105/EC) states that “Member States shall arrange for the long-term trend analysis of concentrations of those priority substances listed in Part A of Annex I that tend to accumulate in sediment and/or biota, giving particular consideration to the substances numbered 2, 5, 6, 7, 12, 15, 16, 17, 18, 20, 21, 26, 28, 30, 34, 35, 36, 37, 43 and 44<sup>19</sup> listed in Part A of Annex I, on the basis of the monitoring of surface water status carried out in accordance with Article 8 of Directive 2000/60/EC. Substances numbered 34, 35, 36, 37, 43 and 44 are new priority substances and as such information on trends for them would not be expected to be reported in the second RBMPs. There are therefore 14 priority substances for which monitoring for long-term trends is expected.

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<sup>19</sup> (2) Anthracene, (5) Brominated diphenylether, (6) cadmium, (7) C10-13 chloroalkanes, (12) DEHP, (15) fluoranthene, (16) hexachlorobenzene, (17) hexabutadiene, (18) hexachlorocyclohexane, (20) lead, (21) mercury, (26) pentachlorobenzene, (28) PAH, (30) Tributyltin, (34) Difocol, (35) PFOS, (36) quinoxifen, (37) dioxins, (43) hexabromocyclodecane and (44) heptachlor.

## Spatial coverage

The Czech Republic did not report long-term trend monitoring in WISE. The situation is not entirely clear, as following the reporting of the first RBMP, the Czech Republic clarified that sediment and biota were monitored in the surveillance monitoring network and the international monitoring network. In addition, the background documents for the second RBMP mentioned that monitoring of biota and sediment could be used for long-term trend analysis in the future, but they also highlighted that this trend assessment could not be carried out in the second RBMP, because the methodology for this assessment was not finalised at the time of their adoption.

### ***Monitoring of priority substances that are discharged in each RBD***

Annex V of the WFD states, in Section 1.3.1 (Design of surveillance monitoring), that “Surveillance monitoring shall be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan for [inter alia]: priority list pollutants which are discharged into the river basin or sub-basin.” Section 1.3.2 (Design of operational monitoring) of the directive states that “In order to assess the magnitude of the pressure to which bodies of surface water are subject Member States shall monitor for those quality elements which are indicative of the pressures to which the body or bodies are subject. In order to assess the impact of these pressures, Member States shall monitor as relevant [inter alia]: all priority substances discharged, and other pollutants discharged in significant quantities.”

Member States are therefore required to monitor all priority substances which are discharged into the river basin or sub-basin.

In the Czech Republic, all 41 priority substances and certain other pollutants were in an inventory in all three RBDs.

In the Danube RBD and in the Elbe RBD, 10 and 14 substances were identified as discharged respectively and all were monitored.<sup>20</sup> In the Odra RBD, all 13 discharged substances were monitored<sup>21</sup>. Monitoring extended covered more than priority substances identified as discharged, as described in the above section.

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<sup>20</sup> Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Benzo(b)fluoranthene were identified as discharged and monitoring sites were reported for these substances, however monitoring frequencies were not reported. These substances are then considered as monitored, and the missing information is understood as a reporting mistake.

<sup>21</sup> See footnote above.

### ***Performance of analytical methods used***

In the Czech Republic, for 29 priority substances the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the Directive on technical specifications for chemical analysis and monitoring of water status 2009/90/EC<sup>22</sup>. For the remaining 12 reported substances, the analytical methods complied with Article 4(2) of Directive 2009/90/EC for the strictest standard applied.

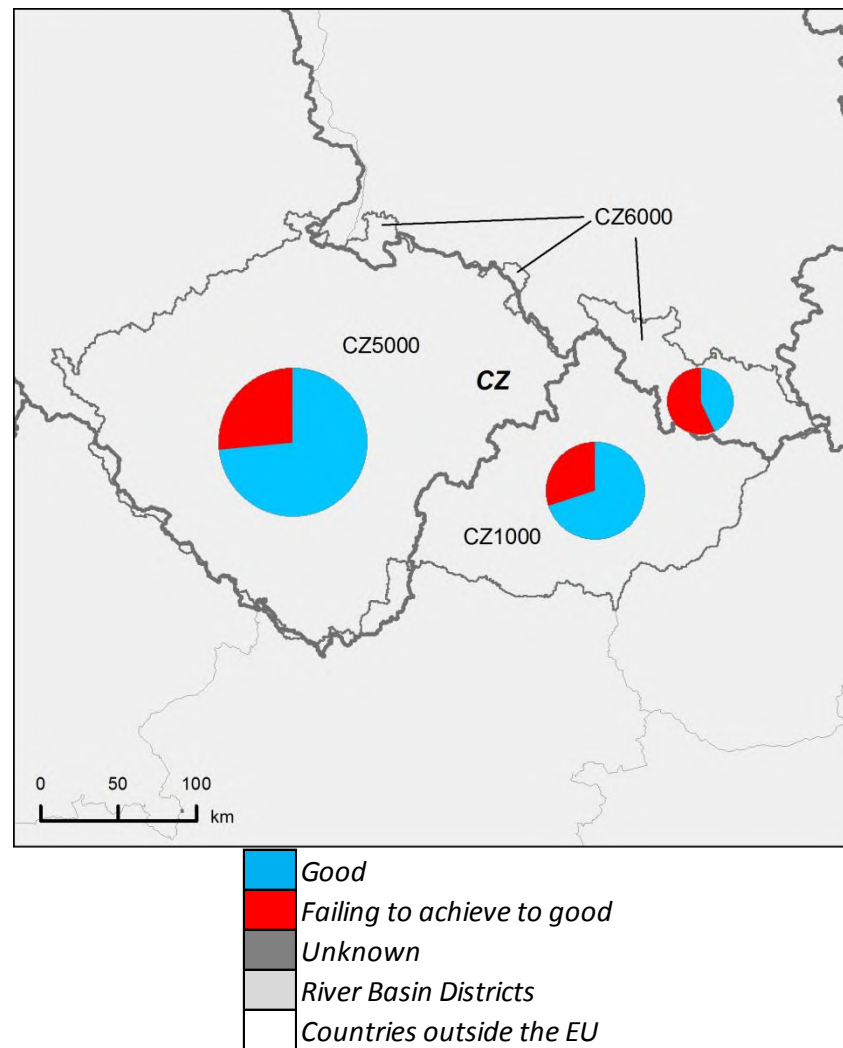
#### **4.1.2. Chemical Status of surface water bodies**

Member States are required to report the year on which the assessment of chemical status is based. This may be the year that the surface water body was monitored. In case of grouping this may be the year in which monitoring took place in the surface water bodies within a group that are used to extrapolate results to non-monitored surface water bodies within the same group. For most (~70%) rivers and lakes in all three RBDs, the assessment of chemical status was undertaken between 2010 and 2012. The most recent assessment year was 2013 but for only at most 1.5 % of river water bodies in the Oder. The chemical status of surface water bodies in the Czech Republic for the second RBMP is illustrated in Map 4.1. This is based on the most recent assessment of status.

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<sup>22</sup> Commission Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0090>

**Map 4.1** *Chemical status of surface water bodies based on the most recently assessed status of the surface water bodies. Note: Standard colours based on WFD Annex V, Article 1.4.3.*



*Source: WISE, Eurostat (country borders)*

The chemical status of lakes and rivers in the Czech Republic for the first and second RBMPs is given in Table 4.1.

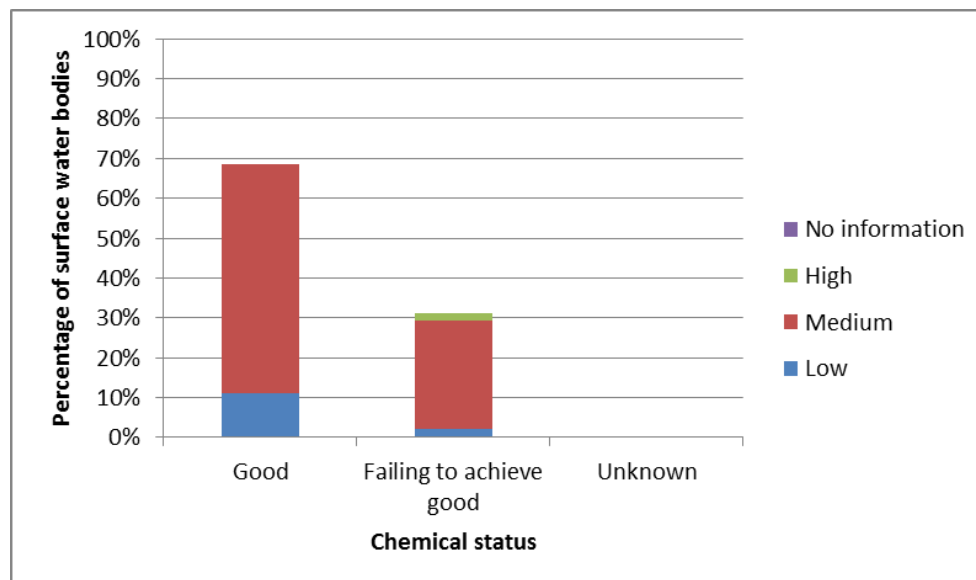
**Table 4.1** *Chemical status of surface water bodies for the second and first RBMPs.*  
*Note: the number in parenthesis next to the water category is the number of water bodies. Note: Chemical status assessment was supposed to be reported based on the standards from the EQS Directive, version in force in 2009, but the Czech Republic used the standards laid down in Directive 2013/39/EU, which amended the EQS Directive. Some Member States did not implement the Directive in the first RBMPs as the transposition deadline was in July 2010, after the adoption of the first RBMPs*

Category	Good		Failing to achieve good		Unknown	
	Number	%	Number	%	Number	%
<b>second RBMP</b>						
Lakes (77)	52	68%	21	27%	4	5%
Rivers (1044)	716	69%	328	31%	0	0%
<i>Total (1121)</i>	<i>768</i>	<i>69%</i>	<i>349</i>	<i>31%</i>	<i>4</i>	<i>0.4%</i>
<b>first RBMP</b>						
LW (71)	59	83.1%	12	16.9%	0	0%
RW(1069)	744	69.6%	318	29.7%	7	0.7%
<i>Total (1140)</i>	<i>803</i>	<i>70%</i>	<i>330</i>	<i>29%</i>	<i>7</i>	<i>1%</i>

Expert judgment has been used significantly: non-monitored water bodies were generally considered to be without pressures and were classified in good status (this was the case for 41 % of all surface water bodies). However it is not clear whether all significant pressures have been identified for all water bodies, as a significant proportion of river water bodies monitored and failing to achieve good chemical status are subject to unknown anthropogenic pressures.

Figure 4.3 shows the confidence in the classification of chemical status for the second RBMP. Most of the classifications are given a medium level of confidence. Confidence in the classification of chemical status for the first RBMPs was not reported.

**Figure 4.3** *Confidence in the classification of chemical status of surface water bodies based on the most recently assessed status/potential.*



*Source: WISE electronic reports*

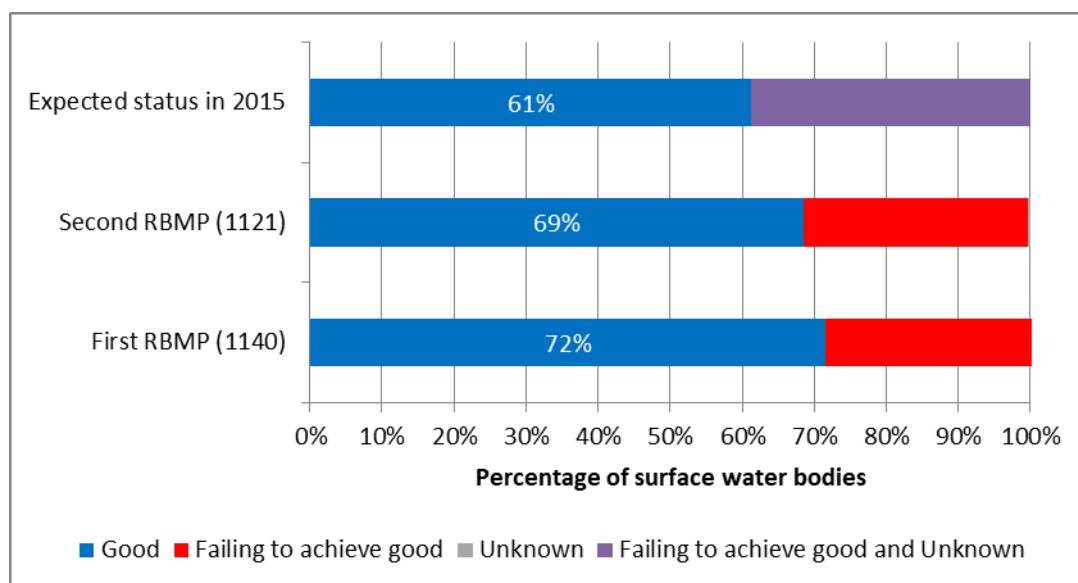
Figure 4.4 presents the chemical status of surface water bodies in the Czech Republic for the first RBMP, that for the second RBMP (based on the most recent assessment of status) and that expected by 2015. The Czech Republic highlights that a direct comparison is not meaningful, in particular because of the re-delineation of water bodies between the first and second RBMPs, because of the increase in monitoring, and the use of the biota standard in particular for mercury, and the use of the 2013 standards.

The assessment of chemical status for the second RBMP was expected to be based on the standards laid down in EQS Directive 2008/105/EC (version in force on 13 January 2009<sup>23</sup>). Some Member States did not implement the Directive in the first RBMPs as the transposition deadline was in July 2010, after the adoption of the first RBMPs.

<sup>23</sup> Please note that Directive 2013/39/EU, which amended the Environmental Quality Standards Directive, introduced a less stringent annual average environmental quality standard for Naphthalene in transitional and coastal waters. This less stringent environmental quality standard should be taken into account for the determination of surface water chemical status by the 2015 deadline laid down in Article 4 of the WFD.



**Figure 4.4** *Chemical status of surface water bodies in the Czech Republic for the second RBMP, for the first RBMP and expected in 2015. The number in the parenthesis is the number of surface water bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2006 to 2013. The year of the assessment of status for the first RBMP is not known.*



Source: WISE electronic reports

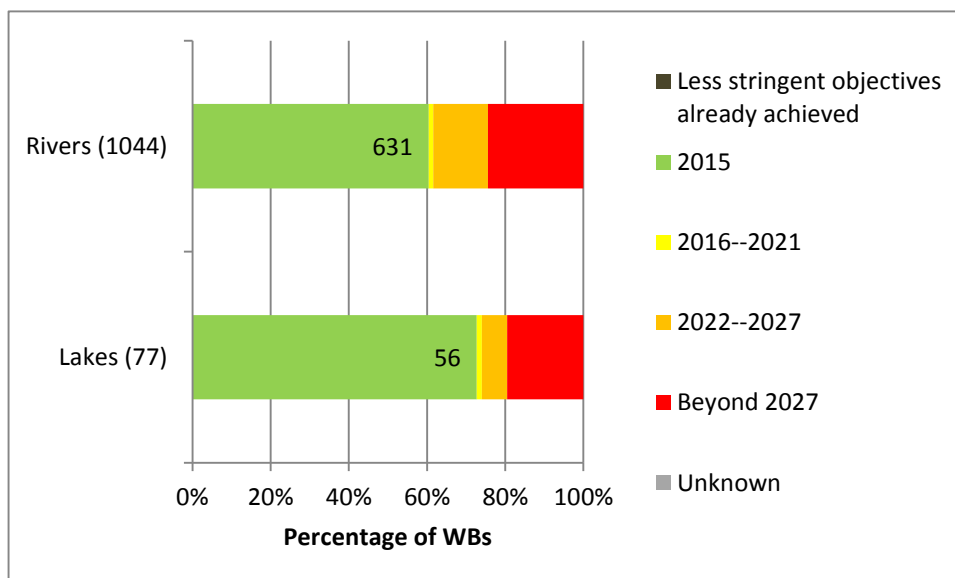
Directive 2013/39/EU amended the EQS Directive. In particular, it sets more stringent environmental quality standards for seven substances<sup>24</sup>. Member States were required to indicate if the new standard caused the status of the surface water body to appear to deteriorate. This was the case for fluoranthene in 21 % of surface water bodies in the Czech Republic as a whole, and for nickel and benzo(a)pyrene in 15 % of surface water bodies. The new standards for lead, brominated diphenylethers and anthracene also lead to failure in a more limited proportion of water bodies.

Good chemical status should be reached by 2021 in relation to the revised environmental quality standards, unless Member States apply exemptions under WFD Article 4(4) or less stringent objectives under WFD Article 4(5).

The expected date for the achievement of good chemical status is shown in Figure 4.5. 73 % of lakes and 60 % of rivers were expected to be at good chemical status by the end of 2015. 19 % of lakes and 24 % of rivers are not expected to achieve good chemical status until beyond 2027.

<sup>24</sup> Anthracene, Brominated diphenylether, Fluoranthene, Lead and its compounds, Naphthalene, Nickel and its compounds, Polyaromatic hydrocarbons (PAH)

**Figure 4.5** *Expected date of achievement of good chemical status of surface water bodies in the Czech Republic The number in the parenthesis is the number of water bodies in each category.*



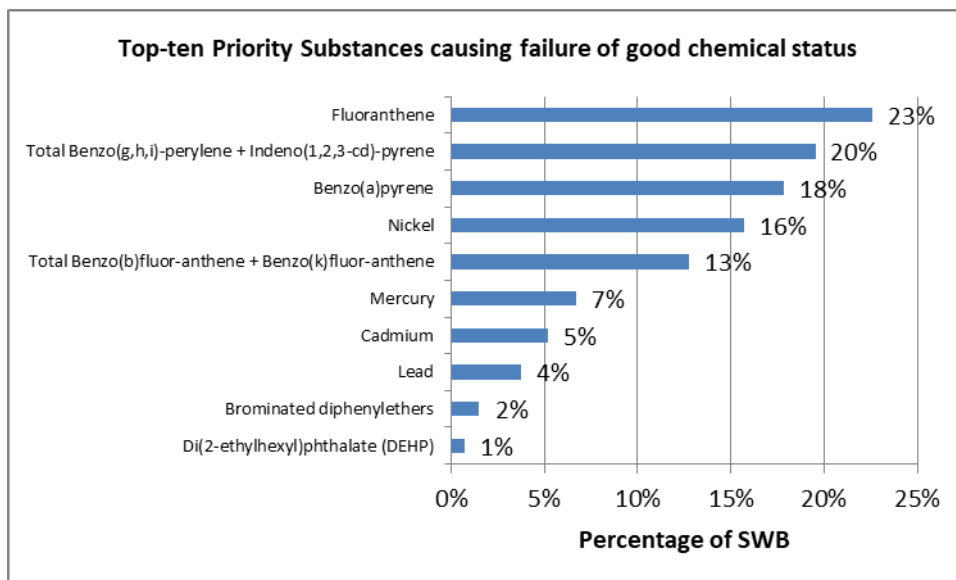
Source: WISE electronic reports

**Priority substances causing the failure of good chemical status**

Member States were expected to report exceedances based on the revised, more stringent standards from directive 2013/39/EU.

