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COMMISSION STAFF WORKING DOCUMENT

Third River Basin Management Plans
Second Flood Hazard and Risk Maps and Second Flood Risk Management Plans
Member State: Czechia

Accompanying the document

REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

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

{COM(2025) 2 final} - {SWD(2025) 13 final} - {SWD(2025) 14 final} -
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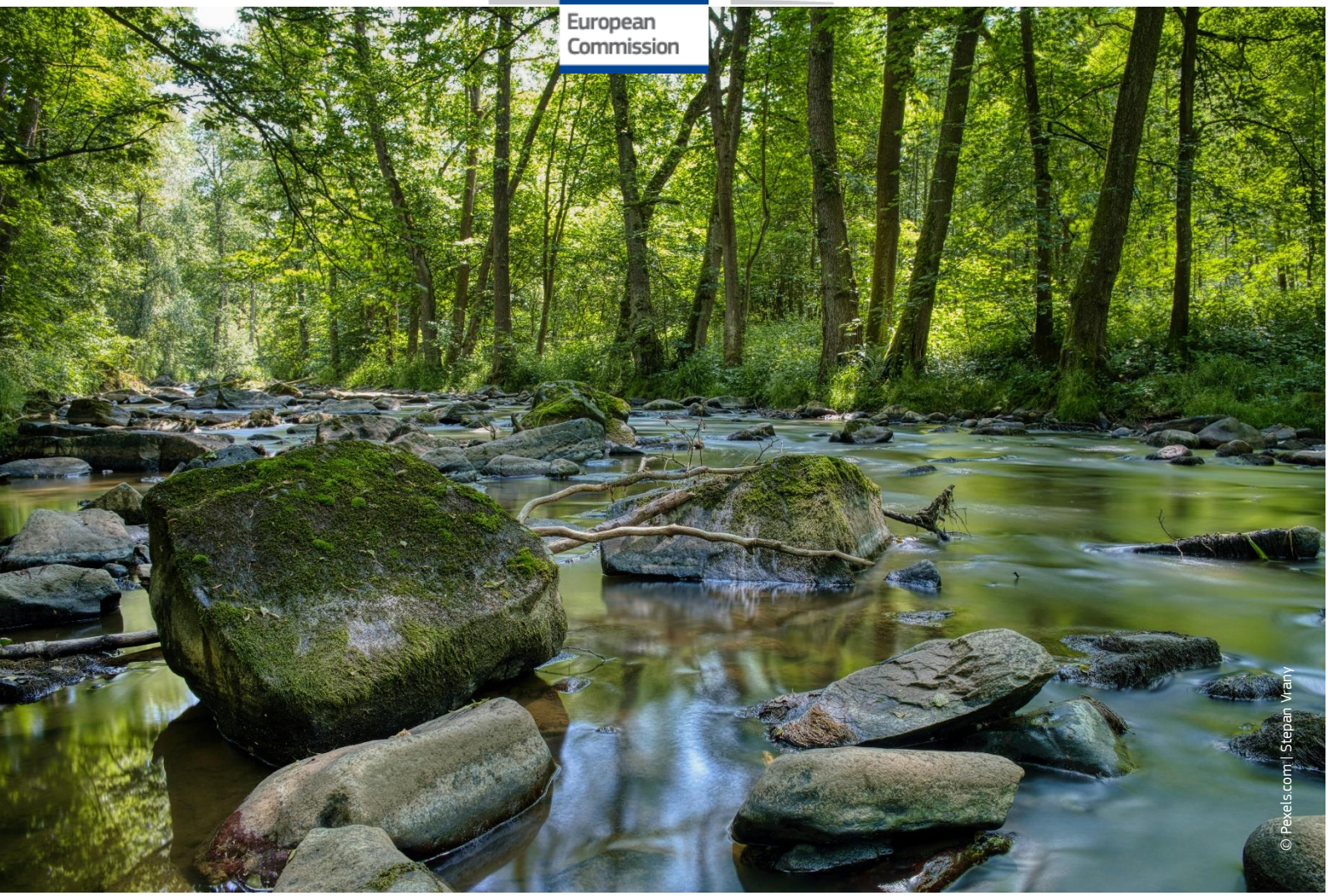


Country specific staff working document

Czechia

Content

SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, Member State characterisation

The Czech Republic (CZ) is a landlocked country, bordered by Austria to the south, Germany to the west, Poland to the northeast, and Slovakia to the southeast. CZ has a hilly landscape that covers an area of 78,871 square kilometres with a mostly temperate continental climate.

CZ (10.8 million) has a population density of 133 per km2, which is above EU average. Bohemia, to the west, consists of a basin drained by the Elbe and the Vltava rivers, surrounded by mostly low mountains, such as the Krkonose range of the Sudetes. Moravia, the eastern part of the country, is drained mainly by the Morava river, and it also contains the source of the Oder River. Water from the Czech Republic drains to three different seas: the North Sea, the Baltic Sea and the Black Sea.

The territory of Czechia covers three international river basin districts (RBDs): The Danube River Basin (CZ 1000), the Elbe River Basin (CZ 5000) and the Oder River Basin (CZ 6000).

Reporting

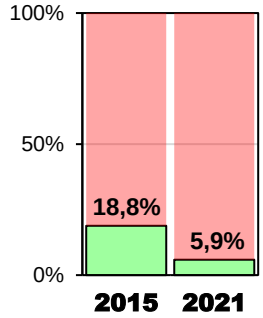
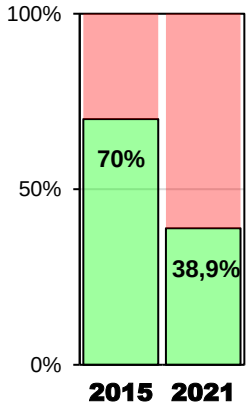
The deadline for reporting the 3rd RBMPs was in March 2022. The Commission and the EEA together with Member States developed an electronic reporting system in WISE (Water Information System for Europe). Its use was voluntary. Some Member States used it to fulfil their obligations, others reported the plans in pdf format. The cut-off date for the WISE e-reporting was September 2023 and the MS were assessed based on the datasets available by this date.

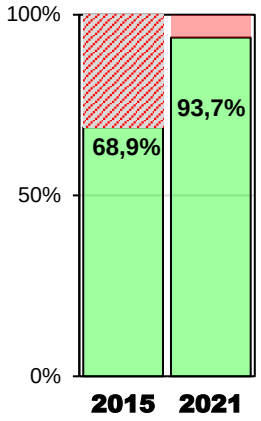
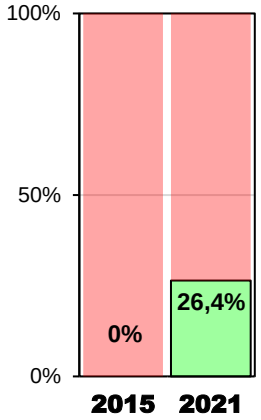
By September 2023 Czechia submitted full electronic reporting and therefore the assessment is based on this dataset.

Despite the cut off dates for the production of this report, reporting continued and, for the State of Water report, the EEA aggregated the results available by July 2024 in their products and dashboards available at WISE Freshwater web portal.

The below table summarises the key data on the pressures on / the status of surface and groundwater bodies in the Czech Republic as per the data reported in Czechia's 3rd RBMP and related electronic reporting in WISE.

Changes in Status, Pressures, Exemptions & Measures

Surface Water Bodies	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
ECOLOGICAL STATUS		The main pressures of Czechia's SWBs are the insufficient treatment of waste waters (affecting 74% SWB) and diffuse pollution from agriculture (affecting 67% SWB). Surface water bodies are impacted by nutrients (affecting 82 % of all SWBs - up from 41% SWB in the 2nd RBMPs) causing severe euthrophication of rivers and lakes. The deterioration of the ecological status from 18.8% to 5.9% since 2015 appears mainly due to the improved surveillance monitoring (coverage increased from 8% to 13% for rivers and from 10% to 48 % for lakes) and stricter boundaries for physico-chemical elements (N + P). The ecologicgal status of rivers is also affected by many impoundments to the free flow of rivers: Less than 20% of Czechia's rivers benefit from sufficient continuity. Czechia is in the process of developing a new methodology for ecological flows. Only 12.2% of SWBs are expected to reach the objective of a good ecological status by 2027. Overall, the improved monitoring and stricter boundaries between 2nd and 3rd RBMP have put Czechia in a better position than before to tackle the root causes for the massive nutrient pollution of its rivers and lakes. This challenge is very signficiant.
CHEMICAL STATUS		Similar to the analysis of the ecological status, Czechia improved its monitoring between the 2nd and 3rd RBMP which allowed for a better identification of pressures on rivers and lakes. Since the 2nd RBMPs, 84% of all rivers are now being monitored, that is a significant increase in monitoring by +30%, and also more chemicals are being considered in the status assessment. Pressures are similar to those for the ecological status, namely discharges not connected to the sewerage network, pollution from agriculture (pesticides) well as insufficienty treated urban wastewaters. The observed deterioration is not only due to better monitoring, though. Wastewater discharges are increasing in a majority of river basins, namely in the Morava RBD + 7.6%, in the Vltava RBD + 5.7% and in the Oder RBD + 1.7%.The majority of substances causing failure to achieve good status in rivers and makes are PBTs. Czechia expects that by 2027 only 38% SWB can reach a good chemical status. Overall, the improved monitoring between 2nd and 3rd RBMP have put Czechia in a better position than before to identify the root causes for the chemical pollution of its rivers and lakes. This challenge is signficiant.

Ground Water Bodies	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
QUANTITATIVE STATUS		Czechia reported a significant numerical improvement of the quantitative status of its groundwater bodies. This seems mainly due to improved knowledge, as 21% of GWBs were re-classified from "unknown" status to "good" status. 3.5% of GWBs were re-classified from previously poor to good status since the 2nd RBMP. It remains unclear, however, how far these improvements are reliable as 83% of assessments are now conducted with medium to low confidence, only. Moreover, Czechia's approach to classifying ground water bodies still fails to consider also the status of surface water bodies which are connected to the ground water bodies, a significant shortcoming and not in line with the WFD requirements. Quantitative pressures on groundwater are caused by water abstractions for public water supply, for industrial and for agricultural uses. By 2027, CZ expects that 99.4% of GWBs could reach a good quantitative status. At the same time, Czechia also reports that 23 GWB (13%) are at risk of failing to achieve good quantitative status by 2027. Measures were mapped to prevent or control groundwater abstractions. At the same time, Czechia also plans new reservoirs and water transfers which could increase existing quantitative pressures on groundwater. Specific investments are not listed.
CHEMICAL STATUS		Czechia is among the EU Member States with the highest portions of groundwater bodies that fail to achieve a good chemical status due to diffuse pollution from agriculture. 89 % of GWB are polluted with pesticides, chloridazon desphenyl, nitrate, metazachlor ESA and ammonium. Regrettably, non agricultural pollutants show a sustained upward trend in GWB. The main non-agricultural pollutants are arsenic, nickel, cadmium, nitrate and aluminium. 43% of groundwater bodies notably fail good chemical status because of the poor surface water quality. PFAS are not yet operationally monitored. 156 GWB (90%) are at risk of failing good chemical status by 2027. Measures focus on removal of contaminated sites, as well as pesticide pollution from agriculture, and diffuse atmospheric pollution.

2. Horizontal aspects

2.1 Governance

Czechia has a two-layers water governance, with authorities competent at the national level (Ministries of Environment and Agriculture) and 14 regional authorities.

Transboundary cooperation: Czechia cooperates with neighbouring countries in the Danube RBD in hydrological monitoring and data sharing, as well as in coordinated actions towards hydro peaking, minimum flows, reservoir management especially under low flow conditions. In 2021 Czechia referred Poland to the European Court of Justice (case C-121/21) for gaps in environmental impact assessment and authorisation of lignite mining activities on Polish territory, as well as relevant consultation processes, with potentially significant impacts on groundwater bodies on Czech territory.