20 Priority Substances were reported to be causing failure to achieve good chemical status in surface water bodies in the Czech Republic. The “top-ten” in terms of the proportion of water bodies failing because of the substance are shown in Figure 4.6.

**Figure 4.6** *The top-ten Priority Substances causing failure to achieve good chemical status in surface water bodies.*



Source: WISE electronic reports

Overall for surface water bodies in the Czech Republic, the largest proportion of exceedances were for the annual average environmental quality standard for benzo(a)pyrene (16 %), fluoranthene (15 %) and nickel (14 %). Exceedances of maximum allowable concentration environmental quality standards were largest for total benzo(g,h,i)-perylene + indeno(1,2,3-cd)-pyrene (18 %) and total benzo(b)fluor-anthene + benzo(k)fluor-anthene (12 %). In terms of overall exceedances (of either type of standards), the largest proportion was for fluoranthene (6 %).

### ***Ubiquitous persistent, bioaccumulative and toxic Priority Substances***

Article 8(a) of Directive 2013/39/EU<sup>16</sup> allows Member States to provide additional maps that present the chemical status information for one or more of the following substances separately from the information for the rest of the substances identified in Part A of Annex I to this Directive: these are the substances numbered 5, 21, 28, 30, 35, 37, 43 and 44<sup>25</sup> which are substances behaving like ubiquitous persistent, bioaccumulative and toxic substances.

The effect of ubiquitous persistent, bioaccumulative and toxic priority substances on the classification of chemical status was identified as minimal in the Czech Republic. In lakes, 21 % of water bodies are failing if all 41 substances are taken into account, while 20 % are failing

<sup>25</sup> (5) Brominated diphenylether, (21) Mercury and its compounds, (28) Polyaromatic hydrocarbons (PAH), (30) Tributyltin, (35) PFOS, (37) dioxins, (43) Hexabromocyclodecane and (44) Heptachlor

if the ubiquitous persistent bioaccumulative and toxic substances are omitted. For rivers, the difference is slightly higher (4 % of water bodies are failing because of ubiquitous, persistent bioaccumulative and toxic substances only).

This is illustrated in the 2018 State of Water report of the European Environment Agency<sup>26</sup>. The low impact of these substance on the overall status might partly result from what appears to be a very limited spatial coverage of biota monitoring for mercury.

### ***Priority substances used in the assessment of chemical status compared to those monitored***

All priority substances are taken into account in the assessment of chemical status. Endosulfan, Tributyltin-cation and Chloroalkanes C10-13 are monitored in the Elbe and the Oder RBD, but not in the Danube RBD. Indeno(1,2,3,-cd)pyrene is not reported to be monitored in any of the RBDs, however the Czech Republic clarified this substance was actually monitored. All other substances are reported to be monitored.

It is unclear how the non-monitored substances were taken into account in the assessment of status.

### ***Application of alternative environmental quality standards for water, biota and sediment***

According to the EQS Directive, Member States may opt to apply environmental quality standards for another matrix than the one specified in the directive for a given substance. If they do so, they have to ensure the environmental quality standard they set in the other matrix (or matrices) offers at least the same level of protection as the standard established in the directive.

The Czech Republic has applied all of the environmental quality standards laid down in Annex I of Directive 2008/105/EC (version in force on 13 January 2009)<sup>27</sup>.

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<sup>26</sup> <https://www.eea.europa.eu/publications/state-of-water> (p40-41 of the report). Also available in a more interactive format at :  
[https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE\\_SOW\\_SWB\\_Chemical\\_Status\\_Maps/SWB\\_Failing\\_Good\\_Chemical\\_Status\\_RBD?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display\\_count=no&:showVizHome=no](https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_SWB_Chemical_Status_Maps/SWB_Failing_Good_Chemical_Status_RBD?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no)

<sup>27</sup> Except for the annual average environmental quality standard for Naphthalene in transitional and coastal waters, for which the revised standards from Directive 2013/39/EU was used, as requested by the Guidance Document on Reporting.

### *Use of mixing zones*

Article 4 of Directive 2008/105/EC provides Member States with the option of designating mixing zones adjacent to points of discharge. Concentrations of substances may exceed the relevant environmental quality standards within such mixing zones if they do not affect the compliance of the rest of the body of surface water with those standards. Member States that designate mixing zones are required to include within their RBMPs a description of the approaches and methodologies applied to define such zones, and of measures taken with a view to reducing the extent of the mixing zones in the future.

Mixing zones have not been designated in the Czech Republic.

### *Background Concentrations and Bioavailability*

Directives 2008/105/EU and 2013/39/EU stipulate that Member States may, when assessing the monitoring results against the environmental quality standard, take into account:

(a) natural background concentrations for metals and their compounds, if they prevent compliance with the environmental quality standard, and;

(b) hardness, pH or other water quality parameters that affect the bioavailability of metals.

In all three RBDs, natural background concentrations for metals were considered where such concentrations prevented compliance with the relevant environmental quality standard.

None of the RBDs took into account bioavailability when assessing compliance for metals.

## **4.2. Main changes in implementation and compliance since first cycle**

Between the two RBMPs, there has been an increase in the number of sites and water bodies monitored for priority substances and an increase in the number of priority substances monitored. In the second RBMPs, the Czech Republic also used the biota standards and the more stringent standards from Directive 2013/39/EU, and metals were monitored in the dissolved phase, as required by the Directive.

Some information given in the second RBMP did not seem consistent with the information reported in the WISE e.g. on whether the assessment was based on monitoring data only or

also on expert judgement. For the first RBMP the assessment of status was based mainly on pressure data.

There was a re-delineation of surface water bodies between the two RBMP (with a slight decrease in the overall number of water bodies, from 1140 to 1121). Because of this re-delineation, and of the other main changes mentioned above, a direct comparison of status between the first and second RBMP is difficult.

The Czech Republic reported some improvements for 22 priority substances (the concentrations of these substances were previously above the relevant standards, but have decreased below this standards in the second RBMP in at least some water bodies). This was the case for example for cadmium (12 % of all water bodies), mercury (12 %), lead (7 %), nickel (7 %) and total benzo(g,h,i)-perylene + indeno(1,2,3-cd)-pyrene (3 %).

### **4.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

The two following recommendations are assessed jointly

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

And

- Recommendation: *Ensure in the second RBMPs that measures adopted in the Programme of Measures are based on a reliable status assessment of water bodies (clear setting of the scale of pressures, measures needed to fully address the pressures and proportion of these measures) and are linked to the relevant pressures. The explanation of the links between pressures and status and respective measures should be included in the update of the RBMPs.*

Assessment: These recommendations apply to a number of topics. The assessment of chemical status in the second RBMPs is based on improved knowledge, in particular thanks to the increase in the number of sites and water bodies monitored for priority

substances, and thanks to the increase in the number of priority substances monitored. In the second RBMPs, metals are assessed based on dissolved concentrations, as required by the directive, and biota standards were used, which also represents an improvement compared to the first RBMPs.

However, a large proportion of water bodies are classified as being in good chemical status based on expert judgment and the basis for this expert judgment is not entirely clear as it seems that not all significant pressures were properly identified. A significant proportion of water bodies has been assessed as failing to achieve good chemical status based on monitoring results yet identified as being subject to unknown anthropogenic pressures.

Most but not all priority substances used in the assessment of chemical status are monitored. It is not entirely clear how status was assessed for the non-monitored substances.

Therefore, as regards the assessment of chemical status, these recommendations have been partially met.

- Recommendation: *“Present in the second RBMPs a clear assessment of the number of water bodies failing to reach good status due to agriculturally derived pressures because diffuse sources of pollution from nitrogen and pesticides were identified as the main significant pressures from agriculture in the Czech Republic. The Czech Republic should start measures to control diffuse sources of pollution outside of NVZs [Nitrates Vulnerable Zones] and the Czech Republic should improve controls of hydromorphological pressures from agriculture. The Czech Republic should report quality of lakes.”*

Assessment: The Czech Republic has reported diffuse source pollution from agriculture as a significant pressure. Though there is not necessarily a one-to-one link between a pressure and chemical substances causing failure of objectives, the Czech Republic has reported pesticides which are either a priority substance or a river basin specific pollutant as causing failure of objectives. Nutrients were not reported as River Basin Specific Pollutants in this context, but they were considered under the general physico-chemical quality elements for the ecological status. The Czech Republic has also reported the relevant Key Types of Measure (KTM2 - Reduce nutrient pollution from agriculture, KTM3 - Reduce pesticides pollution from agriculture, Reduce nutrient and/or pesticide pollution from agriculture) to tackle diffuse agricultural pressures and has given

indicators of the gaps to be filled to achieve the objectives, these are: Load (tonne per year) of nitrogen to be reduced to achieve objectives; Number of surface water bodies failing environmental quality standards for nitrogen or pesticides originating from diffuse agriculture sources; and Number of water bodies failing environmental quality standards for pesticides originating from diffuse agricultural sources.

The chemical quality of lakes was monitored and the status assessed in both the first and the second RBMPs.

This information indicates that this recommendation has been met.

- Recommendation: *More clarity is needed as to which priority substances were monitored in which water bodies and in the event that some substances were not analysed because they were considered as not relevant, based on the pressures and impacts analysis, a justification should be added.*

Assessment: The Czech Republic has reported information at the site and water body level on which chemical substances are monitored for surveillance and operational purposes.

According to further information provided by the Czech Republic, all priority substances were monitored in the Elbe and Oder RBD. In the Danube RBD, endosulfan, tributyltin cation and chloroalkanes C10-13 were not monitored, but all other substances were. In particular, all priority substances identified as discharged were monitored in each RBD. The Czech Republic highlighted that priority substances were only monitored in surface water bodies subject to the corresponding pressure. However, it seems that significant pressures may not always have been identified properly, as a significant number of water bodies failing to achieve good chemical status are subject to unknown anthropogenic pressures

This recommendation has been partially fulfilled.

- Recommendation: *Focus better the operational monitoring of water bodies on verification of results from the pressures and impacts analysis, e.g. the link between impacts on water bodies and hydromorphological pressures should be addressed. Furthermore, the Czech Republic should clarify the link between the pollution by hazardous substances and their sources. The Czech Republic should consider necessary changes in operational monitoring to pick up potential polluting loads.*



Assessment: In two of the three RBDs almost all of the water bodies failing to achieve good chemical status are covered by operational monitoring, in the remaining RBD far less are monitored (38 % of rivers and 14 % of the lake water bodies). It is not clear why the spatial extent of monitoring is more limited in the third RBD.

This recommendation has been partially fulfilled.

- Recommendation: *Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQS Directive, unless water environmental quality standards providing an equivalent level of protection are derived. Trend monitoring in sediment or biota for the substances specified in EQS Directive Article 3(3) will also need to be reflected in the next RBMP.*

Assessment: All 3 substances are reported to be monitored in fish for status assessment, in what appears to be a very limited number of sites. The sampling frequency meets the recommended minimum frequency.

No monitoring of trend was reported in WISE. From the RBMP and background document, it is unclear whether the Czech Republic performed any monitoring for long-term trend analysis.

This recommendation is partially fulfilled.

## Topic 5 Monitoring, assessment and classification of quantitative status of groundwater bodies

### 5.1. Assessment of implementation and compliance with WFD requirements in second cycle

#### 5.1.1. Monitoring of quantitative status in groundwater

The total number of groundwater bodies in the Czech Republic is 174 (Table 2.3). Only 11 groundwater bodies are not subject to monitoring for quantitative status (Table 5.1). This means that 6 % of groundwater bodies are not monitored and in terms of area this equates to about 1 %. For each RBD, more than 90 % of groundwater bodies are monitored, with 96 % monitoring in the Elbe (Table 5.2). The number of monitored groundwater bodies has increased from 75 in the first cycle to 163 in the second. No grouping of groundwater bodies for monitoring and assessment of quantitative status was applied.

The number of monitoring sites is listed in Table 5.3 and shows that the number of monitoring sites for quantitative status was 1,559 in the second cycle. This has increased significantly from 268 in the first cycle. In the Danube and the Oder the number of sites is now almost three-times higher and in the Elbe it increased by nearly 20-times (from 49 to 938) compared to the first cycle.

**Table 5.1** *Number of water bodies directly monitored and the purpose of monitoring*

European Union RBD Code	Total groundwater bodies directly monitored	Monitoring Purpose					
		CHE - Chemical status	NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	OPE - Operational monitoring	QUA – Quantitative status	SOE - EIONET State of Environment monitoring	SUR - Surveillance monitoring
CZ1000	49	45	45	45	49	45	45
CZ5000	96	96	96	96	96	96	96
CZ6000	18	18	18	18	18	18	18

*Source: WISE electronic reporting*

**Table 5.2** *Proportion of groundwater bodies monitored for quantitative status*

European Union RBD Code	No of groundwater bodies with quantitative monitoring	Total No. groundwater bodies	% of total groundwater bodies monitored for quantitative status
CZ1000	49	54	90.74%
CZ5000	96	100	96.00%
CZ6000	18	20	90.00%

*Source: WISE electronic reporting*

**Table 5.3** *Number of groundwater monitoring sites and their purpose*

European Union RBD Code	Total groundwater monitoring sites	Monitoring Purpose					
		CHE - Chemical status	NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	OPE – Operational monitoring	QUA – Quantitative status	SOE - EIONET State of Environment monitoring	SUR – Surveillance monitoring
CZ1000	468	180	152	180	444	165	180
CZ5000	1,047	529	409	529	938	497	529
CZ6000	186	61	50	61	177	55	61

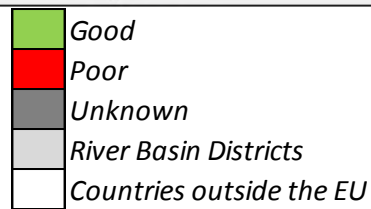
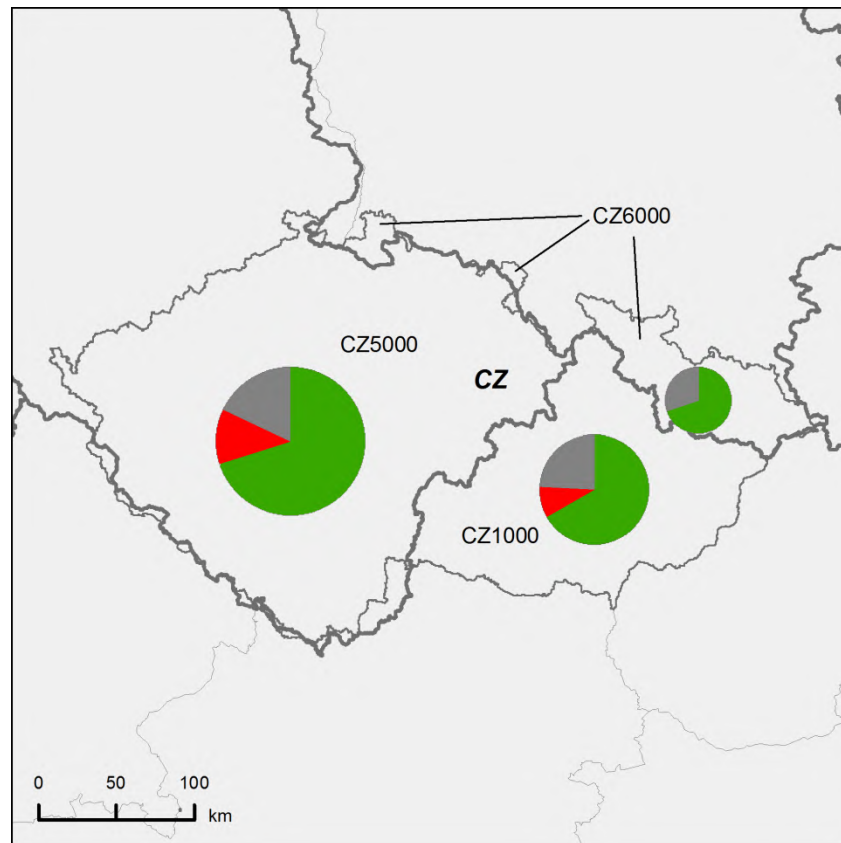
*Source: WISE electronic reporting*

### **5.1.2. Assessment and classification of quantitative status for groundwater**

Map 5.1 displays the most recently assessed quantitative status of groundwater bodies. It shows that 69 % of groundwater bodies overall were in good quantitative status, 10 % are failing good status and 21 % have unknown status (Figure 5.1). In terms of area, this means that about 5 % are failing good quantitative status and 6 % are of unknown status. Figure 5.2 shows the confidence in status classifications, with all the unknown status classifications at low confidence.

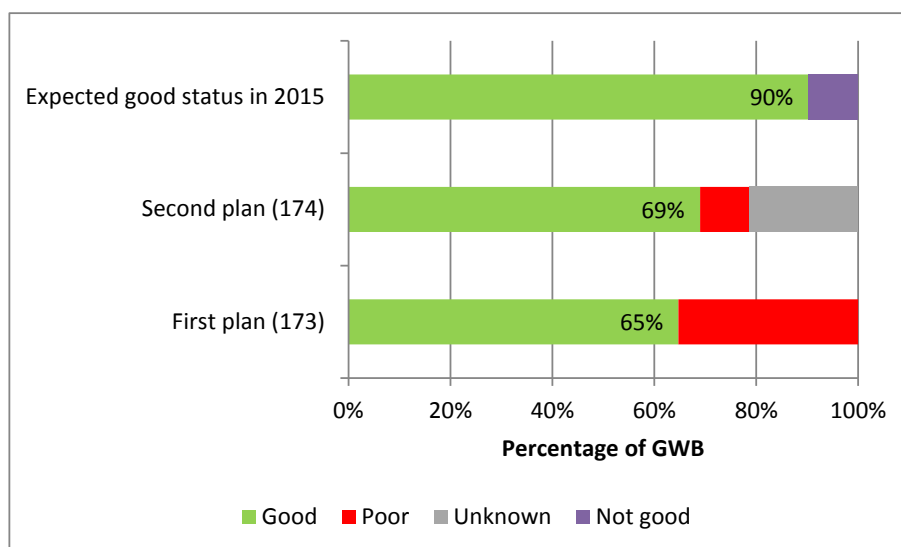
In the Danube and the Oder, the number of groundwater bodies in good status decreased since the first cycle from 39 to 36 and 16 to 14 respectively. Only in the Elbe RBD did the number of groundwater bodies at good status increase since the first cycle from 57 to 70. In the first cycle, 61 groundwater bodies were reported to be at poor status and in the second cycle this number decreased to 17. However, in all RBDs there is a considerable number of groundwater bodies reported to be of unknown quantitative status and this has increased from 0 in 2010 to 37 in the second cycle.