2.2 Characterization of River Basin District

Czechia participates in three River Basin Districts which are transboundary and which are all covered by international agreements: Elbe (shared with AT, DE, PL), Oder (shared with DE and PL) and Danube (shared with DE, AT, SK, HU, SR, RO, BG etc). Czechia's share of these international RBDs respectively is 33.7 % (Elbe), 5.9 % (Oder) and 2.7 % (Danube). A permanent co-operation body and an international RBMP are in place for all IRBDs, too (designated as category 1 cooperation). The Czech Republic published its draft RBMPs, timetable, and work programme as well as the overview of significant water management issues for public consultation as requested during six months.

Table 1. Overview of Czechia's River Basin Districts (RBDs) Source: 3rd RBMPs electronic reporting

RBD	Name	Rivers	Lakes	Groundwater Bodies
CZ1000	Dunaj/Danube	278	17	54
CZ5000	Labe/Elbe	636	49	100
CZ6000	Odra/Oder	131	7	20
	TOTAL	**1045**	**73**	**174**

The Czech Republic has 1118 surface water bodies (1045 rivers and 73 lakes) as well as 174 groundwater bodies.

Pressures & Impacts: Czechia's knowledge of pressures on surface water bodies has significantly improved since the 2nd RBMPs when pressures on 70% surface water bodies were still unknown.

As regards Surface Water Bodies (river and lakes), Czechia reports that most significant are the diffuse pressure from discharges not connected to the sewerage network affecting 74 % of surface waterbodies. This is closely followed by diffuse pressures from agriculture affecting 67 % of them, and then point pressures from urban wastewater affecting 56 % SWBs. This compares to the 2nd

RBMPs when 70% SWBs were still reported to be subject to unknown pressures, a significant improvement of knowledge.

These improved insights in pressures also allowed Czechia to improve its assessment of impacts. The most significant *impact* on surface water bodies is nutrient pollution affecting 82 % of all SWBs. In the 2nd RBMPs nutrient pollution was still being reported to affect only 41 % of SWBs. Nutrient pollution regularly stems from diffuse pressures from agriculture (fertilizers) and insufficient wastewater treatment at industrial sites and in municipalities. Nutrients often cause eutrophication of rivers and at times also algal bloom which kills fish due to a lack of oxygen. Czechia's lakes also severely struggle with eutrophication due to the high amount of nutrients (carp farms).

Czechia's nutrients concentrations are high across the entire country, with more than 10 mg/l of NO3 measurements.[1] Under pressures from industrialised large-scale agriculture that relies excessively on fertilisers, Czechia's nutrient pollution has increased between 2000 and 2017 from for nitrates/ 65 to 101 kg N/ha. The latest data suggest that Czechia discharges 179.8 kg N per hectare.[2]

For groundwater bodies, diffuse pressures from agriculture are now also reported to affect the highest percentage of groundwater bodies, namely 89 % (3rd RBMP) up from 60 % GWBs (2nd RBMPs), a pronounced increase. This is followed by point source pressures from contaminated sites or abandoned industrial sites and then diffuse pressures from atmospheric deposition. Turning to the impacts, the most significant *impact* on groundwater bodies is chemical pollution, affecting 91 % GWBs (3rd RBMP), up from 73 % GWBs (2nd RBMP) – again a very pronounced increase also of impacts, and aligned with the significant increase of pressures.

Czechia's GWBs are regularly polluted with pesticides, chloridazon desphenyl, nitrate, metazachlor ESA and ammonium. Nutrient pollution affects also close to 60% GWB. Non-agricultural pollutants regrettably show a sustained-upward trend in GWBs (arsenic, nickel, cadmium, nitrate and aluminium).

Czech Republic's utilised agricultural area amounts to 45% of the total land area with major outputs of the agricultural industry including cereals (22.3%), milk (19.7%), and industrial crops (14.8%).[3] Agricultural landscape is subject to very intense farming practices on particularly large areas with an excessive use of nitrogen and phosphate fertilisers. As a result of erosion wash off, nutrients and pesticides from agricultural soil leak into groundwater and surface water bodies.[4] Czechia features one of the highest average size of farms in the EU. There has been a massive concentration of holdings with around 75% of farmland being cultivated by large farms. 47% of Czechia's agricultural land is threatened by water erosion, and 49% suffers from high soil compaction due to the large proportion of erosion-sensitive crops in crop rotation, large mono-cropped parcels, missing small-scale landscape variation, and the effects of regulation of water streams. [5]

It is also important to note in this context that more than 70 % of agricultural land in Czechia is today economically exploited by economic operators other than the land owners (for historic reasons).[6] While a farmer who grows crops on his/her own land has inherent incentives to preserve the quality of the soil in the long term, thinking often also a generation ahead, a (large) tenant who

[1] Source: JRC, available at 24 (europa.eu).
[2] 24 (europa.eu).
[3] Commission Report on the implementation of Directive 91/676/EC on 2016-2019 time period.
[4] See the National Biodiversity Strategy of the Czech Republic 2016–2025 at page 61, prepared under supervision of the Ministry of the Environment, page 70, available here.
[5] Czechia's CAP Strategic Plan available **here**.
[6] https://mze.gov.cz/public/portal/en/mze/soil/land-ownership-and-land-prices#:~:text=Rental%20%E2%80%93%20tenure,the%20lowest%20in%20mountainous%20areas.

rents (many small land units) on a short term basis is tempted to maximise cashflow only, irrespectively of long term repercussions for the soil they rent. In a country with such a peculiar economic situation like Czechia, governmental controls over the sector's compliance with restrictions on pesticides and fertilisers gain particular importance. Fines must be sufficiently dissuasive and controls particularly effective.

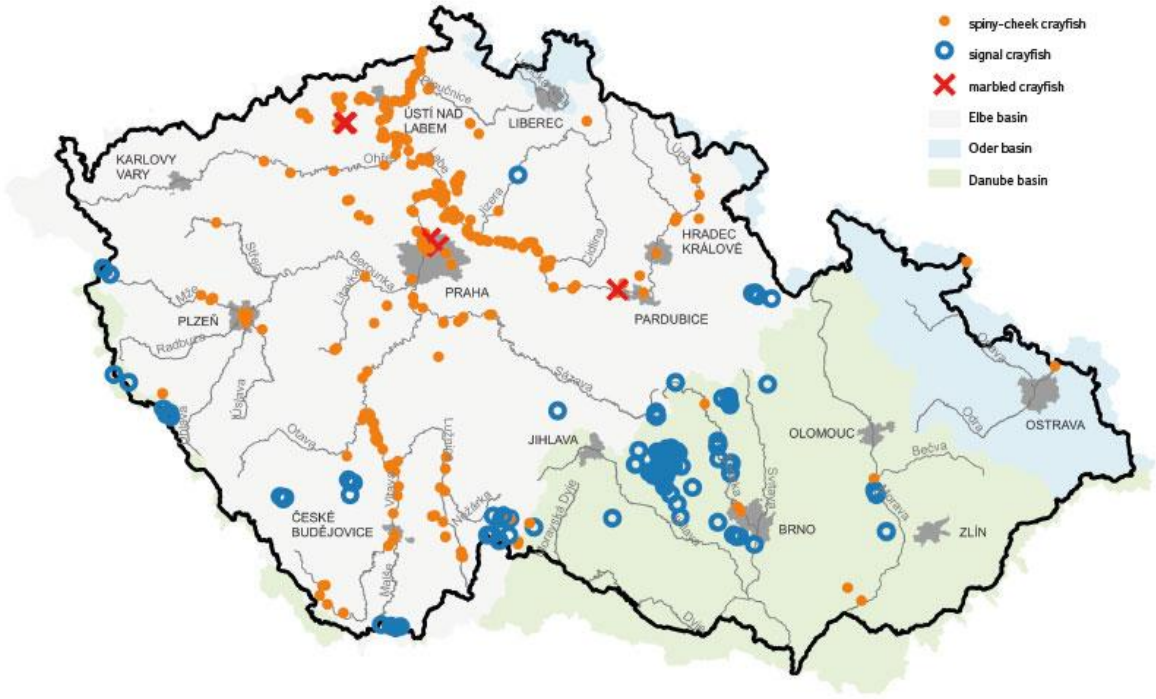
It is certainly positive that Czechia's government strives to increase organic agriculture to reach 21% by 2027. If achieved, this could be an important step to help reduce pollution of surface and groundwater water bodies alike.

Wastewater and mine water discharges are also still significant pressures on rivers in Czechia and progress to reduce these pressures remains heterogenous. In 2019, a total of 1,522.3 million m^3 of wastewater and minewater were discharged into surface water bodies, a year-on-year decrease by approximately 1.2% according to the Czech government. However, the development of wastewater discharges varies according to the RBD. A high increase of wastewater discharges was recorded in the Morava RBD (by 7.6%), in the Vltava RBD (by 5.7%) and in the Oder RBD (by 1.7%). Other river basin districts to the contrary recorded a decrease in wastewater discharge, the Elbe RBD by 9.4% and Ohře RBD by 2.7% (data from 2019).[7]

Invasive alien species exert pressure on the ecological status of surface water bodies**.** Data on invasive species in Czechia's Biodiversity Strategy suggest that 595 alien animal species live in Czechia with 113 of them being considered invasive. Of crayfish considered an invasive species of European Union concern, at least three species are procreating in the Czech Republic. These are the signal crayfish (Pacifastacus leniusculus), the spiny-cheek crayfish (Orconectes limosus – high fecundity, omnivore, copes with polluted canals), and marbled crayfish (Procambarus fallax – high reproductive potential, native to Northeastern Mexico, may have significant impact on fish populations). In particular the omnivore spiny-cheek crayfish and the signal crayfish are widely present in the Czech Republic. The marbled crayfish stayed so far local around Prague and Pardubice, but it has a particularly high procreation potential.

[7] REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC IN 2019 by the Czech Ministry of Agriculture and the Ministry of the Environment , on page 45.

Figure 1. Map of invasive cray fish species in the Czech Republic (2023)



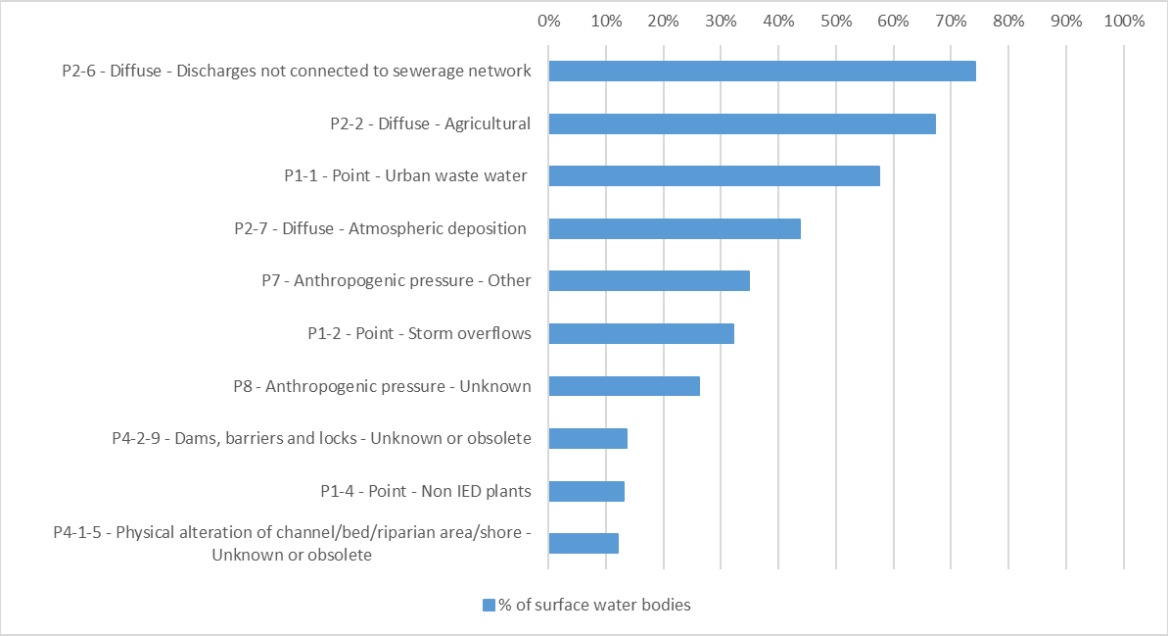
Source: Jiří Picek, Jitka Svobodová and Silvie Semerádová, TGM WRI, p. r. i., May 2023.

It therefore appears advisable for Czechia to adopt more aggressive measures for containing the spreading of invasive crayfish. Such measures can include the release of predator fish that feast on invasive crayfish, such as eel, burbot, pike perch, catfish, chub, as well as dragonfly larvae, which successfully destroy juvenile crayfish. Other methods include the sterilization of males or emptying fish ponds to allow them to freeze during winters. [8]

Impacts: The most significant impact on surface water bodies is nutrient pollution which affects 82% of surface water bodies. This is a notable increase since the 2nd RBMPs where nutrient pollution was still reported to affect 41 % SWB. The reason for this increase is not clear from the information in the RBMPs.

[8] In this respect see the article here.

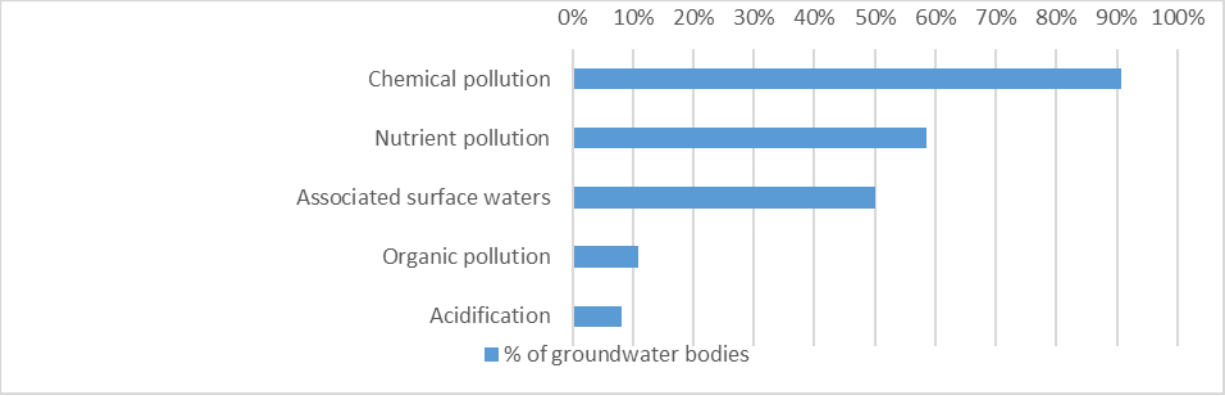
Figure 2. Pressures on Czechia's surface water bodies (2021)



Source: WISE electronic reporting

The most significant impacts on groundwater bodies are chemical pollution which affect 91% GWB (2021), up from 73 % GWB in the 2nd RBMP (2015). These GWBs are polluted with pesticides, chloridazon desphenyl, nitrate, metazachlor ESA and ammonium. Nutrient pollution affects close to 60% GWB. Non-agricultural pollutants showing a sustained-upward trends in GWB are arsenic, nickel, cadmium, nitrate and aluminium.

Figure 3. Pollution of Czechia's Groundwater Bodies (2021)



Source: WISE electronic reporting

Classification: All water bodies have been classified for ecological status or potential but half of the river water bodies which are classified in national types do not correspond to any intercalibration[9]

[9] Intercalibration is essentially about making sure that every EU Member State uses the same yard stick to evaluate the status of a surface water body. The intercalibration exercise involves allocating rivers and lakes to commonly agreed classes and types so that waterbodies can be compared.

types. Also, no type-specific reference conditions have been established for hydromorphological[10] quality elements of lakes.

It is worth noting that Czechia has an important cultural heritage in a high number of fishponds that can occupy important surfaces (1ha- several hundred ha), some are even in Natura 2000 areas. Main fish being farmed is the carp, that supports rather high nutrient conditions. Czechia is aiming to co-fund the restoration of fishponds that have neglected or flood damaged infrastructure and therefore are contributing to increased flood risks. The fish farms, if extensive, can get support for restoration if this contributes to reducing flood risks and is complying with the WFD. Historically, Czechia's high number of heavily modified lakes and artificial lakes goes back long ago (14th -20th century) when the Czech Republic built a network of ponds and the popular Vltava Cascade with the dams of Kamýk, Orlík and Slapy which are now recreational areas with camps, small hotels, restaurants, pubs and other facilities. There are also approximately 24 000 fishponds and water reservoirs with total surface area of approximately 52 thousand ha in the Czech Republic where around 20 986 tonnes of marketable fish are caught (2019).[11]

3. Policy elements contributing to biodiversity and climate change adaptation

3.1 Surface Water: what is their ecological status or potential

Monitoring

Czechia's knowledge of pressures on the ecological situation of surface water bodies has considerably improved since the previous 2nd RBMP, when CZ still did not know which pressures affected 70 % of its surface water bodies. This much better insight is due to better monitoring.[12] First, the coverage of Czechia's monitoring programme has increased since the 2nd RBMP. In the 3rd RBMPs, Czechia's surveillance monitoring covered 13 % of river water bodies (8 % in the 2nd RBMPs) and 48 % of lake water bodies (10 %). For the coverage of operational monitoring, the percentages for river and lake water bodies are 96.5 % (95 % in the 2nd RBMPs) and 100 % (78 %), respectively. Second, the number of monitored parameters has also increased.

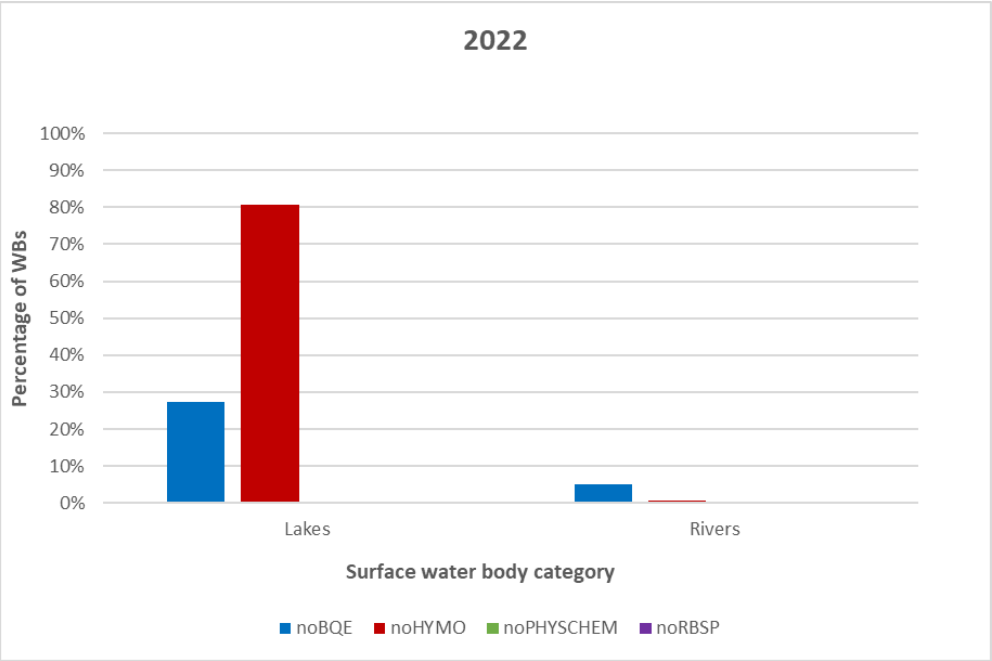
However, detailed information on these changes has not been provided and it is unclear whether the reported increase in monitored parameters concerns both surveillance and operational monitoring. There are namely two types of monitoring: i) operational monitoring to determine the status and which covers all water bodies at risk and ii) surveillance monitoring aimed rather at identifying impacts and long-term changes.

Despite the improvements, some significant gaps remain for monitoring quality elements relevant to the ecological status of SWBs. Czechia for instance does not monitor biological quality elements, macrophytes, phytobenthic or benthic invertebrates and fish in lakes, nor their salinity and nitrogen conditions. For rivers, the general physico-chemical quality elements[13], transparency and salinity

[10] Hydromorphology considers the physical character and water content of water bodies. Good hydromorphological conditions support aquatic ecosystems (i.e. hydromorphological elements such as water flow and substrate provide physical habitat for biota such as fish, invertebrates and aquatic macrophytes).
[11] Czechia did not include fishponds in reporting under the RBMP as only 73 lake water bodies were reported 2021 under the 3rd RBMP.
[12] Ecological status (or ecological potential for heavily modified surface water bodies) is assessed by monitoring biological quality elements with supporting hydromorphological and general physico-chemical quality elements.
[13] Physico-chemical elements include thermal conditions, oxygenation conditions, acidification status and nutrient conditions.

conditions are not monitored either. The monitoring of physico-chemical elements would be important as it could allow Czechia to identify also pressures from nutrient pollution.

Figure 4. Missing parameters for designating ecological status of SWB (without biological quality elements (noBQE), hydromorphological quality elements (noHYMO), general physico-chemical quality elements (noPHYSCHEM), or river basin specific pollutants (noRBSP) for classification of ecological status / potential in 3rd RBMP)



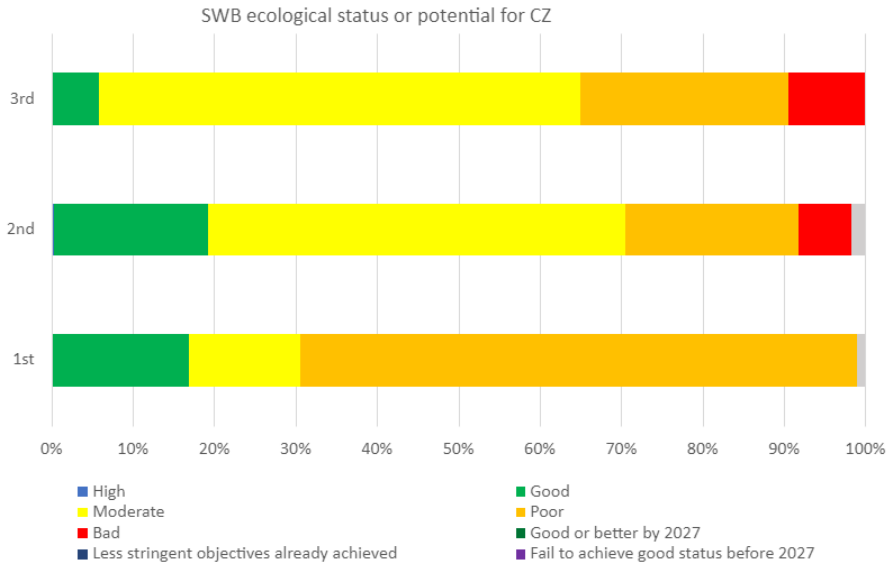
Source: WISE electronic reporting

Ecological Status

Czechia reported that changes between the 3rd RBMP and 2nd RBMP make direct comparisons difficult due to changes in the delineation of the water bodies, due to stricter limits for physico-chemical elements (e.g.: nutrients), and due to significant improvements to monitoring (see above).

Based on the reported data, Czechia's problems with nutrient pollution in rivers and lakes are worrying. While previously Czechia reported 18.8 % SWBs in good ecological status (2nd RBMP), this has declined to only 5.9 % (3rd RBMPs). The percentage of surface water bodies in moderate, poor, and bad status for the current cycle also increased (at the expense of good status) from 70 % in the 2nd RBMPs to 94.1% in the 3rd RBMPs. Again, this may be due to better insight rather than a genuine deterioration over a five years timespan, but the numbers are of concern.