**Map 5.1** *Map of the most recently assessed quantitative status of groundwater bodies s.*  
*Note: Standard colours based on WFD Annex V, Article 2.2.4.*



Source: WISE, Eurostat (country borders)

**Figure 5.1** *Quantitative status of groundwater bodies in the Czech Republic for the second RBMP, for the first RBMP and expected in 2015. The number in parenthesis is the number of groundwater bodies for both cycles. Note that the period of the assessment of status for the second plan was 2007 to 2012. The year of the assessment of status for the first RBMP is not known.*

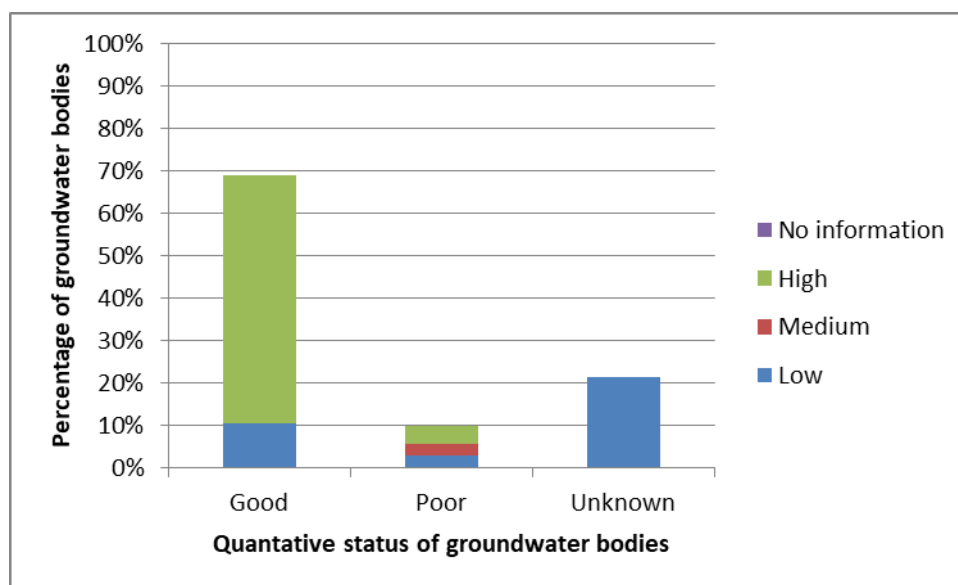


Source: WISE electronic reporting

A water balance method was applied in each RBD to assess quantitative status. However, only the water balance has been considered in quantitative status assessment which means that not all environmental objectives have been taken into account.

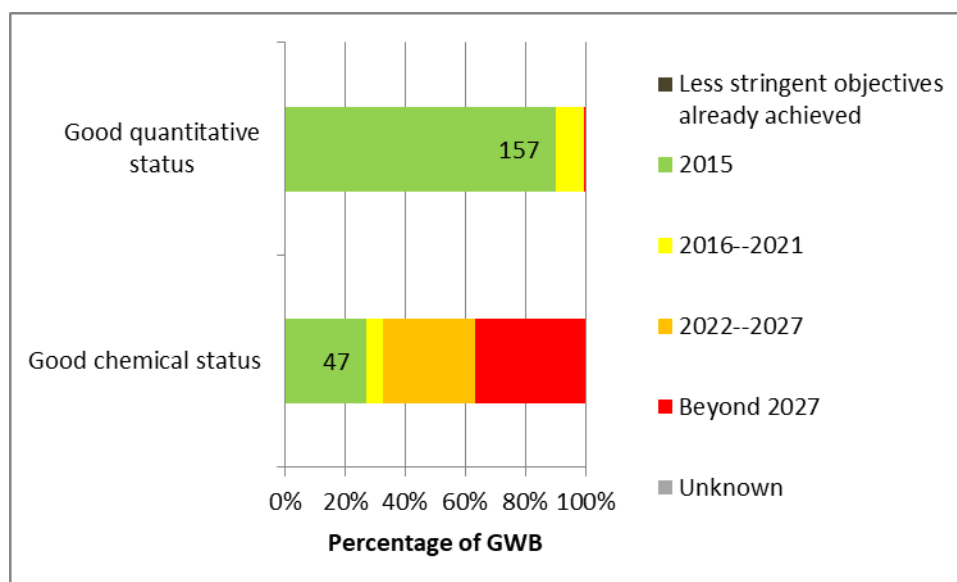
The reasons for the failure of good quantitative status of groundwater bodies are shown in Figure 5.3. It is shown that water balance is the only reason for not achieving good quantitative status. This means the long-term annual average rate of abstraction exceeds the available groundwater resource which may result in a decrease of groundwater levels. The expected date of achievement of good quantitative status in the Czech Republic is shown in Figure 5.3, with less than 1 % (one water body) expected to achieve good status beyond 2027.

**Figure 5.2** *Confidence in the classification of quantitative status of groundwater bodies based on the most recent assessment of status.*



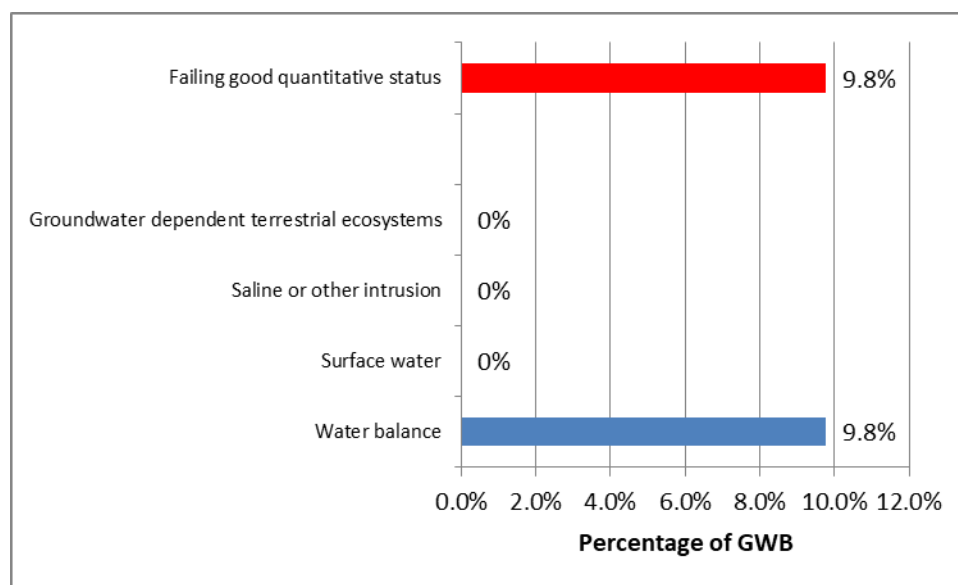
Source: WISE electronic reporting

**Figure 5.3** *Expected date of achievement of good quantitative and good chemical status of groundwater bodies in the Czech Republic. 174 groundwater bodies delineated for the second RBMP.*



Source: WISE electronic report

**Figure 5.4** *Reasons for the failure of good quantitative status of groundwater based on the most recent assessment of status.*



*Source: WISE electronic reporting*

Notes:

‘Water balance’ = long-term annual average rate of abstraction exceeds the available groundwater resource which may result in a decrease of groundwater levels.

‘Surface water’ = Failure to achieve Environmental Objectives (Article 4 WFD) for associated surface water bodies resulting from anthropogenic water level alteration or change in flow conditions; significant diminution of the status of surface waters resulting from anthropogenic water level alteration or change in flow conditions.

‘Groundwater dependent terrestrial ecosystems’ = Significant damage to groundwater dependent terrestrial ecosystems resulting from an anthropogenic water level alteration.

‘Saline or other intrusion’ = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.

### **5.1.3. Consideration of groundwater associated surface waters and/or groundwater dependent ecosystems**

Groundwater associated aquatic ecosystems and groundwater dependent terrestrial ecosystems were not considered at all in quantitative status assessments. In the first RBMPs some groundwater dependent terrestrial ecosystems were identified, but they are now not referred to in the second RBMPs<sup>28</sup>.

70 groundwater bodies are linked to surface waters but the related risk is not indicated. Associated surface waters are only considered in the chemical status assessment. No

<sup>28</sup> Czech Republic subsequently clarified, that groundwater bodies linked to groundwater dependent terrestrial ecosystems were reported in the second RBMP as protected areas, because they were identified based on NATURA 2000 sites with link to groundwater. However, they were not used for groundwater status assessment because of lack of a methodology.

information was found in the RBMPs or supporting information as to why they were not considered in quantitative status assessment.

## **5.2. Main changes in implementation and compliance since first cycle**

The monitoring situation has improved: The number of quantitative monitoring sites increased significantly from 268 to 1559 as did the number of groundwater bodies which are covered by monitoring. Still 11 groundwater bodies, representing 1 % of the Czech Republic area, are not subject to quantitative monitoring, but no explanation of the reasons was found.

The status changes show slight improvements but also drawbacks: the number of groundwater bodies in good status increased from 112 to 120 and the number of groundwater bodies in poor status drastically dropped from 61 to 17. But most of these groundwater bodies, where the poor status changed, are now of unknown status (37 groundwater bodies). The changes are mainly caused by changed values for the available groundwater resources.

The methodology of status assessment changed, but no information was found on what has been done in detail. Groundwater associated aquatic ecosystems and groundwater dependent terrestrial ecosystems are still not considered at all in status assessment<sup>29</sup>. It was mentioned that due to amending the methodology, the values for the available groundwater resources changed which led to the considerable changes in status, in particular the number of groundwater bodies of unknown status which increased from 0 to 37.

## **5.3. Progress with Commission recommendations**

There were no Commission recommendations based on the first RBMPs and Programme of Measures.

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<sup>29</sup> Even if groundwater dependent terrestrial ecosystems are reported as protected areas, as mentioned before.



## **Topic 6 Monitoring, assessment and classification of chemical status of groundwater bodies**

### **6.1. Assessment of implementation and compliance with WFD requirements in second cycle**

#### **6.1.1. Monitoring of chemical status in groundwater**

The total number of groundwater bodies in the Czech Republic is 174 (Table 2.3). Only 15 groundwater bodies are not subject to surveillance monitoring (Table 5.1) and not all groundwater bodies at risk are subject to operational monitoring. No grouping of groundwater bodies for the monitoring and assessment of chemical status was applied. Grouping was used for groundwater body delineation, whereby groundwater bodies with similar natural conditions were grouped into larger units, but for chemical status assessment they were split to smaller units and each unit was assessed separately.

The number of monitoring sites is listed in Table 5.3 and shows that the number of monitoring sites for chemical status was 730 in 2015 which was the same number of surveillance monitoring sites. The number of monitoring sites for chemical status of groundwater has increased significantly since 2010. In the Danube and the Oder the number of sites almost doubled and in the Elbe the number of sites increased by nearly 18-times (from 38 to 529) compared to 2010.

Not all substances at risk of causing deterioration in chemical status are subject to surveillance monitoring<sup>30</sup>. The WFD core parameters oxygen, conductivity and pH are not covered at all by surveillance monitoring sites.

#### **6.1.2. Assessment and classification of chemical status in groundwater**

Map 6.1 and Figure 6.1 display the chemical status of groundwater chemical status of groundwater bodies based on the most recently assessed status. It shows that 27 % of groundwater bodies overall were in good chemical status, and the remaining 63 % in poor status. In all three RBDs the number of groundwater bodies in poor status decreased since 2010 but still nearly 127 of 174 groundwater bodies (73 %) are in poor status.

Figure 6.1 also shows that the percentage of groundwater bodies in good status has increased from 21 % in 2010 to 27 % in 2015. There were no groundwater bodies in unknown status in

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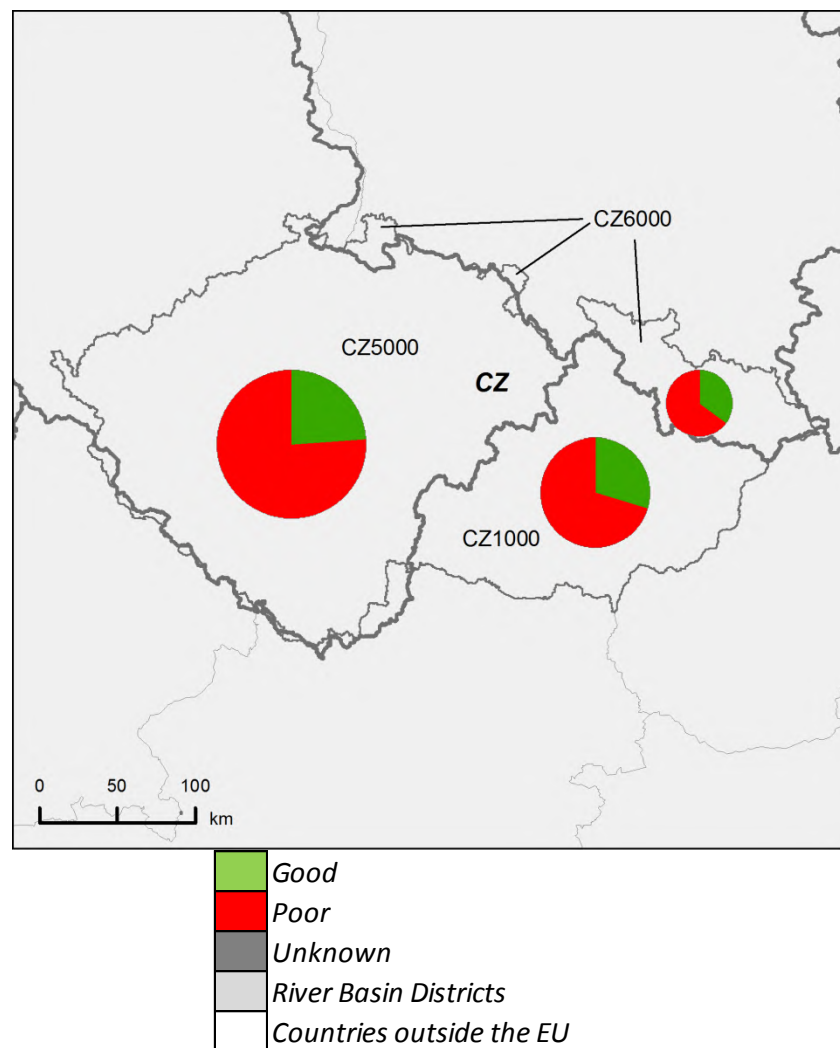
<sup>30</sup> The Czech Republic subsequently highlighted that pesticides (in general) and some individual pesticide substances in particular (e.g. acetochlor or metalochlor) were subject to risk assessment and 35 individual pesticides or their metabolites were subject to surveillance and operational monitoring.

2010 and there are still none in 2016. Figure 6.2 shows the confidence in status classifications, with 9 % of good and poor status classifications of low confidence.

The reasons for the failure of good chemical status of groundwater bodies are shown in Figure 6.3. The main reason (127 groundwater bodies) is the failing of the general quality test and the surface water body test (53 groundwater bodies). Figure 6.4 shows the top 10 pollutants causing failure of status (e.g. nitrate) and Figure 6.5 shows the top 10 causing a sustained upward trend (e.g. nickel).

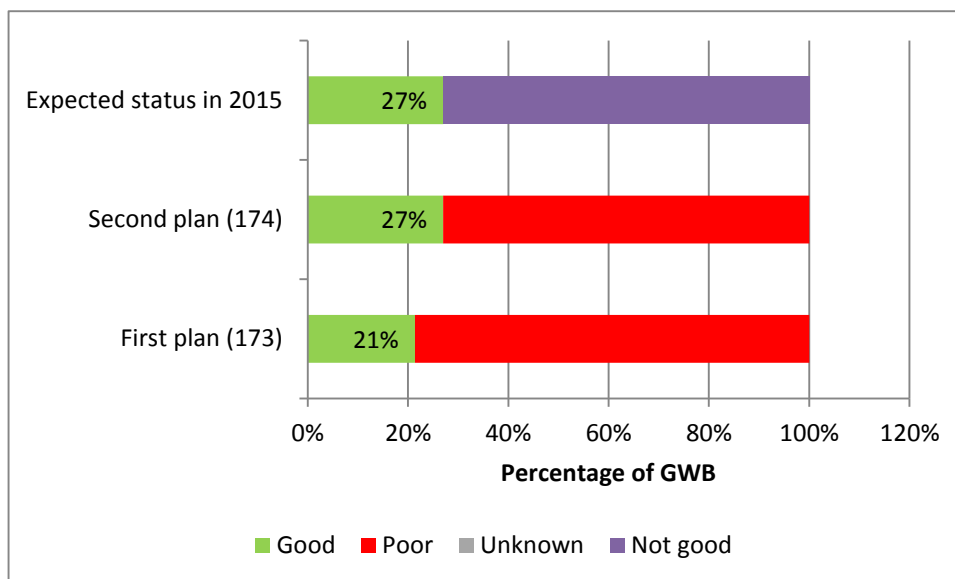
**Map 6.1** *Map of chemical status of groundwater bodies based on the most recently assessed status of the groundwater water bodies.*

Note: Standard colours based on WFD Annex V, Article 2(4)5.