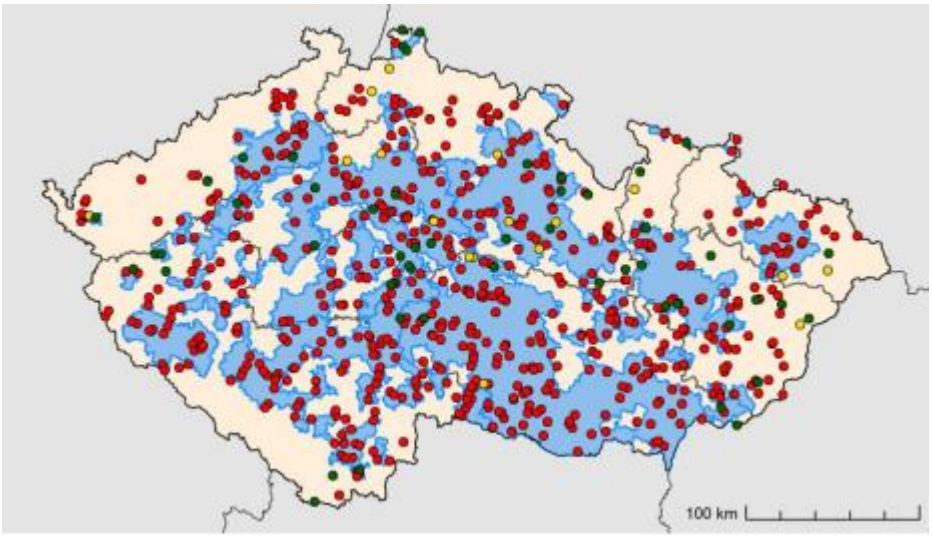
Figure 5. Ecological status of SWB in 2nd and 3rd RBMPs



Source: WISE electronic reporting

In particular Czechia's lakes severely struggle with eutrophication due to the high amount of nutrients. Czechia's nutrients concentrations are high across the entire country, with more than 10 mg/l of NO3 measurements.[14] Under pressures from industrialised large-scale agriculture that relies excessively on fertilisers, Czechia's nutrient pollution has increased between 2000 and 2017 from for nitrates/ 65 to 101 kg N/ha. The latest data suggest that Czechia discharges 179.8 kg N per hectare.[15]

Figure 6. Trophic Status reported under the Nitrates Directive



Source: JRC Statistics reported under the Nitrates Directive: trophic status surface water

[14] Source: JRC, available at 24 (europa.eu).
[15] 24 (europa.eu).

In rivers, potentially also due to eutrophication and/or hydromorphological alterations, the status of fish and benthic invertebrates[16] is of concern. Both quality elements display a significant percentage in poor and even bad status.

Gap to target

Czechia's gap to the 2027 target is profound. Until 2027, the Czech government predicts that the ecological status/potential of surface water bodies may improve slightly with only 12.2 % of water bodies achieving good or better ecological status/potential. This implies that 87.8% SWB will fail good ecological status by 2027.

3.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

Hydromorphological characteristics of surface water bodies concern the quantity and dynamics of water flow, the connection of surface water bodies to groundwater bodies, continuity of rivers, as well as river depth, river width and their variation in structure as well as the substrate of the riverbed structure of the riparian zone.

In the 3rd RBMP, the number of heavily modified river water bodies in Czechia has increased from previously 89 (8.5 %) to 98 (9.4 %). Often flood protection structures are the cause for heavy modifications to river water bodies, followed by hydropower. Fisheries and aquaculture, tourism and recreation, and urban development each represents 20% of HMWB designations. The main physical alterations related to heavily modified river water bodies are channelisation, straightening, bed stabilisation, and bank reinforcements. For heavily modified lake water bodies, the main alterations are weirs/dams/reservoirs.

Table 2. Heavily Modified & Artificial Water Bodies (CZ, 2021)

Modifications	Rivers (% of total)	Lakes (% of total)
HEAVILY MODIFIED	9.4%	94.5%
ARTIFICIAL	0.5%	5.5%

It is striking that 94.5% or river bodies remain natural whereas all lakes are either heavily modified or even artificial. . Czechia has a tradition of breeding carp in large fishponds which can occupy important surfaces. Feed-based carp farming can cause eutrophication of a lake's waters.

In 2023 it was reported that the Czech Republic is also exploring a possibility of transporting water from the Danube in Austria to Czechia for irrigation of farmland in the neighbouring Moravia and Lower Austria regions.[17] Infrastructure projects of such magnitude could alter the flows of the Danube

[16] Benthic invertebrates are the small animals, such as clams, worms, and crustaceans that live on or in the bottom substrate of a water body. These organisms are an important food source for many fish and crustaceans, including many recreationally and commercially important species.

[17]

See also at Vyprahlou jižní Moravu může spasit kanál z Dunaje, s nápadem přišlo Rakousko - iDNES.cz.

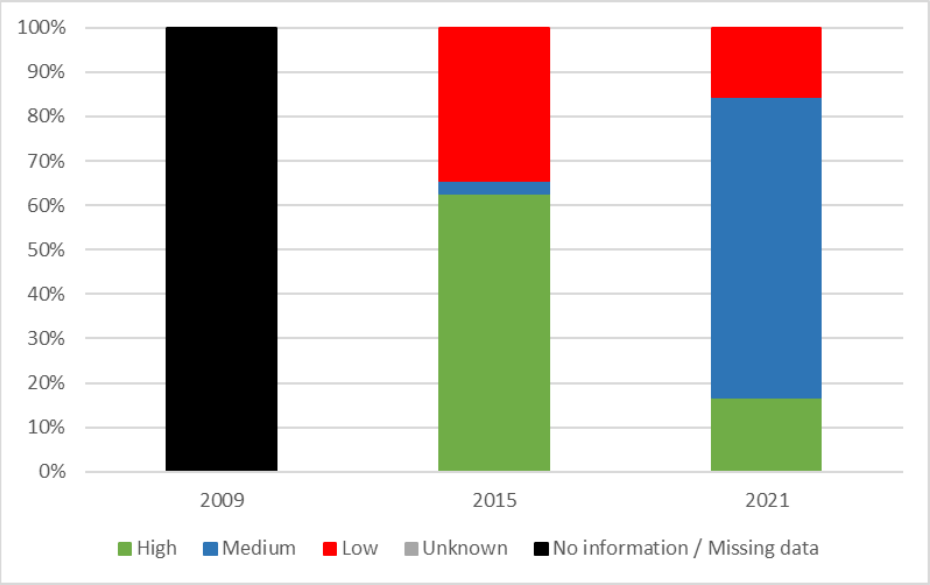
and affect its ecological status, making an environmental impact assessment necessary for evaluating the cumulative conditions of Article 4 (7) WFD. This analysis should be conducted as part of an integrated river basin management and be reflected in the transboundary River Basin Management Plan for the Danube. The hydrological conditions and the need to guarantee ecological flows of the Danube would need future-proofing in view of climate change and glacier melting / reduced snowfall.

3.3 Groundwater bodies - have they sufficient water – quantitative status

Monitoring

There are 1610 monitoring sites for quantitative monitoring in the 3rd RBMPs. The number has increased from 1559 in the 2nd RBMPs. There has been an improvement of knowledge, because no groundwater bodies are still assessed in "unknown" quantitative status in the 3rd RBMPs, while 37 GWB (i.e., 21.3 %) were still assessed as "unknown" in the 2nd RBMPs. In view of these advances, it is all the more striking that Czechia's confidence in the overall quantitative classifications of ground water bodies has significantly decreased since the 2nd RBMP. In the 3rd RBMP, most classifications are done with "medium" confidence. In the 2nd RBMP, 62.6% GWB were classified with a "high" level of confidence, while in the 3rd RBMP merely 16.7% are classified with high confidence.[18] Taking these numbers together, it seems that at the 2nd RMP, Czechia's high confidence was probably due to classifying many GWB as "unknown" while in the 3rd RBMP the "medium" level of confidence is due to the fact that now more GWB have been attributed a status albeit for the first time and hence with less confidence than before the "unknown" status.

Figure 7. Confidence in quantitative status assessment GWB in Czechia



Source: WISE electronic reporting

Quantitative Status

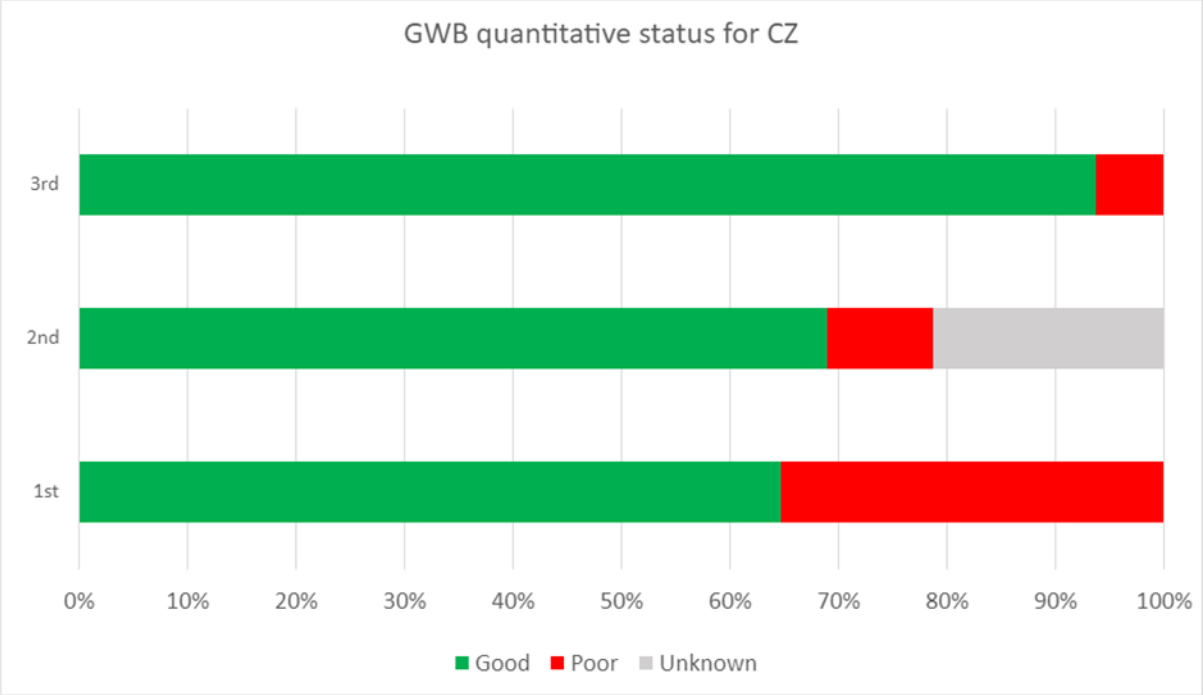
In the 3rd RBMP, 93.7% GWB were in good quantitative status (163 out of 174 GWB). Compared to the 2nd cycle, 21% of GWB previously in "unknown" status were re-classified as in "good" status, leading to the significant increase from ca. 69% to 93.7% GWB in good status. At the same time,

[18] The low level of confidence in the assessment of the quantitative status could potentially be due to the fact that Groundwater associated aquatic ecosystems and Groundwater dependant terrestrial ecosystems are still not considered in the assessment of quantitative status of groundwater bodies in all RBDs.

less GWB were classified in "poor" status, namely only 11 GWB (2021) of previously 17 GWB (2015). As set out above, most quantitative status assessments were made with lower confidence than previously.

There are indeed severe gaps in the assessment methodology and implementation, including lack of consideration of GWAAEs, GWDTEs and saline or other intrusions in the assessment of groundwater quantitative status in all RBDs. This gap weakens the robustness of Czechia's assessment. Applying a correct methodology, more ground water bodies may have to be classified in poor quantitative status.

Figure 8. Quantitative Status GWB Czech Republic (2021)



Source: WISE electronic reporting

Gap to target

The Czech Republic expects that by 2027 only one GWB would still fail to reach good quantitative status, this would be less than 1%. From Czechia's programme of measures, it is however not clear how the significant improvement from 6.3% to 1% good status will be achieved concretely.

3.4 Protected Areas (identification, monitoring, objectives and measures)

Currently, 21.9% of Czechia's terrestrial territory is designated as protected areas, slightly below the EU value of 26.4%. The EU Biodiversity Strategy has set a target of reaching 30% protected area coverage at the EU level by 2030.

Table 3. Protected areas per type of area and associated water body (CZ, 2021)

Protected area type	Number of Water Bodies Associated with protected areas in

	Rivers	Lakes	Groundwater
Bathing waters	74	26	
Drinking water protection area	341	32	165
Other protected habitat sites	683	34	125

Source: WISE electronic reporting

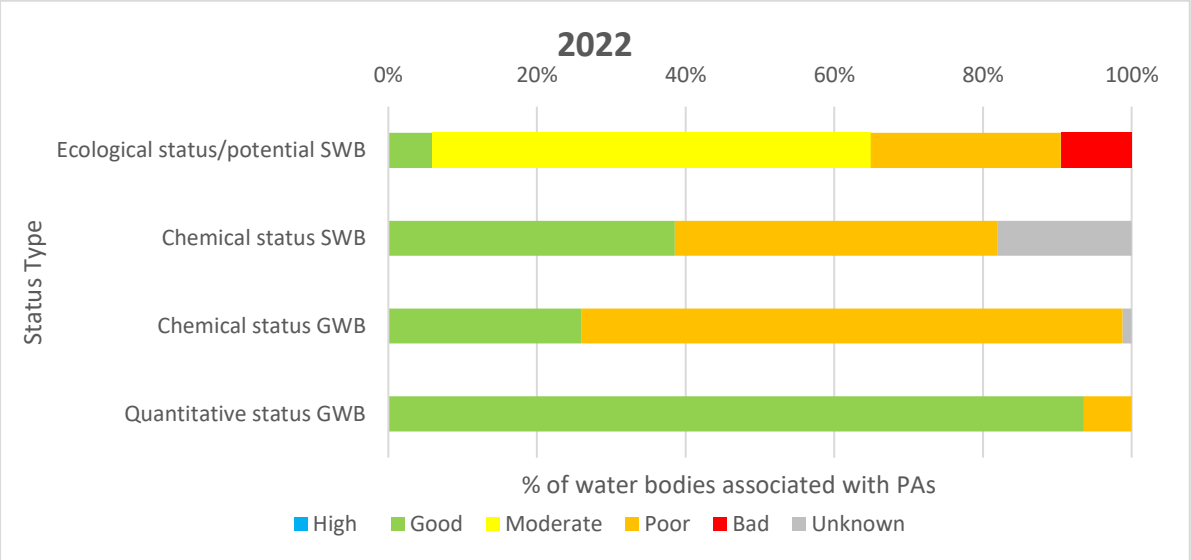
Monitoring

Czechia addressed a previous Commission recommendation on covering all relevant protected areas and Czechia now reports a large network of protected areas in the 3rd RBMPs. Protected areas have been identified for surface waters under the Bathing Waters Directive, and for surface and groundwaters as Drinking Water Protection Zones and Natura 2000 sites which includes the Birds and Habitats Directives.

Gap to Target

Since the 2nd RBMP, the ecological status of surface water bodies associated with protected areas has deteriorated, and consequently a number of water bodies was re-classified from good to moderate status. The chemical status has followed a similar downward trend. Now less than 40% of water bodies associated with protected areas remain in good chemical status, compared to 75% in the 2nd RBMPs. Again, due to better monitoring, a more realistic picture of reality has emerged since the 2nd RBMP, visualised in the below chart.

Figure 9. The status of water bodies associated with protected areas in 2022



Source: Member State WISE electronic reporting

Measures

Member States are required to set additional environmental objectives and standards for water bodies linked to protected areas where these are needed to ensure that the requirements of the Directives applicable to those protected areas are met. However, no information was found within Czechia's 3rd RBMPs related to such additional objectives for protected areas. To the contrary, additional measures have been planned in the 3rd RBMPs relating to Birds and Habitats Directives for surface and ground waters.

3.5 What is being done to prevent/reduce hydromorphological pressures

Monitoring

Czechia deserves credit for comprehensively mapping morphological alterations to surface water bodies since the 2nd RBMP. A new and improved method has been developed taking account of CIS Guidance No. 4 and Commission recommendations on the designation of heavily modified water bodies in the 2nd RBMPs.

Measures

The 3rd RBMP is less convincing when it comes to mitigation measures. The Plan contains only some limited information on restoration and mitigation measures which are only briefly described in a qualitative way. Background documents mention that mitigating hydropeaking and ensuring minimum flows in the reservoirs are in place as they were required by legislation at the time when the dams were built (1960s – 1980s). Programmes to support the revitalisation of watercourses, water retention in the landscape and the recovery of landscape structures are referred to in Czechia's Report on Biodiversity where however it is also noted that the measures are often not sufficiently implemented. [19]

It is unclear whether Czechia's legislation foresees the periodic review of water permits including permits for irrigation. There is no explicit link in the 3rd RBMPs between the implementation of e-flows and the authorisation process and / or review of permits to control water abstractions. At the time of the 3rd RBMP, a new methodology for e-flows was still awaiting approval. The 3rd RBMP foresees a number of measures to tackle ecological pressures. They KTM5 – Improving longitudinal connectivity, KTM6 – Improving hydromorphological conditions of water bodies other than longitudinal continuity and KTM7 – Improvements in flow regime and / or establishment of ecological flows. Assessment and tackling of these pressures have been improved compared to the previous cycle thanks to a new comprehensive database of hydromorphological mapping.

It is very positive that Czechia cooperates with neighbouring Austria to re-naturalise – with EU financial support - transboundary rivers like Thaya in order to restore spawning grounds for local fish populations. [20]

[19] See the National Biodiversity Strategy of the Czech Republic 2016–2025 at page 50, prepared under supervision of the Ministry of the Environment, page 70, available here.
[20] *https://2014-2020.at-cz.eu/at/ibox/pa-2-umwelt-und-ressourcen/atcz7_dyje-2020-thaya-2020*.

3.6 What Czechia is doing for abstractions and water scarcity

As in the previous 2nd cycle, Czechia has not identified water abstraction as a significant pressure at the RBD level or in significant portions of any RBD. However, according to the EEA's Water Exploitation Index[21], 19.5% of all freshwater in Czechia is consumed in some form. This is just underneath the 20% threshold above which a country usually experiences water scarcity.[22] It must be noted that groundwater abstractions have been declining between 1989 and 2006, and stayed stable since then. However, according to an analysis by the Czech Ministry of Agriculture in 2019, groundwater abstractions have been increasing in the Oder RBD by 1.7%. [23]

Regarding basic measures to control abstraction from surface and groundwater (referred in Article 11(3)(e) WFD), in Czechia there is a concession, authorisation, and / or permitting regime to control surface and groundwater abstractions and impoundments. Furthermore, there is an updated register of abstractions from surface water and groundwater and a register of impoundments. For smaller abstractions no registration and reporting are required; these are abstractions below 100 m3/month or 1000 m3/year, and where the volume of water raised or stored by a water body does not exceed 1 000 000 m3.[24] Permits are generally issued for a fixed limited period, which may be longer for hydropower projects (>30 years) and impoundment/accumulation water works (valid for the duration of the use of the structure).

Regrettably, the Czech Republic has not yet defined a methodology for ecological flows. Ecological flows are considered within the context of the WFD as "an hydrological regime consistent with the achievement of the environmental objectives of the WFD in natural surface water bodies as mentioned in Article 4(1)". Assessment of the hydrological regime is not only compulsory under the WFD for assigning high ecological status to SWB, but also plays an important role for water permits. The WFD requires that available groundwater resources exceed the long-term annual average rate of abstraction. To achieve this, abstraction permits must be granted knowing the minimum flows of surface water bodies that connect with ground water bodies.[25]

3.7 Adaptation to climate change

As regards flood risks, the Floods Directive requires Member States to consider the impact of climate change on the occurrence of floods, and therefore in the preparation of Flood Hazard and Risk Maps (FHRMs) and Flood Risk Management Plans (FRMPs). More information on these Maps and Plans can be found in Section B. However, considering the close relationship between overall water management and floods management and the importance of climate change on both, theytheythey are jointly addressed in this section.

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[21] The WEI+ provides a measure of total water consumption as a percentage of the renewable freshwater resources available for a given territory and period. The WEI+ is an advanced geo-referenced version of the WEI. It quantifies how much water is abstracted monthly or seasonally and how much water is returned before or after use to the environment via river basins (e.g. leakages, discharges by economic sectors). The difference between water abstractions and water returns is regarded as 'water consumption'.

[22] It is noted that the raw data underlying the calculation of WEI+ have some shortcomings.

[23] REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC IN 2019, Ministry of Agriculture of the Czech Republic and Ministry of the Environment of the Czech Republic, on page 47.

[24] Water Act – Section 8 and 10, Decree No 431/2001 Coll. and Methodology for the assessment of significant pressures stipulate that authorised people holding a water management permit are obliged to measure the quantity and quality of the abstracted water, the volume of water raised and the volume of water stored, and submit the results to RBD authorities by reporting annual data to the Records of abstractions, discharges and impoundments/accumulations of water for water balance. No registration and reporting are required, if water abstraction exceeds 100 m3/month or 1000 m3/year, and where the volume of water raised or stored by a water body exceeds 1 000 000 m3.

[25] See Annex II, section 2.1.2 definition of quantitative status

A national research project and studies on impact of climate changes (dated 2015 and updated in 2019) on maximum discharges indicate no significant and robust trend that would point to changes in flood events in the next few decades. Therefore, the impact of climate change was not considered in flood scenario preparations. Czechia's second FRMPs state that the outputs of climate models are very uncertain and vary between scenarios and models. The FRMPs note that, while total annual precipitation is expected to increase in northern Europe and decrease in southern Europe, Czechia lies in between. The plans then go on to state that deciding on possible adaptation measures for flood risks in the country faces large uncertainties. The sources for this analysis are not identified, however. The second FRMPs moreover do not refer to specific climate change scenarios or to quantitative or qualitative analyses of the potential impacts of climate change on floods. Overall, the assessment of potential climate impacts on flooding in Czechia has not changed compared to the first FRMPs. Perhaps as a consequence, the FRMPs do not identify measures specifically to address the expected effects of climate change on flooding; the plans do, however, state that technical solutions should give preference to structures enabling, in the event of a change in conditions in the future, adaptability to allow an additional increase in their protection at an acceptable cost.

As regards drought risks and water scarcity, like many other EU Member States, also the Czech Republic suffers from droughts. The severe drought of 2020, for instance, exposed every 5th municipality in Czechia to water scarcity, particularly in the regions of Southern Moravia and in the Northwest.[26] It is therefore welcome that Czechia's 3rd RBMP considers the national climate change adaptation strategy for designing the 3rd RBMPs programme of measures. Czechia's National Adaptation Strategy is referred to in the 3rd RBMPs as guidance for measures[27], and Czechia also drew up a "Concept for protection against the effects of drought for the territory of the Czech Republic" which recommends the creation of a proper drought risk management plan.

Moreover, in preparation for the 3rd RBMP cycle, a baseline scenario for climate induced water impacts until 2045 was prepared. This baseline scenario until 2045 was then used to model various scenarios on potential impacts of climate change on water management in Czechia. This in turn served then as a basis for developing programs of measure.[28] Finally, in the IRBMPs, specific chapters are also present which analyse the effect of climate change on significant pressures and water status, whilst also establishing transregional objectives for climate change adaptation.