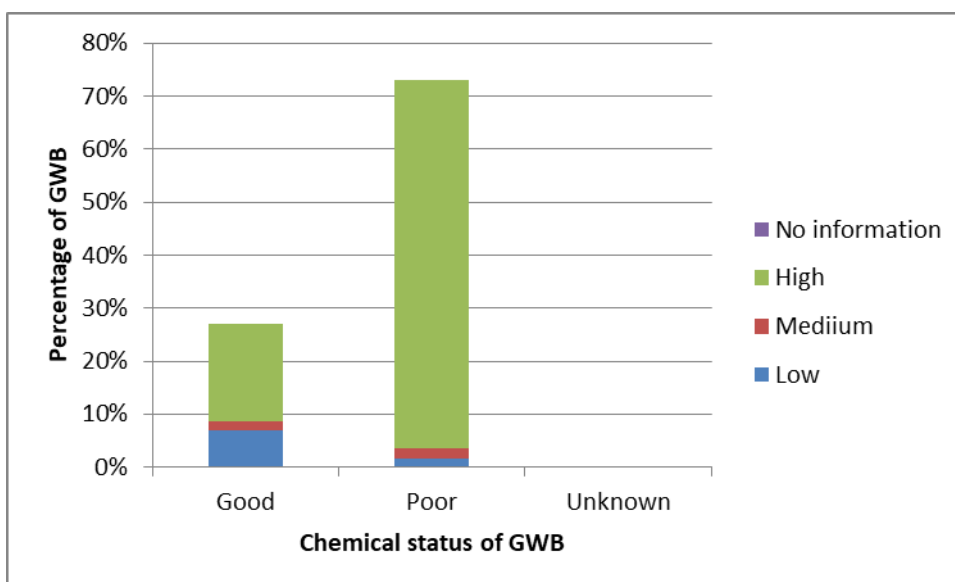
Source: WISE, Eurostat (country borders)

**Figure 6.1** *Chemical status of groundwater bodies in the Czech Republic for the second plan, for the first plan and expected in 2015. The number in the parenthesis is the number of groundwater bodies for both cycles. Note the period of the assessment of status for the second plan was 2007 to 2012. The year of the assessment of status for first plan is not known.*



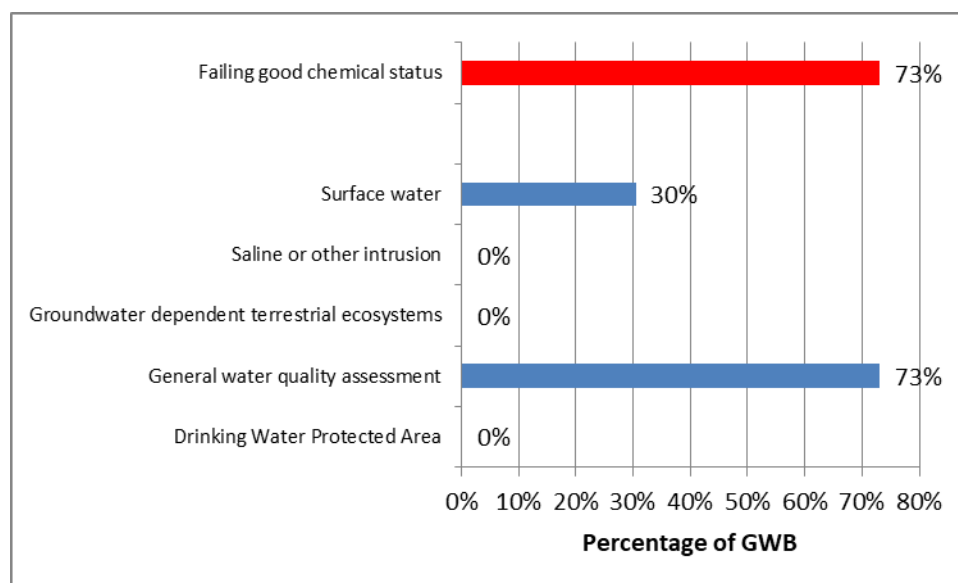
Source: WISE electronic reporting

**Figure 6.2** *Confidence in the classification of chemical status of groundwater bodies based on the most recent assessment of status.*



Source: WISE electronic reporting

**Figure 6.3** *Reasons for failing good chemical status for the most recent assessment of status.*



*Source WISE electronic reporting*

Notes:

‘Surface water’ = Failure to achieve Environmental Objectives (Article 4 WFD) in associated surface water bodies or significant diminution of the ecological or chemical status of such surface water bodies.

‘Groundwater dependent terrestrial ecosystems’ = Significant damage to terrestrial ecosystems which depend directly on the groundwater body.

‘Saline or other intrusion’ = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.

‘Drinking Water Protected Area’ = Deterioration in quality of waters for human consumption.

‘General water quality assessment’ = Significant impairment of human uses; significant environmental risk from pollutants across the groundwater body.

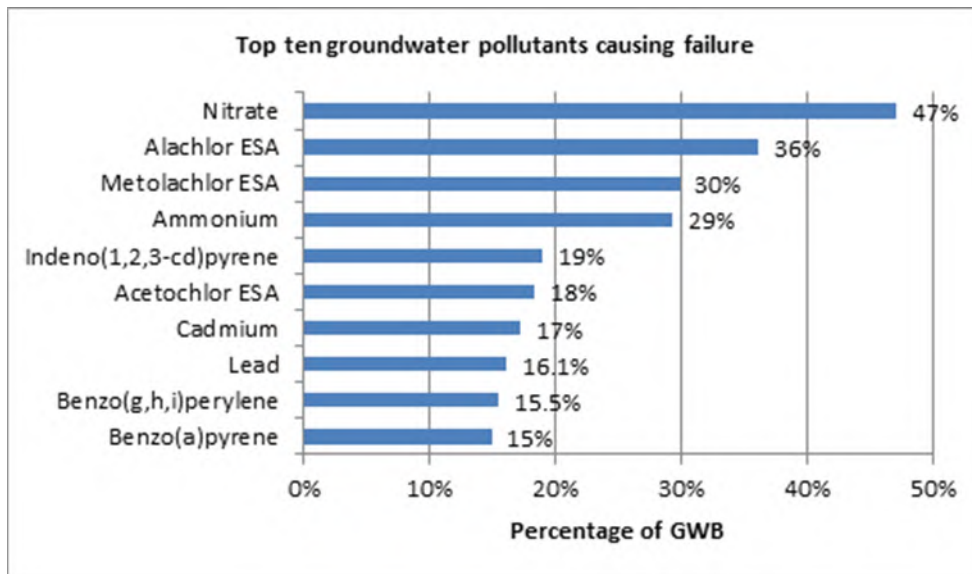
An updated methodology for chemical status assessment was described in the RBMPs. The number of pollutants assessed increased from 35 to 55. In addition, new receptors were added (surface water and drinking water) and their associated threshold values which were more stringent. The aggregation method for assessing groundwater chemical status was described in the RBMPs as using the arithmetic mean and median for most of the pollutants and maximum concentrations were used for pesticides and their metabolites. In all RBDs, natural background levels have been considered in the status assessment.

A trend methodology is available and assessments have been performed in all RBDs but not in all groundwater bodies at risk<sup>31</sup>. The trend reversal methodology was developed, but trend

<sup>31</sup> The Czech Republic subsequently clarified that trend assessment has been performed for all groundwater bodies with existing monitoring data

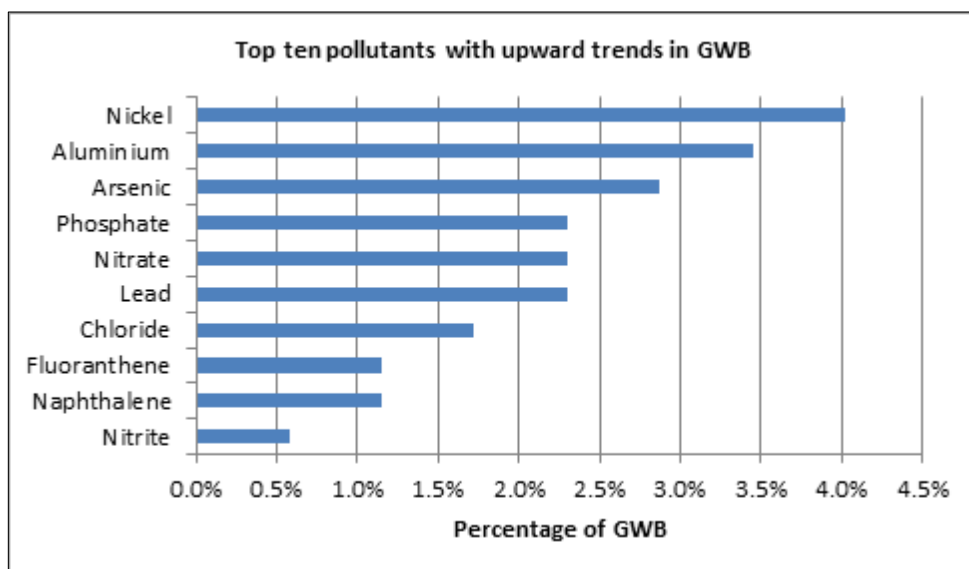
reversal has not been performed, due to short time series data after implementation of measures - the last data was from 2012.

**Figure 6.4** *Top ten groundwater pollutants causing failure of good chemical status in the Czech Republic*



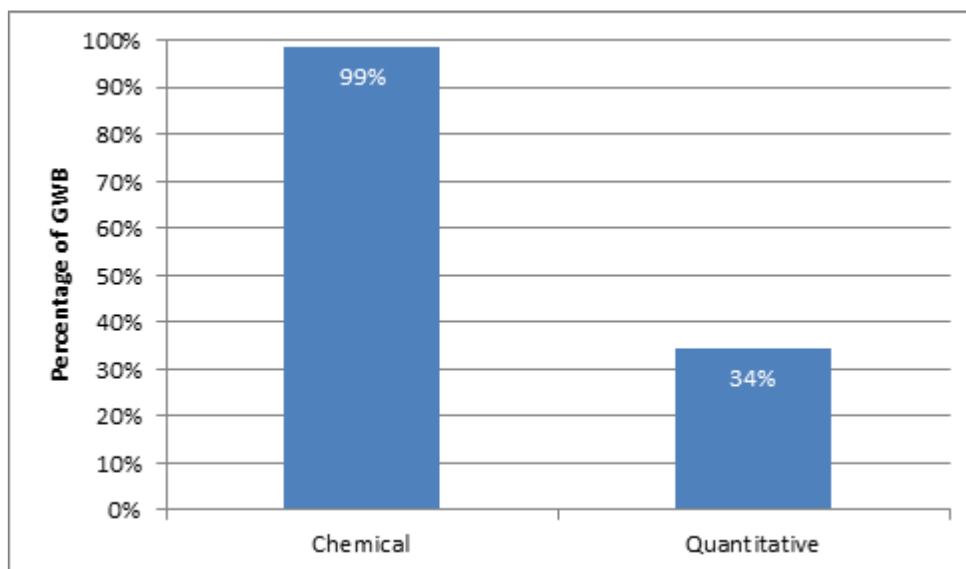
Source: WISE electronic reports

**Figure 6.5** *Top ten pollutants with upward trends in groundwater bodies in the Czech Republic*



Source: WISE electronic reports

**Figure 6.6** *Percentage of groundwater bodies at risk of failing good chemical status and good quantitative status for the second RBMP*



*Source: WISE electronic reports*

### **6.1.3. Consideration of groundwater associated surface waters and/or groundwater dependent ecosystems**

Groundwater dependent terrestrial ecosystems were not identified and hence not considered at all in status assessments. Even in the first RBMP some groundwater dependent terrestrial ecosystems were identified which do not appear in the second RBMPs.

70 groundwater bodies are linked to surface waters but the related risk is not indicated. Associated surface waters have been considered in threshold values establishment.

## **6.2. Main changes in implementation and compliance since first cycle**

The monitoring situation has improved. The number of chemical monitoring sites increased significantly from 167 to 770 as well as the number of groundwater bodies which are now covered by the increased monitoring. Still, 15 groundwater bodies are not subject to chemical monitoring but no explanation of the reasons was found in the RBMPs. There was no grouping applied for monitoring purposes.

The number of groundwater bodies of good chemical status slightly improved (by 10). The main reasons of the low progress are the increased monitoring, the consideration of new

pressures, a changed assessment methodology, more stringent threshold values and additionally considered assessment tests.

Methodologies for chemical status assessment were updated and changed, the number of assessed pollutants increased from 35 to 55. New receptors were considered (surface water and drinking water) in the status assessment.

### **6.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Ensure proper assessment of the chemical status of its groundwater and assess whether the quality standards in Annex I of the Groundwater Directive<sup>32</sup> are insufficient to achieve the environmental objectives for groundwater-dependent ecosystems.*

Assessment: The consideration of relevant factors (protection of aquatic ecosystems and uses and functions of groundwater) in the establishment of threshold values is reported. This means that this recommendation has been partially fulfilled as groundwater dependent terrestrial ecosystems were not considered yet.

- Recommendation: *The Czech Republic should establish more stringent nitrates and pesticides threshold values (point 3 of Annex I of Directive 2006/118/EC).*

Assessment: Threshold values for nitrates are now all below 50 mg/l (between 15.5 and 19.92 mg/l in all RBDs). Some pesticides now have more stringent threshold values than 0.1 micrograms per litre, as relevant. The recommendation has therefore been fulfilled.

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<sup>32</sup> Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration  
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0118-20140711>

## **Topic 7 Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential**

### **7.1. Assessment of implementation and compliance with WFD requirements in second cycle for designation**

#### **7.1.1. Designation of Heavily Modified and Artificial Water Bodies**

There are some significant changes in the percentage of designated heavily modified water bodies since the first cycle, especially for rivers in the Danube and in the Elbe, where there is an approximate 19 % and 3 % decrease respectively of designated heavily modified water bodies (Figure 7.1).

Overall, it is noted that the assessment basis for the designation of heavily modified water bodies is not entirely clear, because according to the WISE reporting, significant pressures from water flow regulation, morphological alterations and water abstractions have not been assessed for all relevant water bodies.

Several of the designated heavily modified water bodies are reservoirs. Specifically, all water bodies designated as heavily modified lakes in the three RBDs are reservoirs which were originally rivers. According to Common Implementation Strategy guidance on this issue, it is recommended to designate such water bodies as heavily modified river water bodies.

For heavily modified river water bodies, flood protection is the main designated use. For lakes (which are in fact rivers turned into reservoirs), the main uses for the heavily modified water body designation include the wider environment, flood protection, hydropower or other uses. The main physical alterations related to heavily modified river water bodies are channelisation/straightening/bed stabilisation/bank reinforcement. For heavily modified lake water bodies, the main alterations are weirs/dams/reservoirs.

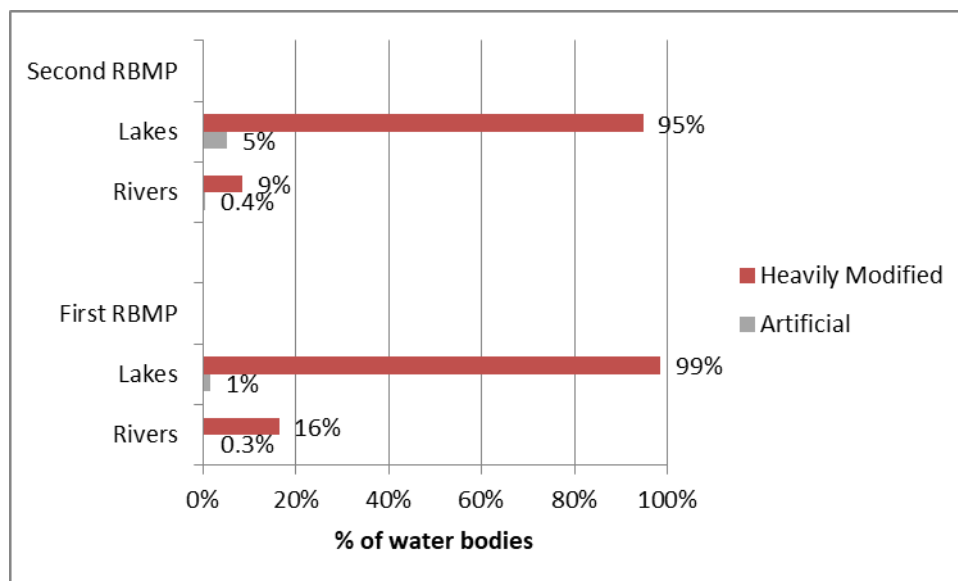
Information on how significant adverse effects of restoration measures on the use and wider environment are defined is found in methodological documents applicable at national or regional level. However, significant adverse effects are not quantified and the information on the approach is general only. No criteria are provided.

No information is found in the RBMP about beneficial objectives of other means. A better environmental option (other means) was not applied for reservoirs due to the multiple water uses. Most of heavily modified rivers were designated due to flood protection and for this use, it is reported that there is currently no better environmental option. This seems to be a case of



clear-cut decision on heavily modified water bodies' designation without fully applying the designation test required under Article 4(3)(b).

**Figure 7** *Proportion of total water bodies in each category in the Czech Republic that has been designated as heavily modified or artificial*



*Source: WISE electronic reports*

### **7.1.2. Definition of Good Ecological Potential for Heavily Modified and Artificial Water Bodies**

Good ecological potential is reported as defined in all RBDs using the Common Implementation Strategy approach (approach based on biological quality elements as illustrated in Common Implementation Strategy Guidance No 4). Good ecological potential has not been defined at water body level or for groups of heavily modified water bodies and AWBs but another approach has been followed defining ecological potential for rivers and reservoirs.

In the second RBMP, new methods for good ecological potential have been developed at national level for rivers and reservoirs.

Good ecological potential is reported to be defined in terms of biology, using the biological quality elements phytoplankton, macrophytes, fish and benthic invertebrates. According to information in the second RBMP, good ecological potential for rivers was assessed only for three biological quality elements sensitive to hydromorphology (benthic invertebrates, fish and phytoplankton). The assessment of phytobenthos and macrophytes is the same as for natural water bodies. Good ecological potential of reservoirs was defined based on a combination of

expert judgement and approaches from other countries but no specific information is provided on the biological quality elements used.

Some biological quality element assessment methods in use for both lakes and rivers are reported as sensitive to hydrological and morphological changes. For lakes, the assessment methods used for macrophytes and fish are reported to be sensitive to hydrological and morphological changes, but not the methods used for phytoplankton. For rivers, the assessment methods used for benthic invertebrates are reported to be sensitive to hydrological and morphological changes, the methods for fish only to morphological changes and the method for phytoplankton only to hydrological changes. The assessment methods used in rivers for macrophytes and phytobenthos are reported to be insensitive to hydromorphology.

Mitigation measures for defining good ecological potential have been reported as existing in all RBDs. Concerning the ecological changes expected due to mitigation measures, these are briefly described in a qualitative way. The second RBMP briefly states that mitigation measures for rivers aim at improving living conditions for fish and other relevant biological components.

A comparison between good ecological potential and good ecological status has been done in all RBDs. For rivers, the good ecological potential boundaries are about one class lower than good ecological status for fish, phytoplankton and benthic invertebrates. The class boundaries are the same between good ecological potential and good ecological status for macrophytes and phytobenthos.

## **7.2. Main changes in implementation and compliance since first cycle**

There are some significant changes in the percentage of designated heavily modified water bodies since the first cycle, especially for rivers in the Danube and in the Elbe, where there is a ca. 19 % and 3 % decrease respectively of designated heavily modified water bodies. The reasons for changes are explained only briefly. The main reasons for these changes are i) redelineation of surface water bodies, ii) changes of methodology and iii) experience from the first RBMP (for all RBDs).

The national methodology for designation (reported for rivers and reservoirs) has changed and the present approach is explained, although no details about the specific methodological changes are provided.

Progress is made concerning the methodology for defining good ecological potential. In the first cycle, the assessment of good ecological potential for reservoirs was not WFD compliant,

because it did not cover all relevant biological quality elements; assessment of good ecological potential for rivers was missing. The methodology was not clear and very preliminary. Good ecological potential was defined using expert judgement. In the second cycle, new methods for good ecological potential have been developed at national level for rivers and reservoirs. Good ecological potential is reported to be defined in terms of biology and details on the biological quality elements used are provided for rivers.

In the first cycle, no reference was found to mitigation measures for good ecological potential or their expected effects. In the second cycle, the mitigation measures to define good ecological potential are reported as existing for the three RBDs.

### **7.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *The Czech methodologies for provisional and final heavily modified water body designation in the first planning cycle were not applied to their full extent. The designation of heavily modified water bodies should comply with all the requirements of Article 4(3). The assessment of significant adverse effects on their use or the environment and the lack of significantly better environmental options should be specifically mentioned in the RBMPs. This is needed to ensure transparency of the designation process.*

Assessment: A national methodology on heavily modified water body designation is reported for rivers and reservoirs but it is not detailed enough on all relevant aspects. Criteria used for the identification of substantial change in character, type of physical alterations and the water uses behind the designated heavily modified water bodies are explained in detail. Significant adverse effects were not quantified and the information on the approach is general only. No criteria are provided. A better environmental option was not applied for reservoirs due to the multiple water uses. Most of heavily modified rivers were designated due to flood protection and for this use, it is reported that there is currently no better environmental option.

No information is reported on the details of the outcome of the designation tests of significant adverse effects on the use and better environmental options for individual water bodies.

Therefore, this recommendation has been partially fulfilled.

- Recommendation: *Assessment of good ecological potential for reservoirs was not WFD compliant, because it did not cover all biological quality elements.*

Assessment: In the second RBMP, a national methodology is reported for rivers and reservoirs. In the first cycle, the assessment of good ecological potential for reservoirs was not WFD compliant, because it did not cover all relevant biological quality elements. In the second cycle, although good ecological potential is reported as defined in terms of biology, details on the biological quality elements used are provided for rivers but not explicitly for reservoirs. It is reported that good ecological potential of reservoirs was defined based on a combination of expert judgement and approaches from other countries. Furthermore, even though mitigation measures for defining good ecological potential are reported, no information could be found on the way mitigation measures were used to define moderate ecological potential/good ecological potential. The ecological changes expected due to mitigation measures are described only briefly and in a qualitative way. Therefore, this recommendation has not been fulfilled.

## **Topic 8 Environmental objectives and exemptions**

### **8.1. Assessment of implementation and compliance with WFD requirements in second cycle**

#### **8.1.1. Environmental objectives**

The environmental objectives are defined in Article 4 of the WFD. The aim is long-term sustainable water management based on a high level of protection of the aquatic environment. Article 4(1) defines the WFD general objective to be achieved in all surface and groundwater bodies, i.e. good status by 2015. Within that general objective, specific environmental objectives are defined for heavily modified water bodies (good ecological potential and good chemical status by 2015<sup>33</sup>), groundwaters (good chemical and quantitative status by 2015) and for Protected Areas (achievement of the objectives of the associated Directive by 2015 unless otherwise specified).

In the Czech Republic, environmental objectives for ecological and chemical status of surface water have been reported in all RBDs as well as for chemical and quantitative status of groundwater. A significant share of water bodies is expected to achieve its objectives only beyond 2027.

Member States are also required to specify additional environmental objectives and standards in Protected Areas where these are required to ensure the requirements of the associated Directive are met. An assessment of such additional objectives for the Czech Republic is provided in Chapter 15 of this report.

Assessments of the current status of surface and groundwater bodies in the Czech Republic are provided elsewhere in this report: for ecological status/potential of surface waters (Chapter 3); chemical status of surface waters (Chapter 4); quantitative status of groundwater bodies (Chapter 5); chemical status of groundwater bodies (Chapter 6); status of surface and groundwater bodies associated with Protected Areas (Chapter 15).

For the second cycle plans, Member States are required to report the date when they expect each surface and groundwater body to meet its environmental objective. This information is summarised for the Czech Republic elsewhere in this report: for ecological status/potential of

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<sup>33</sup> For priority substances newly introduced by Directive 2013/39/EU, good status should be reached by 2027, and for the 2008 priority substances, for which the Environmental Quality Standards were revised by Directive 2013/39/EU, good status should be reached in 2021.

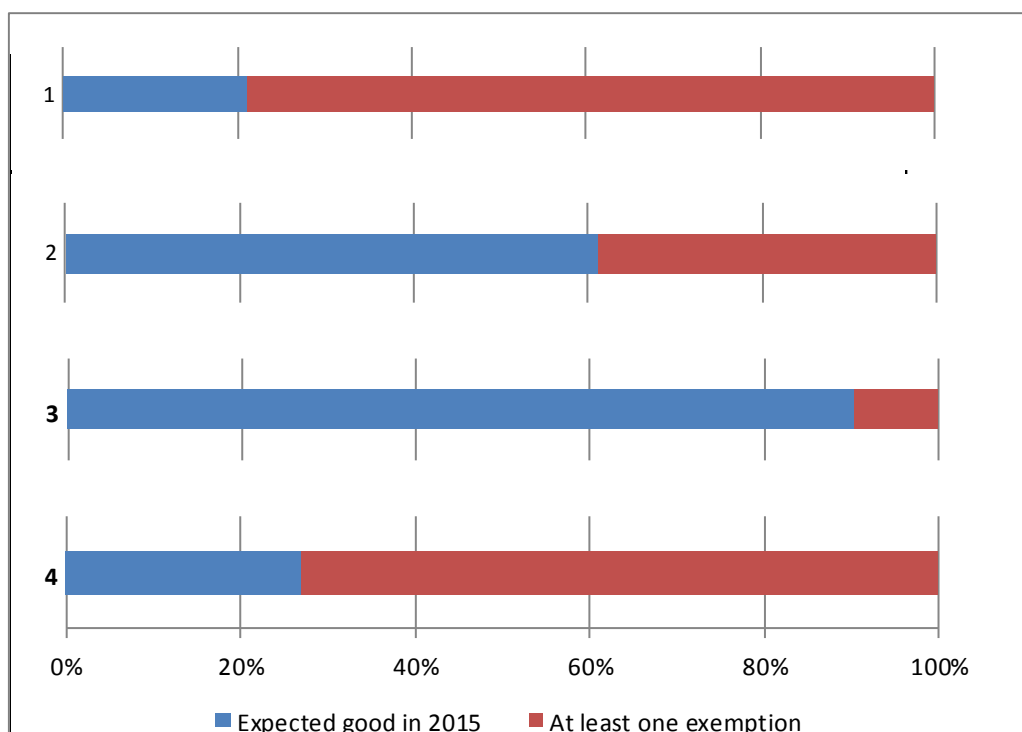
surface waters (Chapter 3); chemical status of surface waters (Chapter 4); quantitative status of groundwater bodies (Chapter 5); chemical status of groundwater bodies (Chapter 6).

### 8.1.2. Exemptions

Where environmental objectives are not yet achieved exemptions can be applied in case the respective conditions are met and the required justifications are explained in the RBMP.

Figure 8.1 summarises the percentage of water bodies expected to be at least in good status in 2015 and the use of at least one exemption in the Czech Republic for the four main sets of environmental objectives.

**Figure 8.1** *Water bodies expected to be in at least good status in 2015 and use of exemptions. 1 = Surface water body ecological status/potential; 2 = Surface water body chemical status; 3 = Groundwater body quantitative status; 4 = Groundwater body chemical status.*



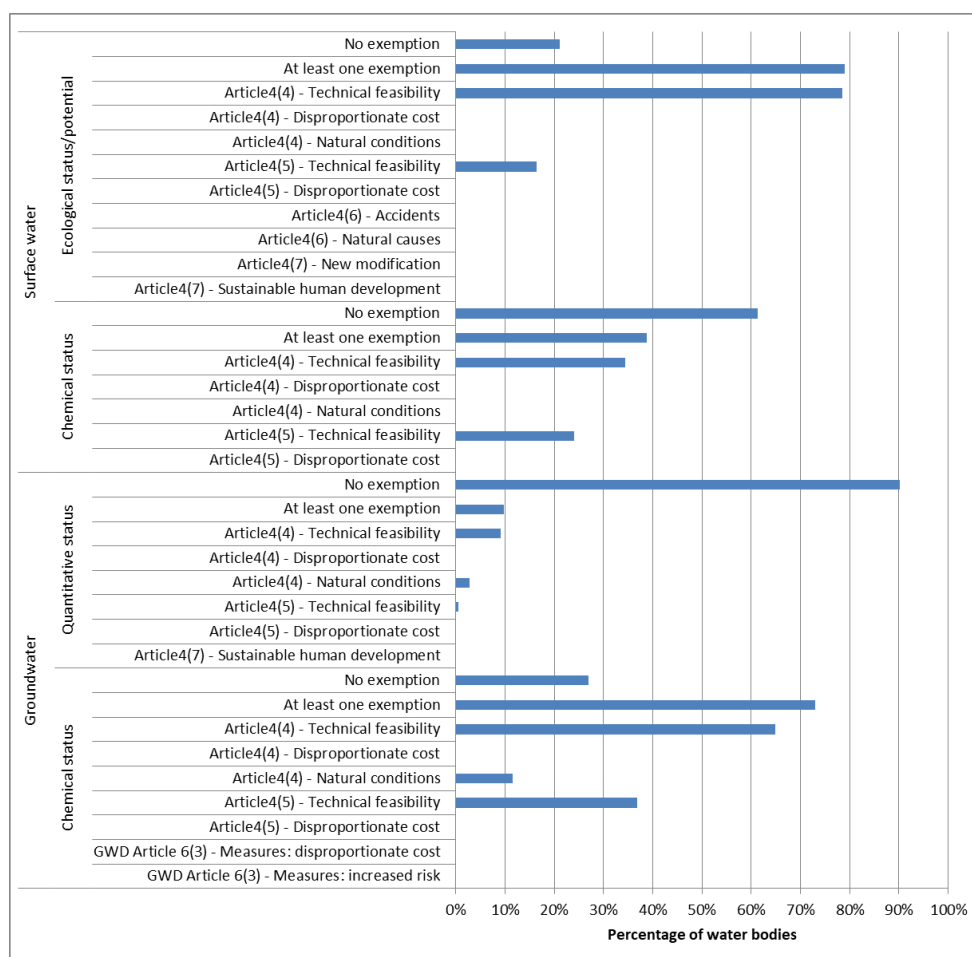
Source: WISE electronic reports

Article 4 of the WFD allows under certain conditions for different exemptions to the objectives: these include the provisions in Article 4(4) - extension of deadline, 4(5) - lower objectives, 4(6) - temporary deterioration and 4(7) - new modifications / new sustainable

human development activities. Article 4(4) exemptions may be justified by: disproportionate cost, technical feasibility or natural conditions, and Article 4(5) by disproportionate cost or technical feasibility. In addition, Article 6(3) of Directive 2006/118/EC on the protection of groundwater against pollution and deterioration allows Member States to exempt from the measures required to achieve the objective under Art 4(1)(b)(i), certain inputs of pollutants to groundwater under certain specified circumstances.

Figure 8.2 summarises the percentage of water bodies subject to each type of exemption (and reason) in relation to the 4 types of environmental objectives in the Czech Republic.

**Figure 8.2** *Type of exemptions applied to surface water and groundwater bodies for the second plan. Note: Ecological status and groundwater quantitative status exemptions are reported at the water body level. Chemical exemptions for groundwater are reported at the level of each pollutant causing failure of good chemical status, and for surface waters for each priority substance that is causing failure of good chemical status*



Source: WISE electronic reports

### *Application of Article 4(4)*

As in the first cycle, the Czech Republic applied Article 4(4) exemptions in the second cycle. In the first cycle, the justification for surface waters in relation to Article 4(4) exemptions only referred to technical feasibility. The same is the case in the second RBMP. However, in the second plan the Czech Republic indicates that natural conditions for surface water bodies might be used in the next cycle. For groundwater, technical feasibility and natural conditions are used as the justifications for exemptions under Article 4(4). Exemptions are applied at the water body level.

Technical feasibility is further justified in the RBMP by:

- Unknown technical solution
- measures that would lead to a good status are not prepared or they are too large to be implemented within three years,
- The measures proposed are expected to become effective in the course of time of the next planning cycle,
- the causes of failure are not known to achieve a non-conforming state (part of the effects will be eliminated by measures, but the targets are still not achieved).

For each water body exemptions have been set and justifications (there could be more than one exemption for one water body and ecological/chemical status if different pressures are responsible for not achieving good status) are provided.

The main drivers causing exemptions related to Article 4(4) in groundwater in all RBDs are agriculture, industry, transport and urban development. For surface waters in all RBDs these are agriculture, energy production, flood protection, industry, tourism and recreation, transport, urban development and unknown drivers. In the Elbe also fisheries and aquaculture are reported as drivers.

The significant pressures responsible for exemptions to good ecological status under Article 4(4) in surface waters are stemming from a broad range of activities including urbanisation, industry, agriculture, mining, atmospheric deposition and activities causing changes in hydromorphology. A similar range of significant pressures are responsible for exemptions under Article 4(4) in relation to chemical status (Table 8.1). For groundwater, the main



pressures responsible for exemptions under Article 4(4) in relation to chemical status are point and diffuse pollution from atmospheric deposition, industry and agriculture (Table 8.2).

**Table 8.1** *Pressures on surface waters responsible for priority substances failing to achieve good chemical status and for which exemptions have been applied*

Significant pressure on surface water bodies	Failing Priority Substances	Article 4(4) - Technical feasibility exemptions	Article 4(5) - Technical feasibility exemptions
	Number	Number	Number
1.1 - Point - Urban waste water	1	0	1
1.3 - Point - IED plants	12	28	21
1.4 - Point - Non IED plants	4	0	4
1.5 - Point - Contaminated sites or abandoned industrial sites	9	36	23
1.7 - Point - Mine waters	1	2	1
2.1 - Diffuse - Urban run-off	1	1	1
2.2 - Diffuse - Agricultural	3	8	0
2.7 - Diffuse - Atmospheric deposition	11	275	328
2.8 - Diffuse - Mining	2	6	0
8 - Anthropogenic pressure - Unknown	16	354	238

**Table 8.2** *Pressure responsible for pollutants failing to achieve good chemical status in groundwater and for which exemptions have been applied*

Significant pressure on groundwater	Number of failing pollutants	Number of exemptions		
		Article4(4) - Natural conditions	Article4(4) - Technical feasibility	Article4(5) - Technical feasibility
1.5 - Point - Contaminated sites or abandoned industrial sites	20		58	191
2.2 - Diffuse - Agricultural	25	45	359	19
2.7 - Diffuse - Atmospheric deposition	13	1	68	52
8 - Anthropogenic pressure - Unknown	11	16	113	22

The impacts causing exemptions under Article 4(4) in surface water and groundwater in all RBDs are acidification, chemical pollution, nutrient pollution. Hydromorphological impacts are not identified in the case of surface water. In the Odra, saline intrusion is also reported as an impact responsible for exemptions in surface water.

For groundwater, in addition abstraction exceeding available groundwater resource and diminution of quality of associated surface water are also mentioned as impacts, as well as organic pollution for the Odra.

#### ***Application of Article 4(5)***

In the second cycle the Czech Republic applied Article 4(5) exemptions for both surface and groundwater for the first time and to a significant extent. For both technical feasibility is used as a justification.

The pressures behind exemptions under Article 4(5) are similar to the one related to Article 4(4) as shown in the Table 8.1 and Table 8.2. The impacts related to Article 4(5) on surface water are acidification, chemical pollution, nutrient pollution, organic pollution, and elevated temperatures. In the Odra also saline intrusion is reported as an impact.

For groundwater the reported impacts are acidification, chemical pollution, nutrient pollution, the diminution of quality of associated surface waters for chemical / quantitative reasons and abstraction exceeding available groundwater resource (lowering water table).

#### ***Application of Article 4(6)***

Article 4(6) exemptions were not applied in the Czech Republic.

#### ***Application of Article 4(7)***

The Czech Republic did not report the application of Article 4(7) in the second RBMP. The impact of new modifications on water status was indicated to be assessed and deterioration of water bodies is not expected for any of them. However, a more detailed justification for each project that may or may not fall under Article 4(7) is not provided in the RBMP but background documents provide further information, indicating that no project has been identified so far, which would require the application of Article 4(7). A number of navigation projects are planned (e.g. Decin locks, Danube-Odra-Elbe canal, etc.) together with an extension of the nuclear plant at Temelin. So far, no exemptions relating to these developments have been applied under Article 4(7).

### ***Application of Article 6(3) GWD***

Exemptions to ground water under Article 6(3) of the Groundwater Directive have not been applied.

## **8.2. Main changes in implementation and compliance since first cycle**

In the first cycle, the Czech Republic set environmental objectives for all surface and groundwater bodies what is also the case for the second cycle. The situation with respect to additional objectives for Protected Areas is summarised elsewhere in this report (Chapter 15).

Changes in status and the dates by when surface and groundwater bodies are expected to meet their environmental objective are summarised for the Czech Republic elsewhere in this report: for ecological status/potential of surface waters (Chapter 3); chemical status of surface waters (Chapter 4); quantitative status of groundwater bodies (Chapter 5); chemical status of groundwater bodies (Chapter 6).

The main changes relate to the use of exemptions in the second cycle. In the first cycle, only Article 4(4) exemptions were applied on the grounds of technical feasibility for surface and groundwater. In the second cycle, Article 4(4) exemptions continue to be applied but with natural conditions as well as technical feasibility as a reason for groundwater bodies. Article 4(5) exemptions are applied for the first time for ecological and chemical status in surface waters and for quantitative and chemical status for groundwater bodies on the grounds of technical feasibility and to a significant extent.

Significant pressures were reported in the first cycle, and in the second one these have been reported when causing the applications of exemptions. Impacts were not reported in the first cycle but have been reported in the second cycle.

## **8.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

*Recommendation: It is unclear whether there are new physical modifications planned in RBMPs. If this is the case, the use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment of whether the project is of overriding public interest and whether the benefits to society*

*outweigh the environmental degradation, and regarding the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.*

Assessment: Article 4(7) exemptions are not applied in the second RBMPs. Background documents indicate that the impacts of all new modifications on water status have been assessed and no potential deterioration of the status of water bodies was identified. Therefore further assessments and justifications according to Article 4(7) were not required. Further information is needed to assess whether all the required assessments relevant in relation to Article 4(7) have been performed and whether the recommendation has been fulfilled.

Recommendation: *The Czech Republic RDP proposes significant investment in drainage measures, with the potential to lead to deterioration of status. Compliance with Article 4(7) must be ensured.*

Assessment: See assessment above.

Recommendation: *Justify adequately new hydromorphological modifications (e.g. new hydropower plants, new drainage, etc.), support them by a proper assessment of alternative solutions and include all necessary mitigation measures.*

Assessment: See assessment above

Recommendation: *Indicate clearly in the second RBMP when WFD objectives will be achieved.*

Assessment: Environmental objectives for ecological and chemical status of surface water have been reported in all RBDs as well as for chemical and quantitative status of groundwater. Information is also provided on when the objectives will be achieved. The recommendation is fulfilled, although a significant share of water bodies is expected to achieve its objectives only beyond 2027.

Recommendation: *Exemptions should be adequately justified at water body level and, in particular for new modifications, compliance with Article 4(7) of the WFD has to be ensured in the second RBMPs.*

Assessment: Exemptions are justified at water body level based on information provided in the improved WISE reporting. Further details on the justification are provided in background documents accompanying the RBMP. Compared to the first RBMP a significant number of Article 4(5) exemptions has been applied for the first time in the second RBMP based on technical feasibility, whereas the distinction between the criteria applied for Article 4(4) and Article 4(5) is not clear. This recommendation has therefore been partly fulfilled. In regard to Article 4(7) see assessment above.