It is also positive that Czechia in 2020 amended its Water Act to set up an operational governance for manging water scarcity. Regional commissions can now declare a state of water scarcity and impose restrictions on the use of water in the event of droughts. The amended Water Act introduced a requirement to develop plans for water scarcity and droughts at the regional and at the national level.

Eventually, successful climate mitigation and adaptation for water management will also necessitate measures beyond those referred to in the 3rd RBMP Programme of Measures, or in the FRMPs, because the water cycle is significantly affected by sectoral policies outside the scope of the WFD. To prevent that ground water is being depleted for irrigation in agriculture (for instance in the Morava region), resilience should be improved through nature-based solutions that improve water retention in the landscape, by promoting less water-intensive crops and through water reuse. This all would help Czechia secure the long-term resilience of its agricultural sector to climate change.[29] Moreover, there seems to be scope for improvements to Czechia's forestation policies. Monocultures of

[26] https://www.osw.waw.pl/sites/default/files/OSW-Report_Drought-in-the-Czech-Republic_net.pdf
[27] "Measures to prevent and mitigate the effects of drought and water scarcity", which are based on the document "Concept for protection against the effects of drought for the territory of the Czech Republic" Mezirezortní komise VODA-SUCHO (2023) Koncepce ochrany před následky sucha pro území České republiky na období 2023–2027.
[28] https://eagri.cz/public/web/file/694664/LABE_II_VLIVY_A_DOPADY.pdf
[29] See the Report from the Commission to the European Parliament and Council "Summary of CAP Strategic Plans for 2023-2027: joint effort and collective ambition", page 7 of 23.11.2023, COM(2023) 707 final.

coniferous trees account for around 70% of the country's forests. They are particularly vulnerable to high temperature and temperature fluctuations. This has exposed Czechia's forests to bark beetle invasions. In recent years, the necessary logging covering vast stretches of forest has significantly aggravated soil erosion.[30] In addition, Czechia's State of the Environment report mentions that the increasing extent of land sealed by constructions disrupts the ability of the landscape to retain water and protect against floods.[31]

4. Policy elements contributing to zero pollution

4.1 Surface Water: what is their chemical status

Monitoring

According to the electronic data reported by Czechia under the 3rd RBMPs, for 84% of rivers are now subject to operational monitoring, but the monitoring of lakes covers 47 % only, down from 58% in the 2nd RBMP, a significant decline. Surveillance monitoring covers 13.2% and 19.6% of rivers and lakes respectively. As monitoring of lakes declined, knowledge about their chemical status declined, too. The chemical status is now, regrettably, unknown for as much as 44% of all lakes.

Table 4. Percentage of surface water body (length / area) included in monitoring

Chemical status monitoring		3rd RBMPs
River length %	Surveillance monitoring	13.2%
River length %	Operational monitoring	84.0%
Lake area %	Surveillance monitoring	19.6%
Lake area %	Operational monitoring	47.0%

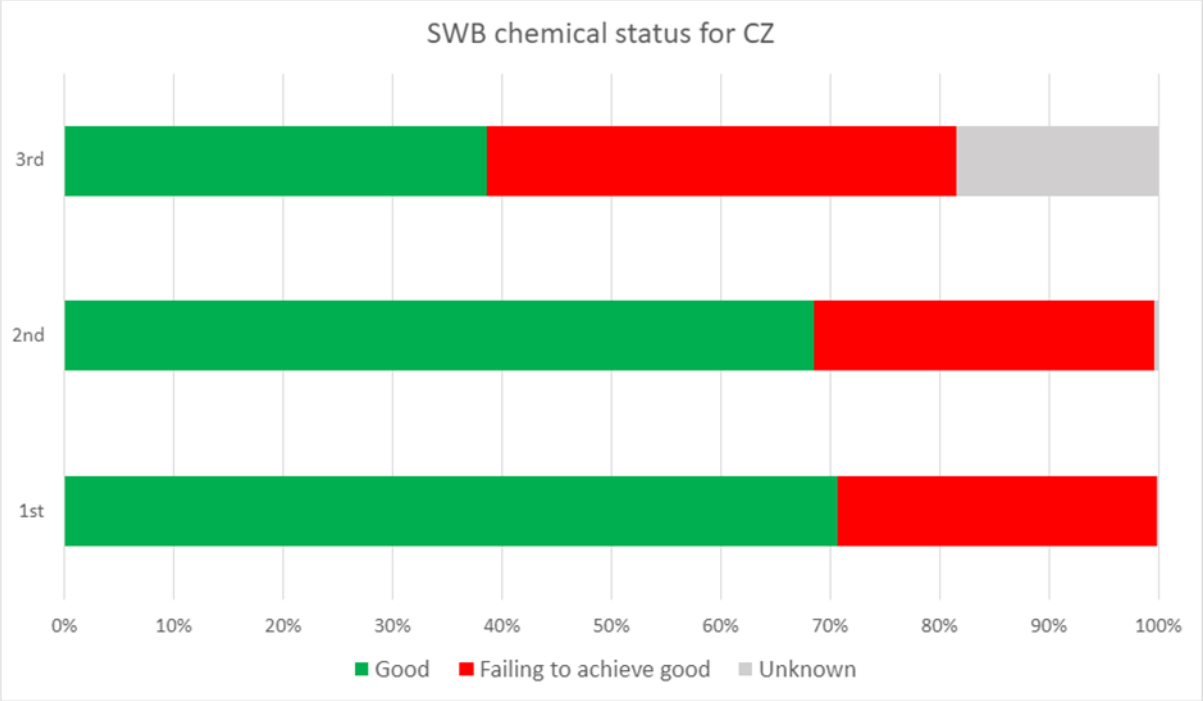
Source: WISE electronic reporting

Gap to Target

According to electronic reporting, in 2021 only 38.6% SWB are in good status, which means that Czechia still has a gap of 62% SWB not in good status, of which 18.4% are in unknown status. 42.9% of surface water bodies are in poor chemical status, up from 30% in the 1st and 2nd RBMPs. According to the Czech government this increase in "poor" status reflects a stricter methodological approach based on the precautionary principle rather than a substantial deterioration. Looking forward to 2027, data received through WISE reporting suggest that the Czech Republic expects to achieve good chemical status for another 6 SWB by this date. This also means that only limited progress is expected from the measures now planned in the 3rd RBMPs.

[30] https://www.osw.waw.pl/sites/default/files/OSW-Report_Drought-in-the-Czech-Republic_net.pdf.
[31] The State of the Environment Report (SoER) of the Czech Republic is a basic reporting document of the Czech Republic. The SoER is published annually on the basis of Act No. 123/1998 Coll (as per EEA, 2015).

Figure 10. Chemical Status SWB in 1st, 2nd, 3rd RBMP



Source: WISE electronic reporting

Compared to the 2nd RBMP, the number of water bodies in unknown status has increased. The Czech government clarified that this is due to several reasons, the main reason being that gaps in the monitoring of surface water bodies (SWBs) were no longer closed using expert judgment. The confidence in the classification of 3rd RBMP stayed largely the same as in the 2nd RBMP, the majority of water bodies being classified with a medium level of confidence.

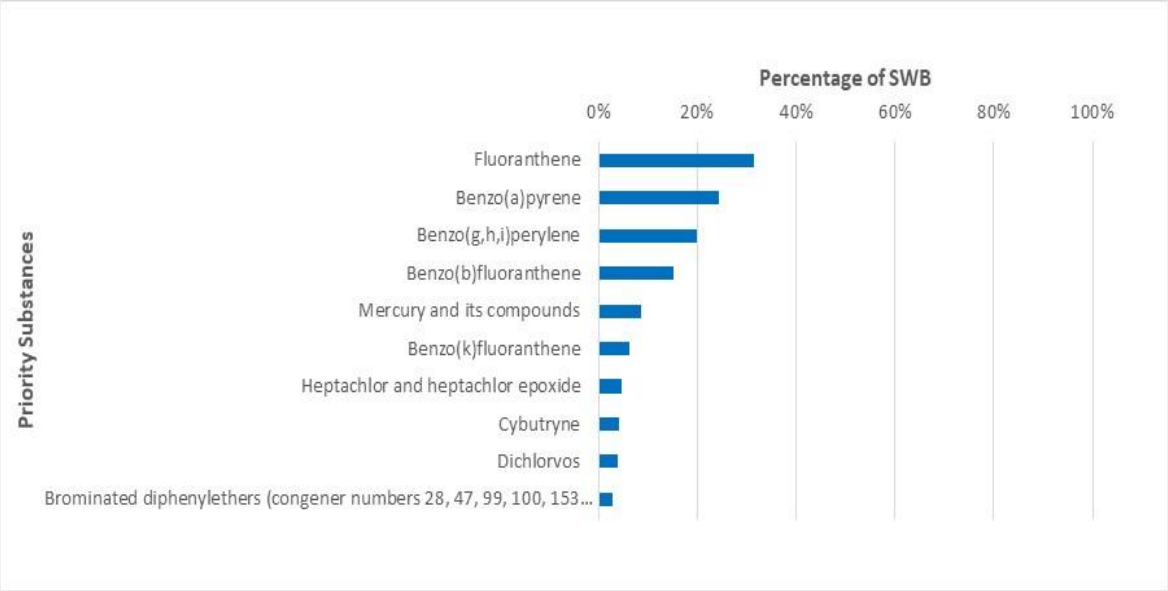
The primary substances that cause failure to achieve good chemical status of rivers and lakes in Czechia are PAHs[32], mercury, PBDEs, heptachlor and heptachlor epoxide. Excluding these Persistent, Bioaccumulative and Toxic substances (PBT) which have high resistance to degradation, there are also a number of non-PBT substances which cause failure to achieve good chemical status. In particular, this includes fluoranthene and two pesticidal / biocidal substances, cybutryne and dichlorvos. Cybutryne was used as a biocide, particularly in shipping for treatment of hulls which was legal to use in the European Union until 2016[33]. Dichlorvos is an organophosphate insecticide which was no longer used in the European Union after 2006.[34] In other words, several substances which keep polluting Czechia's surface and groundwaters date back to times when these substances were not yet prohibited, they are persistent.

[32] Listed in Figure 4.4 individually as Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(b)fluoranthene, and Benzo(k)fluoranthene.

[33] COMMISSION IMPLEMENTING DECISION (EU) 2016/ 107 - of 27 January 2016 - not approving cybutryne as an existing active substance for use in biocidal products for product-type 21 (europa.eu)

[34] EUR-Lex - 32007D0387 - EN - EUR-Lex (europa.eu)

Figure 11. Priority substances causing failure of chemical status in SWB (2021)



One cause for diffuse pollution of surface water bodies is also air pollution coming from combustion processes. Air pollution still remains a serious environmental and health problem of the Czech Republic.[35] If Czechia tackled air pollution more decisively, it could also reduce pollution of its surface water bodies, for instance of mercury.

4.2 Groundwater Bodies: what is their chemical status

Monitoring

The confidence in the assessment of the chemical status of groundwater bodies has decreased (Figure 6-4). Classification chemical status of groundwater bodies with high confidence decreased from 87.9 % in the 2nd RBMPs to 82.8 % in the 3rd RBMPs. The rest of the classifications are conducted with medium (8%), low (8 %) or unknown (1.1 %) confidence. The RBMPs do not explain this change.

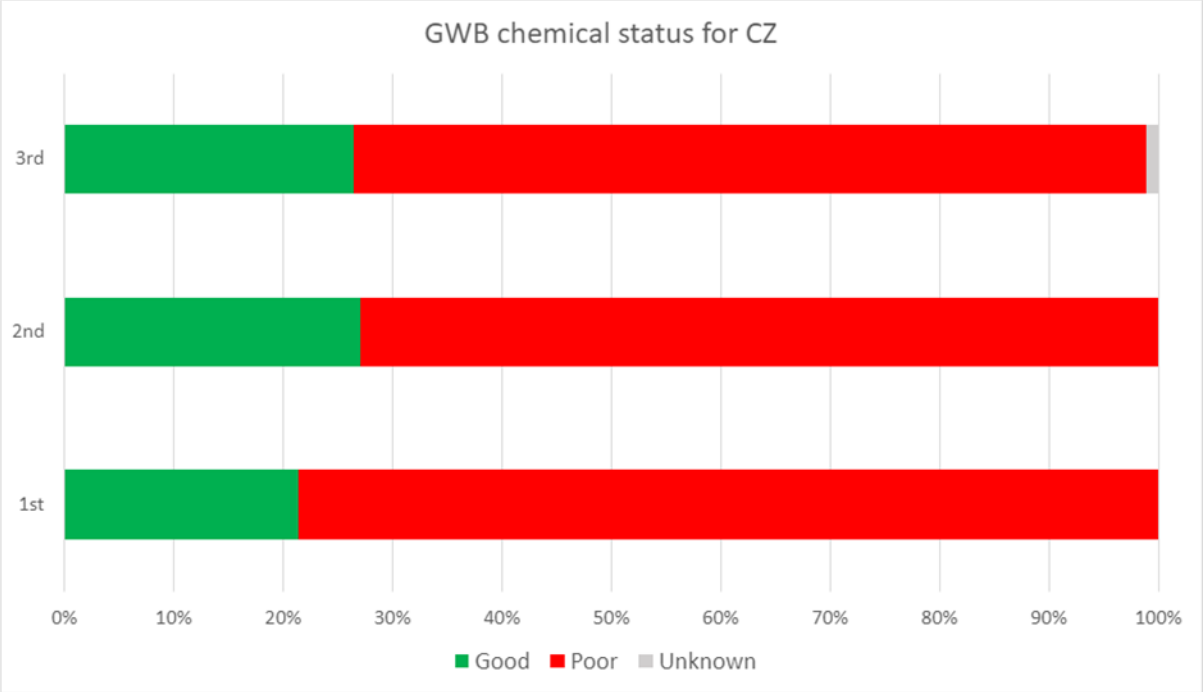
Chemical Status

In the 3rd RBMP, only 26.4% (46 out of 174) groundwater bodies remain in good chemical status, while the vast majority (126 GWB = 72.4%) are being classified in poor chemical status and 2 GWB (1.1 %) unknown status. Since the 2nd RBMPs, 17 GWB have turned from good to poor chemical status. The Czech Republic still fails to consider the status in of GWAAEs and GWDTEs in assessing

[35] HomePage - Ministerstvo životního prostředí (mzp.cz).

the status of ground water bodies. The number of GWBs in poor chemical status may therefore be higher than reported.

Figure 12. Chemical Status of GWB in the Czech Republic (2021)



Source: WISE electronic reporting

Gap analysis

A key reason why the Czech Republic is failing to achieve good status for so many ground water bodies is the chemical contamination of industrial sites. The gap analysis in the 3rd RBMP suggests that 137 GWBs miss good status due to "contaminated sites or abandoned industrial sites". The number of priority substances that contaminate Czechia's groundwater is long. Czechia also has high portions of groundwater bodies that do not have a good chemical status due to nitrates and pesticides. While nitrate pollution caused 45 GWB to fail good status in 2021, the gap analysis in the 3rd RBMP suggests that already 111 GWB fail good status due to pesticides pollution. Diffuse atmospheric pollution fails 35 GWB from reaching good status.

4.3 What Czechia is doing to combat pollution from agriculture

The most significant impact on the ecological status of surface water bodies in Czechia remains nutrient pollution which affects 82 % of surface water bodies. This is twice as much nutrient pollution as in the 2nd RBMPs, where nutrient pollution was reported to affect 41 % of surface water bodies. Emissions for N are (also) caused by fossil fuel energy production at household level and by energy plants, industry, traffic and agriculture. Czechia has the second highest share (50%) of coal in its total domestic energy production, despite a 36% decrease since 2009[36], which contributes for an important part to the N-pollution.

[36] Czech Republic 2021 – Analysis - IEA

Generally speaking, Czechia's Programme of Measures under the 3rd RBMP has been further developed compared to the 2rd RBMP and more information has become available on the links between measures and pressures. Information is now also presented on the use of cost effectiveness, though this is still largely focused on basic measures, with a bias towards measures compulsory under the Urban Waste Water Treatment Directive, i.e.: measures concerning urban waste waters, not pollution from agriculture.

Czechia's Strategic Plan for the Common Agricultural Policy ("CAP")[37] pays some attention to improving water quality. For instance, farmers are incentivised not to apply pesticides in 12-metre buffer strips around water courses, which is substantially larger and more effective than the 3-metre minimum mandatory under the CAP. In addition, financial support is offered for measures protecting the vicinity of four large drinking water reservoirs, covering an area of 25 000 hectares, where only limited use of pesticides is allowed. That said, these measures under the CAP remain voluntary, i.e.: they do not oblige farmers to actually avoid pesticides and fertilisers.

Czechia's CAP Strategic Plan 2023-27 aims amongst others. at redistributing EU financial support to small- and medium-sized farms, strengthening also the position of organic farming aiming for a growth from 16% to 21.3% of the agricultural land in 2030[38], and improving the vitality and quality of life in rural areas through investments. In Czechia about 16% of the total utilised agricultural area is already organic farming, which is above EU average in 2021 (ca. 10%)[39] but far below the Green Deal target for 2030 (25%).

The Czech CAP Strategic Plan in 2022 is focussing on biodiversity measures, but part of those measures is beneficial for water objectives too, like arable land being dedicated to non-productive areas and the sustainable meadow management including sustainable animal grazing. The shift to a more sustainable meadow management is expected on more than 25% of the agricultural land. This is reducing diffuse pollution of nutrients for the water. The aim to deploy integrated production methods (limiting pesticides and replacing them with biological preparations) on more than 40.000 hectares is an important step to further reduce the pesticides pollution. According to Czechia's CAP Strategic Plan, the share of utilised agricultural area (UAA) under supported commitments related to improved nutrient management is currently 14.19%; and related to a sustainable use of pesticides it is 23.09%.[40]

To close the gap, Czechia would need to reduce nutrient loads on 28.365 km2 of agricultural land and pesticide pollution on 10.575 km2 of agricultural land.[41] However, looking forward to 2027, the 3rd RBMPs does not offer specific data for how to achieve good status by 2027 for nutrient loads from agriculture in specific water bodies. There is a reference to the assessments done in the international RBDs, but no data are presented in the RBMPs themselves.

Similarly, there is no detailed assessment of how the measures from the 2nd RBMP planning cycle have been implemented and their efficiency. The more detailed fact sheet on each measure includes a description of what the measure might entail, but there are no details of its implementation nor its impact. There is only limited reference made to implementation of the Nitrates Directive in the RBMPs.

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[37] More information about relevant measures can be found in "Mapping and analysis of CAP strategic plans" (2023-2027) the link Mapping and Analysis of CAP Strategic Plans - European Commission (europa.eu)

[38] At a glance: Czechia's CAP Strategic Plan (europa.eu)

[39] Developments in organic farming - Statistics Explained (europa.eu).

[40] Czechia's Cap Strategic Plan 2021 report, 2023CZ06AFSP001, page 101.

[41] See table A.4 Country report CZ Republic (" Table A.4 Key Types of Measure planned to achieve objectives in surface water bodies by 2021 in the Czech Republic")

The key measures planned in the 3rd RBMP PoM to close the gaps show the magnitude of the issues Czechia is facing: KTM2 to reduce nutrient pollution from agriculture for 6030 km2; KTM3 to reduce pesticides pollution from agriculture for 14.762 km2.

Regrettably, Czechia's Programme of Measures does not foresee measures for the recovery of cost of water services in agriculture" nor "advisory services for agriculture" which could be important to help farmers to better manage manure.

Overall, while some progress is being made, that progress is by far too slow for Czechia to reduce pollution from agriculture significantly and eventually meet WFD objectives.

4.4 What Czechia is doing to combat pollution from other sectors

Nitrate pollution not only emerges in the agricultural sector, but also results from burning fossil fuels. Lignite still accounts for almost half of Czechia electricity generation and a quarter of its residential heating demand. The burning of lignite causes aerial and surface water pollution. Geographically, the most affected regions where air quality standards are repeatedly exceeded are in particular the agglomeration Ostrava/ Karviná/ Frýdek-Místek, as well as the Prague agglomeration, Brno agglomeration, the Northwest zone (Ústí nad Labem Region), the Central Bohemia zone (Kladno area) and the Central Moravia zone.[42] All this aerial pollution exerts pressures on the quality of surface water bodies. Czechia has adopted programs for Air Quality Improvement as defined by the Ambient Air Quality Directive 2008/50/EC. However, in practice these programs seemingly fall short of what is needed to comply with the Directive's requirements as several infringement cases suggest.

Beyond nitrate pollution, Czechia identified in total 55 prohibited substances in the Danube RBD, 56 in the Elbe RBD and 55 in the Oder RBD which include 45 priority substances. To achieve good status in surface water bodies in 2021, the Czech Republic would have had to close a very significant gap for a large number of prohibited and non-prohibited substances.[43] Amongst the polluting substances are also highly toxic substances like DDT, lead, arsenic, and uranium. The gap is more significant for some substances than for others. As an example, the gaps for DDT (2 SWB), lead (4 SWB), arsenic (13 SWB) and uranium (1 SWB) in rivers and lakes is smaller than the gap for Bisphenol A (78 SWB), EDTA (93 SWB) and Mercury (95 SWB).

The key measures planned in the 3rd RBMP PoM to close the gaps show the magnitude of the issues Czechia is facing: The 3rd RBMP PoM maps KTM 4 remediation of contaminated sites for 15.772 km2. There are also 7.167 km2 affected by unknown anthropogenic pressures, addressed with KTM 14 (research).

Czechia's programme of measures prioritises measures that have traditionally been regulated and are subject to improvement measures, in particular the Urban Waste Water Treatment Directive. Type A measures (that is measures specific to a water body), relate to wastewater plants and sewage systems and are prioritised due to their significant impact to address point source discharges (1221 measures) and diffuse pollution (420 measures). Moreover, 102 measures are planned to phase out emissions of priority hazardous substances.

[42] HomePage - Ministerstvo životního prostředí (mzp.cz).

[43] Table A.3 of Czech Country Report.

A critical factor for the success of implementing these and other measures will be the availability of funding to support investments required. The cost of the measures in the Czech Republic has been mapped out, but importantly, the source of funds remains only estimated. For example, the cost of measures for CZ1000, CZ5000 and CZ6000 amounts to 68 126 million CZK. The estimated funding for these measures comes from EU funds (15 834 million CZK) and the national budget (52 292 million CZK).[44] However, funding cannot be considered 'secured' if there are only estimates on funding needs and indications about potential funding sources. Czechia should spend all programmed amounts for sustainable water management under cohesion and regional funds.

Regrettably, Czechia also does not foresee measures to use water pricing policy for recovering cost of water services from industry, while Czechia qualifies the remediation of contaminated sites as "disproportionately expensive" when invoking exemptions to justify non-compliance with "good status" requirements under Article 4 WFD.

4.5 What Czechia is doing to combat significant pressures – overall assessment of the Programmes of Measures

Gap assessment

The Programme of Measures has been further developed in the 3rd RBMP and more information has become available on the use of key measures and links between these measures and pressures. The RBMP also includes a gap assessment. All pressures are associated with KTMs with either basic or supplementary measures assigned to them. However, there is limited information on the gap to target in 2021 (no information is presented for 2027) and the assignment of indicators to KTMs. The main barrier to the effectiveness of the 2nd RBMP PoMs has been reported as a lack of appropriate measures.

Cost-effectiveness

The RBMP includes information on the cost effectiveness of measures, although this is largely focused on the basic measures, with a bias towards those associated with the UWWTD. Information is presented on the co-ordination of the PoMs with other Directives and within transboundary catchments.