*Recommendation: More details about pressures and pollutants leading to exemptions, especially for surface water bodies, should be provided in the next planning cycle. (The measures needed to achieve good status/potential should be fully assessed and used as a basis for the justification of exemptions on the basis of disproportionate costs/technical feasibility. This justification has to be clearly explained in the second RBMP).*

Assessment: Information on some pressures leading to exemptions is provided in the improved WISE reporting. The role of hydromorphological pressures and their impacts is partly lacking in the reported information. This recommendation is therefore partially fulfilled.

## **Topic 9 Programme of measures**

The aim of this chapter is to provide an overview of the Programme of Measures reported by Member States; more specific information on measures relating to specific pressures (for example arising from agriculture) is provided in subsequent chapters.

The Key Types of Measure (KTM) referred to in this section are groups of measures identified by Member States in the Programme of Measures, which target the same pressure or purpose. The individual measures included in the Programme of Measure (being part of the RBMP) are grouped into Key Types of Measure for the purpose of reporting. The same individual measure can be part of more than one Key Type of Measure because it may be multi-purpose, but also because the Key Types of Measure are not completely independent. Key Types of Measure have been introduced to simplify the reporting of measures and to reduce the very large number of Supplementary Measures reported by some Member States (WFD Reporting Guidance 2016).

A Key Type of Measure may be one national measure but it would typically comprise more than one national measure. The 25 predefined Key Types of Measure are listed in the WFD Reporting Guidance 2016.

The Key Types of Measure should be fully implemented and made operational within the RBMP planning period to address specific pressures or chemical substances and achieve the environmental objectives.

### **9.1. Assessment of implementation and compliance with WFD requirements in the second cycle**

#### **9.1.1. General issues**

There are indications of insufficient implementation of the WFD for some aspects of this Topic in all RBDs.

An indication as to whether or not measures have been fully implemented and made operational is when they have been reported as being planned to tackle significant pressures (at the Key Types of Measure level). Significant pressures are also reported at the water body level. It would therefore be expected that there would be measures planned in the RBMP to tackle all significant pressures. In terms of groundwater Key Types of Measures have not been reported to tackle diffuse mining pressures in the Elbe and abstraction or flow diversion for

public water supply in the Danube and the Elbe. On the other hand, Key Types of Measures have been reported to tackle pressures not reported at the water body level: groundwater recharges in all three RBDs and alteration of water level or volume in the Danube and the Oder (the latter was reported as a significant pressures in the Elbe).

A similar picture emerges for surface waters where no measures are reported to tackle pressures from the following sources:

- point source storm overflows;
- point sources from IED and non-IED plants;
- point sources from waste disposal sites (one RBD);
- point source from mine waters;
- point source aquaculture (one RBD);
- other point sources;
- diffuse transport sources;
- diffuse source discharges not connected to sewers (three RBDs);
- diffuse mining sources; and
- all of the 13 different hydromorphological pressures (three RBDs).

50 % of the national measures mapped to Key Types of Measures were associated with KTM1 - construction of upgrades of waste water treatment plants, and all of these are reported to be basic measures. In contrast only two national measures, both supplementary, are reported for diffuse agricultural pollution (Reducing pollution from agriculture and protecting the aquatic environment and agrotechnical measure): 22 % and 61 % of surface and groundwater bodies, respectively, are reported to be subject to diffuse agricultural pressures: 38 % of surface water bodies are subject to significant point source pressures from urban waste water. Remediation of contaminated sites is another pressure for which KTM4 has been reported: This Key Type of Measure is associated with 275 national measures all of which are supplementary. The Czech Republic reported 10 other Key Types of Measures, one of which is "Measures to reduce pollution from atmospheric deposition" which has been reported as significant pressure on surface water bodies: there is only one national (supplementary) measure reported: "Reduction of pollution in atmospheric deposition". National measures have been mapped against the Key Types of Measure which have not been made operational.

49 % of groundwater bodies and 70 % of surface water bodies are subject to unknown anthropogenic pressures. KTM14 - Research, improvement of knowledge base reducing uncertainty has been reported to reduce this pressure in both surface and groundwater.

There are many chemical substances causing failure of objectives but no specific measures to tackle them have been reported by the Czech Republic. However there are other measures planned: for these significant pressures such as for example remediation of contaminated sites.

The level of ambition and expected progress resulting from the Programme of Measures for the second cycle is low with only small reductions expected in many of the gaps to achievement of objectives at the end of the second cycle. It is reported that there will only be small increases in the proportion of surface water bodies achieving good status by the end of the second cycle: 5% in terms of ecological status/potential and 1 % in terms of chemical status. The Czech Republic also expects that 17 % of surface water bodies will be less than good ecological/status potential by 2027 and 24 % at poor chemical status. There seems to be less investment funds (including European Union funds) for measures in the second cycle compared to the first cycle perhaps reflecting a low level of ambition.

The RBMPs and FD Flood Risk Management Plans have not been integrated into a single plan in the Czech Republic, however joint consultation was carried out on the RBMPs and Flood Risk Management Plans, and the objectives and requirements of the FD have been considered in the second RBMP and Programme of Measures. The Czech Republic indicated that specific win-win measures in terms of achieving the objectives of the WFD and FD - drought management and use of Natural Water Retention Measures (NWRM) - have been included in the Programme of Measures. However, whilst KTM23 - Natural water retention measures- has been mapped to national measures there is no evidence that this measure has been made operational and as to the pressures it is aimed at tackling. Clear financial commitment has been secured for the implementation of the Programme of Measures in the flood protection sector. WFD Article 9(4) has not been applied to impoundment for flood protection and as such it would be an activity/use which should be subject to cost recovery under Article 9.

### **9.1.2. Measures related to other significant pressures**

No other significant pressures were reported in the Czech Republic.

### **9.1.3. Mapping of national measures to Key Types of Measures**

It was expected that Member States would be able to report their programme of measures by associating their national measures with predefined Key Types of Measures. Key Types of Measures are expected to deliver the bulk of the improvements through reduction in pressures required to achieve WFD Environmental Objectives. A Key Type of Measure may be one national measure but it would typically comprise more than one national measure. Member States are required to report on the national measures associated with the Key Types of



Measures, and whether the national measures are basic (Article 11(3)(a) or Article 11(3)(b-1)) or supplementary (Article 11(4)).

Table 9.1 summarises the number of national measures that have been mapped to the relevant Key Types of Measures in the Czech Republic. Also shown is the number of RBDs for which the Key Type of Measure has been reported. Table 9.2 then summarises the type of basic measures associated with the national measures mapped against the Key Type of Measure.

**Table 9.1 Mapping of the types of national measures to Key Types of Measures in the Czech Republic**

<b>Key Type of Measure</b>	<b>National basic measures</b>	<b>National supplementary measures</b>	<b>Number of RBDs where reported</b>
KTM1 - Construction or upgrades of wastewater treatment plants	1209		3
KTM2 - Reduce nutrient pollution from agriculture		4	3
KTM3 - Reduce pesticides pollution from agriculture.	1		3
KTM4 - Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)		275	3
KTM5 - Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)	96		3
KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity		438	3
KTM7 - Improvements in flow regime and/or establishment of ecological flows	13		3
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households	6	18	2
KTM9 - Water pricing policy measures for the implementation of the recovery of cost of water services from households	5		1
KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry	1		1
KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc)	11	1	4
KTM14 - Research, improvement of knowledge base reducing uncertainty	2	16	6
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances	3		3
KTM16 - Upgrades or improvements of industrial wastewater treatment plants (including farms).	8		2
KTM17 - Measures to reduce sediment from soil erosion and surface run-off		5	3
KTM18 - Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases		2	2
KTM20 - Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants		1	1
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	43	77	5
KTM23 - Natural water retention measures		5	3
KTM24 - Adaptation to climate change		7	3

Key Type of Measure	National basic measures	National supplementary measures	Number of RBDs where reported
KTM99 - Other key type measure reported under Programme of Measures			
Control of geothermal boreholes application		3	1
Disposal of old boreholes in protected areas		6	2
Improvement of legislation and monitoring modification		3	3
Limitation of mine water impact		1	1
Limitation of mining impact to groundwater		4	3
Limitations of chloride pollution in groundwater		3	2
Limitations of sulphate pollution in groundwater		2	1
Measures to control groundwater abstractions	2	5	3
Measures to reduce pollution from atmospheric deposition		3	3
Negotiation of transboundary measures		1	1
Total number of mapped measures	1400	868	

Source: Member State reports to WISE

**Table 9.2** Type of basic measure mapped to Key Type of Measures in the Czech Republic

Key Type of Measure	Basic measure type								
	1	2	3	4	5	6	7	8	9
KTM1 - Construction or upgrades of wastewater treatment plants					1209				
KTM3 - Reduce pesticides pollution from agriculture.						1			
KTM5 - Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)				94					
KTM7 - Improvements in flow regime and/or establishment of ecological flows		12							
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households								1	
KTM9 - Water pricing policy measures for the implementation of the recovery of cost of water services from households			1						
KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry	1								
KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.)							11		
KTM14 - Research, improvement of knowledge base reducing uncertainty							1		1
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances									3

Key Type of Measure	Basic measure type								
	1	2	3	4	5	6	7	8	9
KTM16 - Upgrades or improvements of industrial wastewater treatment plants (including farms).	1				7				
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	2				41				
Measures to control groundwater abstractions		2							

Source: Member State reports to WISE

#### Key

1	Accidental pollution - Article 11(3)(l): Any measures required to prevent significant losses of pollutants from technical installations and to prevent and/or reduce the impact of accidental pollution incidents.
2	Controls water abstraction - Article 11(3)(e): Controls over the abstraction of fresh surface water and groundwater and impoundment of fresh surface waters including a register or registers of water abstractions and a requirement for prior authorisation of abstraction and impoundment.
3	Cost recovery water services - Article 11(3)(b): Measures for the recovery of cost of water services (Article 9).
4	Hydromorphology - Article 11(3)(i): Measures to control any other significant adverse impact on the status of water, and in particular hydromorphological impacts.
5	Point source discharges - Article 11(3)(g): Requirement for prior regulation of point source discharges liable to cause pollution.
6	Pollutants diffuse - Article 11(3)(h): Measures to prevent or control the input of pollutants from diffuse sources liable to cause pollution.
7	Protection water abstraction - Article 11(3)(e): Controls over the abstraction of fresh surface water and groundwater and impoundment of fresh surface waters including a register or registers of water abstractions and a requirement for prior authorisation of abstraction and impoundment.
8	Recharge augmentation groundwater - Article 11(3)(f): Controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies.
9	Surface Priority Substances - Article 11(3)(k): Measures to eliminate pollution of surface waters by Priority Substances and to reduce pollution from other substances that would otherwise prevent the achievement of the objectives laid down in Article 4.

#### 9.1.4. Pressures for which gaps are to be filled to achieve WFD objectives and the Key Type of Measures planned to achieve objectives

Member States are required to report the gaps that need to be filled to achieve WFD Environmental Objectives in terms of all significant pressures on surface waters and groundwater, in terms of priority substances causing failure of good chemical status and in terms of River Basin Specific Pollutants causing failure of good ecological status/potential. Member States were asked to report predefined indicators of the gaps to be filled or other indicators where relevant. Values for the gap indicators were required for 2015 and 2021, and were optional for 2027.

The information reported in WISE on the gaps to fulfil to achieve good ecological status include detailed data on the significant pressures on surface and groundwaters that may cause failure on the environmental objectives. For chemical status, the Member States reported the specific chemical substances causing failure.

This information is reported at the sub-unit level. Sub-units are smaller geographic areas within particular RBDs identified by Member States. Not all Member States have defined and reported sub-units.

Member States were required to report which KTMs are to be made operational to reduce the gaps to levels compatible with the achievement of WFD environmental objectives. A number of indicators were predefined for each KTM. Values of the indicators for the second and subsequent planning cycles were also to be reported to give an indication of the expected progress and achievements: the values for 2027 could be optionally reported. This means that the value of the indicator will be reduced with time as measures are implemented. A value of zero is comparable with 100 % good ecological status or potential or good chemical status.

This information was reported at sub-unit level, or at RBDs level if sub-units have not been reported by the Member State.

## **9.2. Main changes in implementation and compliance since the first cycle**

In general, the amount and quality of readily available information has improved between the two cycles because of the revised reporting schema. Often there is no equivalent information for the first cycle and it is difficult, therefore, to make direct comparisons between the two cycles on what has changed significantly.

In terms of an update of the progress to reflect the actual and expected situation at the start of the second planning cycle, a clear financial commitment (e.g. approved budget or financial mechanism by the Parliament, Ministry of Finance or other financial responsible authority) was reported not to have been secured for the implementation of the Programme of Measures in any of the RBDs. In all RBDs, a clear financial commitment had not been secured for the implementation of the Programme of Measures in agriculture and industry but had for flood protection and the urban development sectors. The aquaculture, energy, hydropower, recreation and transport sectors were reported to be not-relevant in any of the RBDs: note there are operational measures for aquaculture.

A summary of the changes from the first RBMP obtained from the second RBMP includes an overview of non-implemented measures and the main reasons for their non-implementation. For example, 668 non-implemented measures are mentioned in the Elbe. 15 % of them are for construction or upgrades of wastewater treatment plants, 66 % for the improvement of hydromorphological conditions of water bodies other than longitudinal continuity, 9 % for the establishment of fish passes and 10 % for remediation of contaminated sites. The main reasons for non-implementation were financial (e.g. lack of funds), land proprietary issues, technical, legal or natural conditions.

The total investment expenditure for the Programme of Measures for the first planning cycle and expected for the second planning cycle, which were/are to be financed by European Union funds is reported to have decreased from €2054 to €751 m. In the first planning cycle European Union funds represented 49% of the investment costs for Article 11(3)(a) and Article 11(3)(b-l), Article 11(4) and 11(5) measures. However, the Czech Republic reported “0” for the expected investment costs for Article 11(3)(a) measures for the second cycle and it is not possible to make a full comparison between the two cycles on the proportion of European Union funds will contribute to investment costs for all measures<sup>34</sup>. The investment costs of Article 11(3)(b- l), Article 11(4) and 11(5) measures for the second cycle are expected to be €4226 m compared to €2308 m for the first cycle. It is likely that the proportional contribution of European Union funds to measures will decrease between the two cycles.

New legislation or regulations were required to implement the Programme of Measures in the first cycle in all three RBDs: it was reported that progress had been made in adopting the new requirements in the second cycle.

### **9.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Ensure in the second RBMPs that measures adopted in the Programme of Measures are based on a reliable status assessment of water bodies (clear setting of the scale of pressures, measures needed to fully address the pressures and proportion of these measures) and are linked to the relevant pressures.*

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<sup>34</sup> The Czech Republic has clarified that it has not included basic measures adopted under other Directives covered by Article 11(3)(a) in the second RBMP. The costs of measures adopted for other Directives have been reported under the reporting requirements for those Directives and have therefore not been reported for the WFD.

Assessment: For there to be a reliable assessment of status there should be fully developed assessment methods for all relevant biological quality elements and other quality elements in rivers and reservoirs. In terms of monitoring it should be clear how the quality elements were selected for operational monitoring i.e. in relation to all significant pressures on water bodies. There has been some progress here in that there are now some biological assessment methods for lakes (reservoirs) but the methods used have not been intercalibrated leading to some uncertainty in the comparability of the ecological potential of lakes. Hydromorphological quality elements are neither monitored nor classified in rivers or lakes. In short the lake and river ecological assessment methods are still not fully satisfactory in the Czech Republic.

The Czech Republic has shown some progress in that gaps to be filled for the achievement of objectives have been quantified for some but not all significant pressures, most notably not for hydromorphological pressures.

Please see chapter 4 for an evaluation of how reliable status is. Although the Czech Republic reported to have planned measures to control emissions of Priority Substances, no measures were reported for tackling individual priority substances. Based on the above reasons, the judgment is that there has been no progress in the second RBMP on this recommendation in terms of chemical status.

- Recommendation: *Ensure that the RBMPs clearly identify the gap to good status, and that the Programme of Measures are designed and implemented to close that gap.*

Assessment: The gaps to be filled to achieve objectives have been quantified for some but not all pressures, and the Key Types of Measures (KTMs) to be made operational to fill the gaps have been reported. However, there are some inconsistencies in the pressures for which measures are planned and the significant pressures reported at the water body level. For example, in the Danube, “abstraction or flow diversion – public water supply” has been reported at the groundwater body level but this pressure has not been reported as being tackled in the programme of measures. Similarly, pressure “groundwater – recharges” and “groundwater – alteration of water level or volume” have been reported in the programme of measures but not as a significant pressure at the groundwater body level.

For surface waters in the Danube, pressures 1.2 - Point - Storm overflows, 1.4 - Point - Non IED plants, 1.9 - Point – Other, 4.1.1 - Physical alteration of channel/bed/riparian area/shore - Flood protection, 4.1.4 - Physical alteration of channel/bed/riparian area/shore – Other were reported at the water body level but were not included in the

programme of measures as pressures to be tackled. There are similar examples in the other two RBDs. In conclusion, the recommendation has been partially met.

- Recommendation: *The Programme of Measures should be made more specific. Meaningful information regarding the scope, the timing and the funding of the measures should be included in the Programme of Measures so the approach to achieve the objectives is clear and the ambition in the Programme of Measures is transparent. All the relevant information on basic and supplementary measures should be included in the summary of the Programme of Measures to ensure transparency on the planned actions for the achievement of the environmental objectives set out in the WFD.*

Assessment: The Czech Republic reported indicators of progress in implementing measures for some but not all measures. In addition, there are also potential gaps in the reporting of operational measures to tackle hydromorphological and some others pressures. Furthermore, no specific measures (KTM) have been reported for the many chemical substances causing failure of WFD objectives. The level of ambition and expected progress resulting from the Programme of Measures for the second cycle is low with only small reductions expected in the many of the gaps to achievement of objectives at the end of the second cycle. In all RBDs, a clear financial commitment had not been secured for the implementation of the Programme of Measures in agriculture and industry but had for flood protection and the urban development sectors. The aquaculture, energy, hydropower, recreation and transport sectors were reported to be not-relevant in any of the RBDs: note there are operational measures for aquaculture. Information was reported on whether or not national measures were basic or supplementary, and on the type of basic measure.

The total investment expenditure for the Programme of Measures for the first planning cycle and expected for the second planning cycle, which were/are to be financed by European Union funds is reported to have decreased from €2054 to €751 m. In the first planning cycle European Union funds represented 49 % of the investment costs of for Article 11(3)(a) and Article 11(3)(b-I), Article 11(4) and 11(5) measures.

The RBMP for the Elbe RBD summarises the main reasons for the non-implementation of measures: 668 planned measures have not been implemented, 103 are construction or upgrades of wastewater treatment plants, 438 improvement of hydromorphological conditions of water bodies other than longitudinal continuity, 57 establishment of fish passes and 70 remediation of contaminated sites. The main reasons for non-



implementation of measures were financial (e.g. lack of funds), land proprietary, technical, legal and natural conditions issues.

In summary, there has been significant progress on this recommendation.

- Recommendation: *Carry out a cost effectiveness analysis of potential measures (voluntary or obligatory), for achieving the environmental objectives. The effectiveness of the implemented measures will have to be demonstrated by the assessment of the status/potential of water bodies in the second RBMPs. Available funding, in particular the European Union funds (e.g. RDP funds, Structural and Investment funds, LIFE Integrated Projects and Horizon 2020) needs to be exploited as much as feasible in order to implement Programme of Measures. Consequently, appropriate priorities shall be set in the programming documents (PA, OPs and RDPs) of the new European Union funding policy 2014-2020.*

Assessment: A combination of a qualitative and quantitative cost-effectiveness analysis has been carried out in all three RBDs for supporting the selection of measures proposed under the 2015-2021 Programme of Measures, and the general type of assessment carried out. The second RBMP indicated that CEA was used for measures related to wastewater plants and sewage systems for four indicators: biological oxygen demand, nitrate, ammonia and phosphorus. These measures and indicators were assessed in a quantitative way (for the four parameters). No information was found on how other types of measures or measures for other pollutants were selected.

It has also been reported that funding has been secured for measures for some but not all sectors causing pressures. However, the information reported to WISE indicates that it is likely that the proportional contribution of European Union funds to measures will decrease between the two cycles which seems contrary to this recommendation. This recommendation has been partially fulfilled.

## **Topic 10 Measures related to abstractions and water scarcity**

### **10.1. Assessment of implementation and compliance with WFD requirements in second cycle**

#### **10.1.1. Water exploitation and trends**

Water quantitative pressures (as consumptive use) are not reported as significant in the Czech Republic and no information is reported on the Water Exploitation Index +. It can be noted that since the first cycle, the number of groundwater bodies in poor quantitative status has significantly decreased but the number with unknown quantitative status has increased. It is unclear whether this change is due to management or changes in the assessment<sup>35</sup>. Regarding the remaining 9-12 % of groundwater bodies in bad quantitative status, it might be necessary to extend the abstraction controls to smaller abstractors in the corresponding basins. As the authorisations are time limited and could be reviewed, such review might also be necessary. The existing authorisations could be cancelled or changed if it is necessary for the achievement of environmental objectives in the RBMP.

Separate water resource allocation and management plans have not been developed in relation to abstractions and ecological flows though there are sub-plans relating to water scarcity and droughts in each RBD. Water scarcity is reported as a future issue in the international RBD the Elbe, but not in the Danube and the Oder.

#### **10.1.2. Main uses for water consumption**

No information is provided on uses responsible for water consumption, as water quantity pressures (as consumptive use or net consumption) are not reported as significant.

#### **10.1.3. Measures related to abstractions and water scarcity**

In the Czech Republic, permits are required and a register exists for groundwater and surface water abstractions, but small abstractions are exempted from controls in all RBDs. There is a concession, authorisation and/or permitting regime to control water impoundment and a register of impoundments (under Article 11(3)(e)) in all RBDs. These activities have existed for a long time and no new measures of abstraction control (except for ecological flows) are planned. Minimum flows are used as a significant part of the authorisation regime. However, it is not clear, if the minimum flows are in line with ecological flows - they should be implemented after 2016.

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<sup>35</sup> The Czech Republic subsequently clarified that these changes are mainly due to changed values for the available groundwater resource.

There is also a register of water consumption by user for all sectors. The register has existed from 1979 and is updated regularly, but no further specific information was found in the second RBMPs.

Under Article 11(3)(c), measures promoting efficient and sustainable water use (e.g. water metering and allocations) were implemented in the previous cycle but new measures and/or significant changes are planned in all RBDs. Water metering is used. The RBMP for the Elbe also includes the following additional tools: i) regular water balance, and ii) inventory of abstracted volume, regular review of abstraction permits, minimum flows and minimal groundwater level. No significant increase of water consumption is expected in the second RBMP.

Under Article 11(3)(f), controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies (Article 11(3)(f)), were implemented in the previous cycle and no new measures nor significant changes are planned in any of the RBDs.

Although abstractions for public water supply are reported as a significant pressure for groundwater in the Danube and the Elbe, as well as abstractions for agriculture for surface water in the Elbe, no operational Key Types of Measures are applied to tackle these pressures. Specifically, KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households is not applied to tackle any significant pressures, and this might be revised.

In all RBDs, reuse of water (e.g. from waste water treatment or industrial installations) has been considered to have a lower environmental impact than other alternative water supplies (e.g. water transfers). Reuse of water has been included in the RBMP as a measure in terms of managing water resources in all RBDs.

## **10.2. Main changes in implementation and compliance since first cycle**

Very significant changes have been detected by comparing the data from this exercise with the first cycle information regarding the number of groundwater bodies in bad quantitative status, with changes reflected in the following statistics: the Danube from 27 to 9 %, the Elbe from 42 to 12 % and the Oder from 20 to 0 %. Furthermore, in a self-assessment from 2011 on water scarcity and drought, all RBDs were reported by the Czech Republic to have RBD-wide water scarcity challenges<sup>36</sup>. As there is no information on the measures taken, there is no explanation for it. Only recent data (without detailed information about year or period) about water abstraction/consumption are part of the second RBMP, but no past data or comparison was provided. In this sense, abstraction pressures cannot be related over time to status.

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<sup>36</sup> <http://cdr.eionet.europa.eu/cz/eu/wfd2016/documents/>

### **10.3. Progress with Commission recommendations**

There were no relevant Commission recommendations on this topic requesting action, based on the first RBMPs and Programme of Measures.

## **Topic 11 Measures related to pollution from agriculture**

### **11.1. Assessment of implementation and compliance with WFD requirements in second cycle**

There is a clear link between agricultural measures and agricultural pressures.

Management objectives have been set for nutrient pollution and a gap assessment was done for nitrogen in all three basins. Quantitative objectives for nutrient load reduction have only been set in the Elbe. For phosphorus, quantitative management objectives have only been set in the Elbe and a gap assessment was only done in the Oder.

In all RBDs, supplementary measures for reducing pollution from agriculture are reported as well as measures to reduce sedimentation from soil erosion and surface runoff. Financing of measures is not secured. Advisory services are not reported to be used as a measure in all RBDs.

In terms of the level of ambition, for groundwater, the number of groundwater bodies failing to achieve good status due to nitrates is expected to decrease from 26 to 24 in the Danube, from 47 to 35 in the Elbe and from 8 to 2 in the Oder by 2021. The number of groundwater bodies failing to achieve good status due to pesticides is expected to decrease from 30 to 14 in the Danube, from 50 to 25 in the Elbe and from 13 to 8 in the Oder by 2021. For surface waters, nitrogen loads are expected to decrease by about 50 % in the Danube and the Elbe and 75 % in the Oder by 2021. For surface waters, the number of water bodies failing environmental quality standards for pesticides originating from diffuse agricultural sources are expected to decrease from five to three in the Danube and remain unchanged in the Oder (three water bodies) by 2021.

The estimated percentage of groundwater bodies for which it is expected that less stringent objectives (Article 4(5)) will be set because of agriculture in the third cycle is 10-20 % in the Danube RBD and 0-10% in the Elbe and the Oder RBDs.

The estimated percentage of surface water bodies for which it is expected that less stringent objectives (Article 4(5)) will be set because of agriculture in the third cycle is 0-20 % in the Danube and the Elbe RBDs and 0-10 % in the Oder RBD. These rates vary along the different sub-basins.

Safeguard zones have been established for all abstractions above 10,000 m<sup>3</sup>/year, but there is a possibility to establish safeguard zones for smaller abstractions.

Controls or general binding rules (Article 11(3)(h) of the WFD) for addressing diffuse pollution from agriculture at source are applied and implemented, but there are differentiated rules for different parts of the RBDs. Financing of measures is not secured.

Some control measures are implemented in the whole area of the Czech Republic - mainly focused on fertilization and pesticide management. It is not clear from the second RBMPs if these measures are additional or not.

Controls or binding requirements at farm level to address diffuse sources of nutrients (nitrates and/or phosphates) are established under the Nitrates Directive<sup>37</sup> and have been adopted via cross compliance (standard DZES1) inside and outside of nitrate vulnerable zones.

No information about specific controls or binding requirements at the farm level to address diffuse sources of pesticides was provided in the second RBMPs. However, regular revision of the list of prohibited pesticides (in the whole area) and pesticides with limited or prohibited use in safeguard zones or other pesticides vulnerable areas occurs. The revision is based on monitoring results and changes in pesticide use.

No information on specific controls or binding requirements at the farm level to address soil erosion and pollution of water bodies with sediment was found in the second RBMPs. However, there is cross compliance (standard DZES5) with binding requirements for plants (e.g. maize) that are associated with erosion in areas with high erosion risk.

No information was found in the second RBMP as to whether the Key Type of Measures reported to address agricultural pollution were mandatory or voluntary measures or both.

The RBMPs or Programmes of Measures indicate that the measures have already been implemented in the first cycle in all RBDs and will be continued during the second cycle. There is also information indicating that some measures could not be implemented in the first cycle but were included in the second cycle Programme of Measures. It is not clear if these measures refer to pollution pressures from agriculture (these measures were not specifically mentioned).

The source of funding for KTM2 - Reduce nutrient pollution from agriculture, was stated to be Rural Development and national funds and for KTM3 - Reduce pesticides pollution from agriculture, and KTM17 - Measures to reduce sediment from soil erosion and surface run-off, to be the budgets of the ministries.

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<sup>37</sup> Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources  
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676>

The polluter pays principle in the farming community seems not to be fully applied.

Farmers/Farmers Unions have been consulted when developing the Programme of Measures.

### **11.2. Main changes in implementation and compliance since first cycle**

Management objectives have been set for nutrient pollution and a gap assessment was done for nitrogen in all three basins. Quantitative objectives for nutrient load reduction have only been set in the Elbe. For phosphorus quantitative management, objectives have only been set in the Elbe and a gap assessment was only done in the Oder. This was not the case in the first cycle.

For all other aspects described in the first implementation report, no change has been detected.

### **11.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Review the degree to which the existing measures to implement the Nitrates Directive (ND) are sufficient to address agricultural pressures.*

Assessment: KTM2 - Reduce nutrient pollution from agriculture (basic and supplementary) and KTM3 - Reduce pesticides pollution from agriculture have been reported to tackle significant diffuse pressures from agriculture. In all RBDs measures to reduce sedimentation from soil erosion and surface runoff are reported. The recommendation has been implemented.

- Recommendation: *Agriculture is indicated as exerting a significant pressure on the water resources in the Czech Republic. This should be translated into a clear strategy that defines the basic/mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farming community to ensure technical feasibility and acceptance. There needs to be a very clear baseline so that any farmer knows the rules this can be adequately advised and enforced and so that the authorities in charge of the CAP funds can adequately set up Rural Development programmes and cross compliance water requirements.*

The above recommendation is considered together with that below due to the high degree of overlap between them.

*Recommendation: In addition to the basic measures, it should be set out clearly what supplementary measures will be needed to bridge the gap to good status and which of these measures will be included in the second POMs and what funding sources will be used to deliver these. Clear references to expectations for the Rural Development Programmes (RDPs) in this regard (and to other funding sources) are expected. The Czech Republic RDP proposes significant investment in drainage measures, with the potential to lead to deterioration of status. Compliance with Article 4(7) must be ensured.*

Assessment: Controls or general binding rules (Article 11(3)(h) of the WFD) for addressing diffuse pollution from agriculture at source are applied and implemented, but there are differentiated rules for different parts of the RBDs. Farmers/Farmers Unions have been consulted when developing the Programme of Measures. However, it remains unclear if a full strategy to tackle diffuse agricultural pressures has been developed. Measures are funded under the Rural Development regime. Therefore, this recommendation is assessed as partially fulfilled.

- *Recommendation: Present in the second RBMPs a clear assessment of the number of water bodies failing to reach good status due to agriculturally derived pressures because diffuse sources of pollution from nitrogen and pesticides were identified as the main significant pressures from agriculture in the Czech Republic.*

The above recommendation is considered together with that below due to the high degree of overlap between them.

- *Recommendation: The Czech Republic should start measures to control diffuse sources of pollution outside of NVZs and the Czech Republic should improve controls of hydromorphological pressures from agriculture.*

Assessment: The RBMPs include estimation of the amount of water bodies failing to reach good status due to agriculturally derived pressures. Some control measures related to fertilization and pesticide management are implemented in the whole area of the Czech Republic. It is not clear from the second RBMPs if these measures are additional or not. National measures have been mapped against Key Types of Measures relevant to hydromorphology. However, Key Types of Measures have not been reported as explicitly tackling specific types of hydromorphological pressures and the Czech Republic was not able to quantify and report the gap indicators for this type of measures. So these recommendations have been partially fulfilled.



- Recommendation: *Additionally the Czech Republic should ensure basic measures as per Article 11(3)(h) of the WFD are put in place to control other diffuse pollutants, e.g. phosphate, pesticides, particulate matter. These measures should be specific, have a clear legal basis, and include appropriate advice, monitoring and inspection regimes to ensure their effective implementation.*

Assessment: Controls or general binding rules (Article 11(3)(h) of the WFD) for addressing diffuse pollution from agriculture at source are applied and implemented, but there are differentiated rules for different parts of the RBDs. Binding rules are set for nutrients, pesticides and other pollutants in all three RBDs. Advisory services are not reported to be used as a measure in all RBDs. The recommendation has been partially implemented.

## **Topic 12 Measures related to pollution from sectors other than agriculture**

### **12.1. Assessment of implementation and compliance with WFD requirements in second cycle**

In the context of this topic, pollution is considered in terms of nutrients, organic matter, sediment, saline discharges and chemicals (priority substances, river basin specific pollutants, groundwater pollutants and other physico-chemical parameters) arising from all sectors and sources apart from agriculture.

The WFD specifies that the Programme of Measures shall include, as a minimum, “basic measures” and, where necessary to achieve objectives, “supplementary measures” when basic measures are not enough to address specific significant pressures (see the chapter 9 in this report).

The Czech Republic has reported KTMs relevant to non-agricultural sources of pressures causing failure of WFD objectives, such as:

KTMM1 - Construction or upgrades of wastewater treatment plants

KTMM4 - Remediation of contaminated sites (historical pollution including sediments, groundwater, soil).

KTMM14 - Research, improvement of knowledge base reducing uncertainty, and

KTMM 99 - Other key type measure reported under Programme of Measures (Historical pollution).

The Czech Republic has stated that there are measures to eliminate pollution of surface waters caused by those substances specified in the list of priority substances and to progressively reduce pollution by other substances which would prevent achieving the objectives for the bodies of surface waters as set out in Article 4 (Article 11(3)(k)).

For second cycle reporting, Member States have been asked to report which KTM have been made operational to reduce significant pressures and chemical substances causing failure of objectives to levels compatible with the achievement of objectives. This is different to the first cycle where Member States just had to indicate whether basic measures were implemented.

The Czech Republic has only reported a limited number of pressures which are to be tackled by KTM (i.e. measures made operational) and no chemical substances that are to be tackled by specific KTM in spite of the fact that chemical substances are causing many failures<sup>38</sup>. This means that not all pressures on chemical status would be tackled with KTMs. They have also reported far fewer KTMs against pressures than they mapped against national measures. They did not assign KTM15 or KTM16 to any pressure or chemical substance. This may indicate that these KTMs have not been made operational in the second RBMP<sup>39</sup>.

Examination of the second RBMPs and background documents indicated that although 35 measures for priority substances are mentioned for the Elbe, no details about specific substances were provided and some of these measures also included priority substances from agriculture. Similarly, many measures described in the second RBMP refer to pollution from point and diffuse sources, but there is no differentiation between general physicochemical elements and specific substances (River Basin Specific Pollutants and groundwater pollutants) and no differentiation between surface and groundwater.

The register of waste water discharges (Basic measures Article 11(3)(g)) is available in all RBDs for surface and groundwater. In all the Czech Republic RBDs, there are no thresholds below which waste water discharges do not require permits and are not subject to registration (Basic measure Article 11(3)(g)). According to the information reported electronically to WISE, direct discharges to groundwater are prohibited in all RBDs.

## **12.2. Main changes in implementation and compliance since first cycle**

In the first RBMPs, there was no information about measures targeted to specific substances or groups of substances. The national approach to implementation of measures related to chemical pollution in general followed the provisions of WFD Article 11(3)(g,h,k,l), but it lacked information on the specific measures and effectiveness of the planned measures. The information reported to WISE on the second RBMPs indicates that measures to eliminate/reduce pollution from priority substances and other substances have been applied in all RBDs. However, there is still no link between individual substances and KTMs or between individual substances and measures. Thus, no significant progress can really be identified in the second cycle.

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<sup>38</sup> The Czech Republic subsequently clarified that they reported the information for limited types of pressures and pollutants, and that quantification of remaining pressures and/or pollutants are rough estimations.

<sup>39</sup> The Czech Republic subsequently clarified that all reported measures are operational in the second cycle.

### 12.3. Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and Programmes of Measures requested action on the following:

- Recommendation: *“The identification of river basin specific pollutants needs to be more transparent, with clear information on how pollutants were selected, how and where they were monitored, where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status. **It is important that there is an ambitious approach to combatting chemical pollution and that adequate measures are put in place.**”*

Assessment: The information reported to WISE indicates that measures to eliminate/reduce pollution from priority substances and other substances (Basic measures Article 11(3)(k) have been applied in all RBDs. However, no link is established between individual priority substances or River Basin Specific Pollutants or groundwater pollutants and KTMs. Neither is there a link established between individual substances and measures. This recommendation has therefore been partially fulfilled.

- Recommendation: *“Identify clearly in the second RBMPs Basic measures to allow for a clear assessment of the need for additional measures, e.g. the Czech Republic should provide all information on the level of compliance and timing to reach full compliance with Directive 91/271/EEC (Article 15 and following) and what measures beyond this are necessary to reach good status and which of these will be included in the second RBMPs.”*

Assessment: An analysis of the gap to the achievement of WFD objectives should have been undertaken, quantifying both the gap that will be filled by Article 11(3)(a-l) basic measures and, if needed, by supplementary measures<sup>40</sup>.

There is no clear evidence that action has been taken to fulfil this recommendation. Two relevant KTMs (15 and 16) have been mapped to national measures which do not explicitly mention Directive 91/271/EEC. KTM15 and 16 have not been reported in terms of the (pressure) gaps required to reach WFD objectives.

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<sup>40</sup> The Czech Republic subsequently confirmed that they were not able to quantify the indicator gap.

## **Topic 13 Measures related to hydromorphology**

### **13.1. Assessment of implementation and compliance with WFD requirements in second cycle**

Significant hydromorphological pressures are identified in all RBDs. For the Danube and the Oder, these are reported as physical alterations, while for the Elbe these are more specifically reported as physical alterations, dams/barriers and hydrological alterations. It is worth mentioning though that according to the WISE reporting, significant pressures from water flow regulation and morphological alterations have not been assessed by the Czech Republic.

Even though certain significant hydromorphological pressures are identified and national measures are mapped to Key Types of Measures relevant to hydromorphology such Key Types of Measures have not been reported as explicitly tackling specific types of hydromorphological pressures. The information in the RBMP of the Elbe indicates that hydromorphological measures are planned for the second cycle. Most measures are only generally described, but they are mainly focused on restoration of river continuity and restoration of natural conditions of rivers. Minimum (ecological) flows are mentioned as are sediment management as well as measures related to erosion.

The Czech Republic subsequently clarified to the Commission that even if it was not possible to quantify and report the gap indicators for the hydromorphological measures, these measures are indeed planned for their implementation in this second cycle.

According to information subsequently provided by the Czech authorities, the reported hydromorphological measures are planned for implementation in the second cycle, and are to be funded from the EU's Operational Programme Environment.

For the majority of water bodies reported to have significant hydromorphological pressures (mainly physical alterations), the sector identified is "other", i.e. is not specified as one of the key sectors indicated in the WISE reporting.

There is an authorisation and/or permitting regime in place to control physical modifications to the water bodies in all three RBDs, according to WFD Article 11(3)(i).

Quantitative management objectives for river continuity are reported to have been set for all 3 RBDs.

Win-win measures in terms of achieving the objectives of the WFD and FD, drought management and use of Natural Water Retention Measures (NWRM) are reported to be included in the Programme of Measures of the three RBDs. Furthermore, the design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, has not been adapted to take into account WFD objectives.

Ecological flows have been derived and implemented for some water bodies but work is still ongoing. Measures related to the present minimum flow are applied. A minimum flows methodology exists and is implemented, but it does not cover all biological aspects. A new methodology for ecological flows should be finished in the end of 2016, thus the setting of the ecological flow is in progress. No reference could be found to using the principles of the Common Implementation Strategy guidance on ecological flows.

No conclusion can be reached on the level of ambition of relevant measures, because information on indicators for hydromorphological pressures and Key Types of Measures relevant to hydromorphological pressures are not reported.

### **13.2. Main changes in implementation and compliance since first cycle**

In the second cycle, many hydromorphological measures have been carried forward from the first cycle, but some new measures for hydromorphology have also been added to the RBMPs.

In the first cycle, it was not clear, if all relevant specific pressures were identified because of missing assessment methods for biological quality elements. In the second cycle, significant hydromorphological pressures are identified and some biological quality element assessment methods in use for both lakes and rivers are reported to be sensitive to hydrological and morphological changes.

In the first cycle, ecological flow regimes were not applied as a measure because they had already been implemented in current legislation and applied through the legal enforcement. In the second RBMPs, it is indicated that ecological flows have been derived for some water bodies but work is still ongoing.

### **13.3. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

Recommendation: *Ensure that the Methodology for ecological flows (called Minimum Residual Flow) is consistent with the WFD environmental objectives (good ecological status or potential).*

Assessment: Measures related to the present minimum flow are applied. A minimum flows methodology exists and is implemented, but it does not cover all biological aspects. A new methodology of ecological flow should have been finished in the end of 2016, thus the setting of the ecological flow is in progress. No reference could be found to using the principles of the Common Implementation Strategy guidance on ecological flows. Thus, not enough information on progress regarding this recommendation could be found in the second plans and the recommendation is therefore partially fulfilled.

Recommendation: *Provide information on future and current actions to address hydromorphological pressures deriving from water management, hydropower, private users and other related sectors, and to put in place adequate measures in the second RBMPs (in particular to develop a strategy to implement fish passes and ensure connectivity) and by including other restoration measures.*

Assessment: For the majority of water bodies reported to have significant hydromorphological pressures (mainly physical alterations), the sector identified is "other", i.e. is not specified as one of the key sectors indicated in the WISE reporting. National measures have been mapped against Key Types of Measures relevant to hydromorphology. However, Key Types of Measures have not been reported as explicitly tackling specific types of hydromorphological pressures and the Czech Republic was not able to quantify and report the gap indicators for this type of measures. According to information subsequently provided by the Czech authorities, the reported hydromorphological measures are planned for implementation in the second cycle.

Overall, there seems to be progress on connectivity issues, as quantitative management objectives are reported to have been set for all three RBDs. Hydromorphological measures mentioned in the second RBMPs are mainly focused on restoration of river continuity and restoration of natural conditions of rivers. Fish ladders and by-pass channels are specific measures mentioned to address the restoration of river continuity (at least in the Elbe).

Based on the information available in the reporting, this recommendation is partially fulfilled.

Recommendation: *Consider and prioritise the use of green infrastructure and/or natural water retention measures that provide a range of environmental (improvements in water quality,*

*flood protection, habitat conservation etc.), social and economic benefits which can be in many cases more cost-effective than grey infrastructure.*

Assessment: Win-win measures in terms of achieving the objectives of the WFD and FD, drought management and use of Natural Water Retention Measures (NWRM) are reported to be included in the Programme of Measures of the three RBDs. National measures have been mapped to the KTM23 on Natural water retention measures, although this Key Type of Measure is not explicitly related in the reporting to tackling specific significant pressures.

At national level, a proposed measure addresses "Drought and Deficiency of Water Resources" including actions for the second planning cycle related to the use of rainwater, water retention in the landscape and climate adaptation measures. The Czech Republic subsequently clarified to the Commission that nature-related flood protection measures and elements of green infrastructure are also proposed in the regional (sub-basin) RBMPs.

Therefore, this recommendation is considered to a large extent as fulfilled.



## **Topic 14 Economic analysis and water pricing policies**

### **14.1. Assessment of implementation and compliance with WFD requirements in second cycle and main changes in implementation and compliance since first cycle**

Overall, no significant modifications have been observed regarding the economic analysis and the implementation of Article 9. The methodology for the economic analysis has remained the same as for the first RBMPs, and only the specific numbers/percentages of the cost recovery rates for the two identified water services (drinking water abstraction, treatment and distribution and Sewage collection and wastewater treatment) have been updated.

It seems that more or less similar information is reported on the scope of the economic analysis undertaken (e.g. the gap regarding environmental and resource costs remains the same according to the reported data).

The way cost recovery calculations are done has not been improved.

Similarly, no improvements/better justifications have been reported regarding adequate incentives, adequate cost recovery contributions and the consideration of the polluter-pays principle.

Hydropower and energy cooling are not included in the economic analysis and the calculation of cost recovery rates.

Due to the very limited modifications in comparison to the first RBMP, no major improvements in implementation are noted.

No broad definition of water services.

### **14.2. Progress with Commission recommendations**

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

*Recommendation: The cost-recovery should address a broad range of water services, including impoundments, abstraction, storage, treatment and distribution of surface waters, and collection, treatment and discharge of waste water, also when they are "self-services", for instance self-abstraction for agriculture. The cost recovery should be*

*transparently presented for all relevant user sectors, and environment and resource costs should be included in the costs recovered. Information should be provided on the incentive function of water pricing for all water services, with the aim of ensuring an efficient use of water. Information on how the polluter pays principle has been taken into account should be provided in the RBMPs.*

Assessment: A narrow definition of water services was used, covering only drinking water abstraction, treatment and distribution and sewage collection and wastewater treatment; yet, it is not clear why only these water services were identified (while also other activities create significant pressures, e.g. diffuse pollution and physical alterations). Hydropower is not considered in the economic analysis/is not considered a water service.

All the water uses identified in general in the RBMP are not mentioned in the economic analysis, but as (potential or significant) pressures only. The economic analysis and relevant calculations concerns only water services.

The way cost recovery has been calculated has not been improved from the first cycle. The calculation of cost recovery was done only at aggregated level for the two water services defined (separately for each and then aggregated) but not disaggregated per (relevant) water uses. Cost recovery levels were calculated for each RBD using specific information from the RBD. Water supply and wastewater treatment fees were calculated from the most important water service companies (due to the high number of water supply companies for small numbers of inhabitants), but without quantification of how many inhabitants were covered by these selected companies.

There has been no consideration of environmental and resource costs regarding diffuse and point sources. Regarding environmental costs and the water services, these were calculated based on cost of abstracted surface water (before treatment) and existing fees (water abstraction fee, water supply fee and sewage and wastewater treatment fee). Since the environmental costs are below 10 %, they are considered as non-significant. Thus, even if the environmental costs were calculated in the second RBMP, they were not included into the cost recovery calculation (also reported as "not included" in the WISE reporting).

There is no calculation/inclusion of resource costs. Subsidies were considered in the economic analysis and two different cost recovery rates calculated, with and without subsidies; yet, the reported cost recovery rates are the ones without consideration of subsidies.

No better explanation regarding the incentive function of the current regime was provided than in the first cycle.

No detailed information regarding the consideration of the polluter pays principle was provided; it is only mentioned as being used for the two water services identified/considered, but no further explanation is provided.

Pricing policies have not been modified/explained better in order to show how "adequate incentives" are provided. It is reported that an assessment of incentive pricing was performed as a basis for the updated Water Act; yet, no results of this analysis or details were found in reported documents. Suspension of billing of water abstraction for irrigation during drought periods is still in place.

Regarding agriculture, even if the estimated costs of measures to counteract the impact of diffuse pollution are reported at about €289,301,000/cycle, no additional contribution of agriculture for e.g. a better implementation of the polluter pays principle has been proposed.

Article 9(4) is reported as not used.

Overall, there is no progress regarding this recommendation.

*Recommendation: Develop fully the economic analysis of water use, including the calculation of Environmental and Resource Costs. The Czech Republic should revise its approach to the exemption from water fees during scarcity periods, and CZ should elaborate on this issue in the second RBMP.*

*Assessment:* There is no information provided on the approach to the exemption from water fees during scarcity periods. Hence, there is no progress on this recommendation.

## Topic 15 Considerations specific to Protected Areas (identification, monitoring, objectives and measures)

### 15.1. Assessment of implementation and compliance with WFD requirements in second cycle

The Czech Republic has reported Protected Areas for all relevant directives in the second RBMPs (Table 15.1).

**Table 15.1** *Number of Protected Areas of all types in each RBD, for surface and groundwater*

Protected Area type	Number of Water Bodies Associated with Protected Areas in		
	Rivers	Lakes	Groundwater
Abstraction of water intended for human consumption under Article 7	165	23	168
Recreational waters, including areas designated as bathing waters under Directive 76/160/EEC <sup>41</sup>	94	48	
Protection of species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 79/409/EEC (Birds) <sup>42</sup>	18	10	10
Protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC (Habitats) <sup>43</sup>	578	37	389
Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC and areas designated as sensitive areas under Directive 91/271/EEC	5761	399	5827
Other	739	49	13

*Source: Member State reports to WISE*

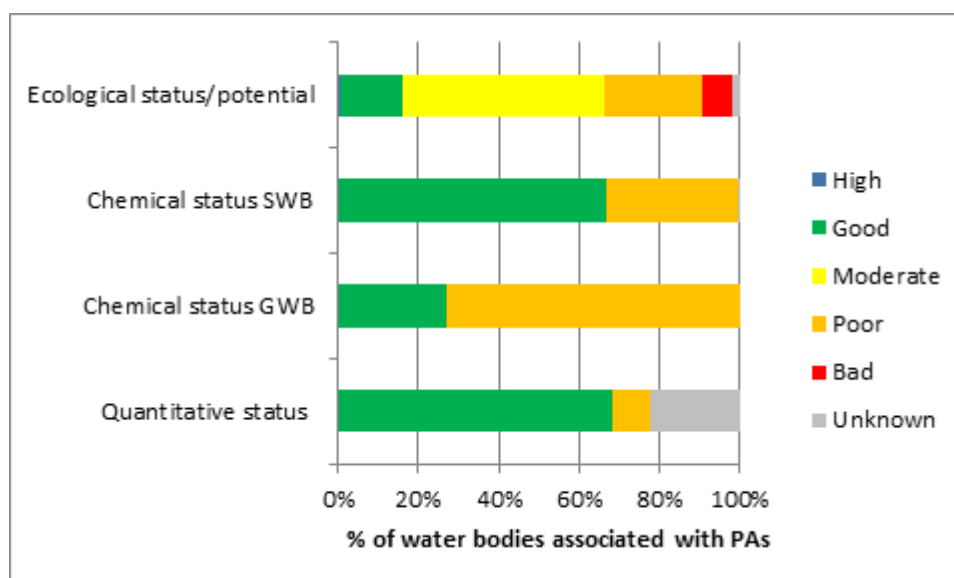
<sup>41</sup> Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007>

<sup>42</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>

<sup>43</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043>

A good overview of the status (chemical and ecological and for ground water also quantitative) of water bodies associated with Protected Areas is reported (Figure 15.1) with the status classification reported with three degrees of confidence.

**Figure 15.1** *Status of water bodies associated with the Protected Areas reported for Czech Republic. Note: based on status/potential aggregated for all water bodies associated with all Protected Areas*



Source: Member State reports to WISE

The Czech Republic reported that, for Protected Areas designated under the Birds and Habitats Directives, no specific water objectives have been set to protect dependent habitats or species because the additional needs are not known. It is not possible to judge if this refers to the fact that it is not known if the objectives according to the WFD will also cover the objectives according to other European Union legislation. Overall, the additional needs which are unknown are unclear. For Drinking Water Protected Areas, no additional objectives are set either.

Overall, the Czech Republic has not set objectives for the different types of Protected Area, despite the relevant Commission recommendation from the first RBMPs. Therefore, no exemptions have been reported either from relevant Protected Area objectives.

As objectives for Protected Areas have not been set, a gap analysis to assess the need for additional measures is not mentioned (as assessed in the Elbe).

Monitoring sites of surface water associated with Protected Areas are only reported for those under the Habitats and the Nitrates and Urban Waste Water<sup>44</sup> Directives (Table 15.2). No specific monitoring sites are reported as associated with other Protected Areas (those designated under Article 7 of the WFD, Bathing or Birds Directives). No data are reported on monitoring sites of groundwater associated with Protected Areas, except for nutrient sensitive areas under the Nitrates Directive. Further information on the purpose of monitoring sites for surface water and groundwater status assessment can be found in Chapters 3 and 4 (ecological and chemical status of surface waters) and Chapters 5 and 6 (quantitative and chemical status of groundwater) of this report.

**Table 15.2** *Number of monitoring sites associated with Protected Areas in the Czech Republic*

Protected Area type	Number of monitoring sites associated with Protected Areas in		
	Groundwater	Lakes	Rivers
Protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC (Habitats)		12	278
Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC and areas designated as sensitive areas under Directive 91/271/EEC	611		326

*Source: WISE electronic reports*

For Drinking Water Protected Areas, there are safeguard zones in the three RBDs and there are no plans to change the regulations as a result of this RBMP. Information on the size of the safeguard zones and criteria for their establishment are provided. While measures in these zones are mandatory, it is not clear if the safeguard zones are sufficient to ensure the protection of the drinking water.

For Birds and Habitats Protected Areas, no measures have been planned (assessed in the Elbe). For Protected Areas related to bathing waters, additional measures are applied (to reduce phosphorus/eutrophication), but no information was found in the second RBMPs on whether the additional measures will be sufficient to reach the objectives (as assessed in the Elbe).

In general, as specific objectives are not set for Protected Areas, specific additional measures were not expected to be included.

<sup>44</sup> Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271>

## 15.2. Main changes in implementation and compliance since first cycle

A significant reduction is noted in the number of Protected Areas related to Article 7 in all RBDs, apparently both for drinking water abstraction<sup>45</sup> from surface and ground water. There also seems to be a significant increase in the number of Habitats and Nitrates Protected Areas between the first and second cycle.

The reporting of monitoring sites associated with Protected Areas is limited. No specific monitoring sites are reported as associated with Protected Areas designated under Article 7 of the WFD, Birds or Bathing Water Directives nor monitoring sites of groundwater associated with Protected Areas (except for nutrient sensitive areas under the Nitrates Directive). A comparison with the first cycle is not possible, as no information was available in the first RBMPs.

## 15.3. Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and Programme of Measures requested action on the following:

- Recommendation: *Assess what additional objectives/measures are needed for Protected Areas (Species and Habitats, Drinking Water, Bathing Water) and to include these additional objectives/measures in the second RBMPs.*

Assessment: None of these requirements have been fulfilled as no objectives have been set because additional needs are not known. It seems as if this "explanation" has been used as a default answer - indicating that no assessment of the individual Protected Areas in order to set an objective has been started. In consequence of this it is assumed that no measures are planned for the second cycle.

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<sup>45</sup> The Czech Republic later clarified that the reduction appears as a result of reporting on water bodies with drinking water abstractions, rather than individual drinking water abstractions as reported in the first RBMPs.

## **Topic 16 Adaptation to drought and climate change**

### **16.1. Assessment of implementation and compliance with WFD requirements in second cycle**

The Czech Republic mentioned in the first RBMP that climate change will be taken into consideration in the subsequent cycles. Indeed, in the second cycle, climate change has been assessed and taken into account in all three RBDs for the second RBMPs. The specific climate change aspects considered are drought management/water scarcity and flood risk management.

A National Climate Change Strategy has been developed and adopted in October 2015, but it could not be fully included in the RBMP (due to the late agreement). The National Action Programme (including particular measures, responsibility and deadlines) is reported to be prepared later and will be used in the next cycle.

Specific climate change adaptation measures (KTM24) have not been applied but there are specific sub-plans addressing climate change in all three RBDs, based on the WISE reporting. According to the assessment of the second RBMPs, no specific sub-plans on Climate Change Strategy were prepared for the Elbe and Oder RBDs, but the regional and national RBMPs include a chapter about the issue. The Climate Adaptation Strategy for the Danube RBD was developed in 2012.

No maladaptation measures were identified (as assessed in the Elbe).

The Czech Republic reports that they did not use the Common Implementation Strategy guidance 24. No information about climate proofing of measures was found in the second RBMPs.

Even though there is no legal obligation to prepare Drought Management Plans, many Member States have prepared them in order to cope with droughts. "Droughts and water scarcity" are considered as relevant aspects in the climate change adaptation strategies in all three RBDs. There is a sub-plan on water scarcity and droughts for all three RBDs.

### **16.2. Main changes in implementation and compliance since first cycle**

In the first RBMPs, all RBDs had developed a drought management plan. In the second RBMPs, the situation is similar as sub-plans on water scarcity and droughts are reported for all RBDs.



While in the first cycle an impact analysis of climate change was not included, this has now been done in the second RBMPs.

### **16.3. Progress with Commission recommendations**

There were no Commission recommendations based on the first RBMPs and Programme of Measures.