5. Exemptions and economics

5.1 To what extent are exemptions applied in Czechia

Since the 2nd RBMP Czechia has improved the use of exemptions at a conceptual level by applying exemptions at the level of water bodies. Czechia invokes the exemption of Article 4(4) WFD for the chemical pollution of 480 SWB, that is 42.9% of all SWB. Czechia more specifically invoked "technical infeasibility" for most of them and for 19 SWBs, that is 1.7 %, "disproportionate cost". Regrettably, the 3rd RBMP does not include any explanation on the reasons to invoke the technical infeasibility or disproportionate cost at the surface water body level, i.e. of the actual reasons justifying the exemption for each water body based on a technical and/or economic analysis.

[44] As of December the 8th 2023 1 CZK = 0.041 Euros. Therefore 68 126 million CZK= 2 796 572 EUR.

Table 5. WFD Exemptions used by Czech Republic (3rd RBMP)

	Number of exemptions	
Significant pressure on surface water	Article4(4) - Disproportionate cost	Article 4(4) - Technical feasibility
P1-1 - Point - Urban waste water		14
P1-3 - Point - IED plants		9
P1-4 - Point - Non IED plants		13
P1-5 - Point -Contaminated sites or abandoned industrial sites	39	39
P2-10 - Diffuse – Other		1
P2-2 - Diffuse - Agricultural		15
P2-4 - Diffuse - Transport		60
P2-6 - Diffuse - Discharges not connected to sewerage network		13
P2-7 - Diffuse - Atmospheric deposition		1052
P4-2-9 - Dams, barriers and locks - Unknown or obsolete		1
P7 - Anthropogenic pressure – Other		38
P8 - Anthropogenic pressure – Unknown		74

As can be seen from the above, Article 4(4) exemptions have been widely applied to water bodies, as was the case in previous RBMP cycles. In the 3rd RBMPs, exemptions according to Article 4(4) in surface waters are applied to 1050 SWBs (93.9 %) for ecological status / potential and to 480 SWBs (42.9 %) for chemical status. Exemptions according to Article 4(4) for groundwater are applied to 10 SWBs (5.7 %) for quantitative status and to 126 SWBs (72.4 %) for chemical status. All Article 4(4) exemptions have been justified on the grounds of lacking technical feasibility, disproportionate costs

and / or natural conditions (the latter for groundwater bodies only) with type of exemption and rationale indicated for each individual water body, but without detailed justifications (reported or referred to).

Regrettably, the 3rd RBMP does not appear to conduct an in-depth economic cost-benefit analysis per water body to justify exemptions on grounds of "disproportionate costs" (see economic section at the end). Moreover, the possibility to invoke the exemption of Article 4 (4) WFD also expires in 2027.

According to the 3rd RBMP, no exemptions according to Article 4(6), Article 4(7) and 6(3) have been applied in this cycle. Article 4(5) has been applied to 1 groundwater body (0.6 %) for chemical and quantitative status on the grounds of disproportionate costs with information provided at the water body level, but without detailed justification.

5.2 Use of economic analysis and water pricing – cost recovery

In the 2nd RBMP, the Commission recommended to Czechia to apply more rigorously WFD article 9's cost recovery principle unless exemptions according to Article 9(4) WFD apply, and to make it more transparent how different water users contribute.

In the 3rd RBMP, the Czech Republic

defines water services as "all activities that provide for the abstraction, impoundment, treatment and distribution of surface water and groundwater for households, public institutions or any economic activity, or for the discharge and treatment of wastewater with subsequent discharge into surface waters". The report disaggregates data for these services as requested by Art 9 (1) WFD according to the broad water use sectors households, industry, energy, manufacturing/industry and agriculture..

Confusingly, the 3rd RBMPs also refers occasionally to "watercourse and river basin management" as a distinct water service, while the Czech authorities actually treat it as an "other water use" since it does not undergo its own cost-recovery analysis. Instead, the RBMPs indicate that the charges for watercourses and river basin management help to cover the expenses associated with the treatment of surface water abstracted to source public water supply.

The 3rd RBMP does not report specific progress on the economic methodology since the 2nd RBMP. Following a national methodology, the analysis has been carried out at the national level without a differentiation between RBDs, based on 2018 data. Most of the assessment items listed in WFD Annex III are reported. There are long-term forecasts of water supply, with breakdown over source types, and of water demand, categorised by water user types and sectors. Presumably, these forecasts draw on the 'baseline scenario for water management, water use and water impact' up to the year 2045, coming from the National Climate Adaptation Strategy. In addition, there are volume, cost and price estimates for the broad water services water supply and sanitation services, differentiated by user types / sectors.

Remarkably, there appear to be no estimates and forecasts for the investments in water supply and wastewater collection and treatment facilities, apart from those on the investment measures in the Programme of Measures.

For the 2021 reporting, the quantitative cost-effectiveness analysis (CEA) has only informed the selection of the so-called "Type A" measures related to specific wastewater plants and specific sewage systems. The RBMPs say that because of a lack of data, CEA has not been used for other type A measures (i.e. other measures targeting specific waterbodies and neither for type B and type C measures (respectively a general course of action targeting a significant pressure or with a national

scope). The RBMPs consequently do not compare the cost effectiveness of different types of measures, for example measures addressing nutrient point sources vs those tackling nutrient diffuse sources aiming at reducing nutrient input. Cost-Effective analysis was carried out only for certain measures related to wastewater plants and sewage systems.

The RBMPs do not offer a concrete conclusion as to whether the pricing policy provides adequate incentives to use water efficiently. However, the RBMPs' comprehensive outline of the pricing structure suggest some incentives with a potential for improvement, as illustrated below.

The regulatory procedures to set tariffs for collective water supply and sanitation are laid down in national legislation. This price regulation is explicitly geared to cover the costs of providing the water services: the water companies need to follow binding rules for their cost accounting, the calculation of the water service costs and how to set on that basis the tariffs. The tariffs can take two forms: either 'fully volumetric,' i.e. through a defined unit rate, or 'mixed,' i.e. a volumetric and fixed part, the latter depending on a set of consumer profile parameters. The latter allows social tariffs arrangements.

The law also defines the charges to be levied on surface water abstraction above a threshold volume and arranges that the proceeds are used to fund water management services. This arrangement implies that irrigation is priced when sourced from surface water (rather than from groundwater). The RBMPs do not report on the pricing of other individual water services.

The RBMPs report cost recovery rates for the collective water services, combined and separately. These rates are calculated at RBD level on the basis of a national methodology. Next to the financial cost recovery rate, they also present so-called "broader" cost recovery rate which include environmental costs.

The financial cost recovery rate calculations have informed the decision to only recover a part of the depreciation costs through the water tariffs, as a full recovery would bring the prices up beyond what is deemed socially acceptable, thus calling on the socio-economic mitigation factors listed in article 9 of the WFD. It is not clear whether the non-recovered costs correspond with the amount of financial support from the EU Funds, and whether a part of these costs are perhaps set aside for future recovery (non-linear depreciation).

There is no clear account in any RBMP on whether the various water uses and user sectors provide an adequate contribution to the water services' cost recovery, this despite the Commission recommendation based on their evaluation the 2nd RBMPs. Instead, they appear to provide a general statement on the adequacy of the contributions and of water use sectors to cost recovery.

The RBMPs report quantitative estimates of environmental costs, calculated at the hand of a national methodology of appraising ecosystem restoration expenses and cost savings. Thus, the costs cover three impact categories of environmental impacts, namely water pollution, abstractions, and hydromorphological impacts on watercourses.

Unfortunately, the RBMPs do not demonstrate who incur these environmental costs, apart from a general assurance that the Polluter Pays Principle (PPP) has been applied in price setting. However, they specify that the PPP is applied through other, non-price instruments, namely mandatory abatement actions or investments in environmental protection equipment.

6. WFD recommendations

Recommendations - Czechia should:

1. Address the identified lack of compliance of achieving good status by increasing the level of ambition and reducing the compliance gap as much as possible until the next reporting cycle.

   In particular,

   a. consider that the exemption of Article 4 (4) WFD lapses in 2027 after the last prolongation (with the exception of the time related exemption for reason of natural conditions, which may run beyond 2027), making it necessary to achieve good status or verify the possible application of a lowering of objectives under Article 4(5) WFD.
   b. carefully review the environmental impact of large-scale infrastructure projects such as the construction of canals or large-scale irrigation projects that affect surface water bodies according to Article 4 (7) WFD, weighing the pro's and con's and considering also alternatives to achieving the legitimate public objective, and provide all necessary justifications in the RBMPs.[45]
   c. Increase the investments and ensure adequate financing in prevention and restoration to ensure achievement of good status as required by the Directive, e.g. by making better use of the 'polluter-pays principle', also for historic pollution, and by eliminating environmental harmful subsidies whilst ensuring affordable, just and implementing fair pricing mechanisms for all water users in line with Article 9 WFD.
   d. Identify and put in place additional measures to reduce existing persistent environmental challenges (pressures) preventing the achievement of good status as those pressures will be aggravated by climate change (pollution concentrates in times of less water availability).

   This implies, *inter alia,* also to:

1. reduce more widely and more profoundly nutrient pollution of water bodies caused by the insufficient treatment of waste waters and by agriculture as well as aquaculture;
2. being a main cause for Czechia's failure to achieve the objectives of the WFD; Czechia's must revert the trend on nitrogen pollution where the balance has almost exploded between 2000 and 2017; the programme of measures in the RBMPs should contain more specific data and measures for how to achieve good status by 2027 as regards nutrient loads from agriculture and aquaculture; measures to reduce nitrate and phosphor pollution of surface and groundwater bodies should by far be more ambitious and more comprehensive than so far, going beyond those already compulsory under the Nitrates Directive or voluntary under the Common Agricultural Policy and exceeding voluntary eco schemes for organic farming by including also legally binding and more stringent obligations to reduce significantly the excessive use of fertilizers in all sub-basins where water bodies are not achieving or at risk of not achieving a good ecological / chemical status due to nutrient (and particularly nitrate) pollution; Czechia must significantly better control the use of fertilizers and pesticides in farming, multiplying resources for controls and significantly increase administrative penalties for a breach of thresholds under the Nitrates Directive; measures are also needed to reduce eutrophication of lakes caused by large scale aquaculture; and

[45] Abstractions of waters from the Danube to feed irrigation in Czechia should also be assessed in cooperation with competent authorities as part of the transboundary Danube River Basin Management Plan.

3. improve the treatment of urban wastewater including by connecting more urban and industrial wastewater discharges with sewers and wastewater treatment plants; to this end Czechia should spend all programmed amounts for sustainable water management under cohesion and regional funds; and

4. adopt a legally binding standard for establishing the volume and level or rate of flow to the extent relevant for ecological and chemical status and ecological potential ("ecological flows") within the meaning of Article 8 (1) first indent (i) WFD;[46] and to clearly link water permits to compliance with ecological flows;

    a. improve river continuity to facilitate fish migration by mapping and funding concrete measures to remove redundant obstacles that hamper river continuity, building fish passes and adopting all other measures appropriate to enhance river continuity;

    b. adopt regulations to accelerate significantly the phasing out emissions of emissions, discharges and losses of priority hazardous substances; this should also include a comprehensive, ambitious and time-bound action plan for cleaning-up historic pollution from industrial sites which continue to pollute 137 ground water bodies in Czechia;

    c. increase the effectiveness of measures and controls to enforce the latest best available techniques, emission limit values and environmental quality standards on manufacturing companies in operation;

    d. accelerate the energy transition by phasing out of brown coal (lignite) for heating and electricity production to steeply reduce aerial pollution which causes diffuse pollution of Czechia's rivers and lakes;

    e. increase funding to construct and/or upgrade the 633 waste water treatment plants which are needed to close the gap according to Czechia's 3rd RBMP (P 1-1; KTM1, KN28); improve otherwise the treatment of urban wastewater including by connecting all urban and industrial wastewater discharges to sewers and wastewater treatment plants;

    f. enhance the overall protection of water bodies linked to protected areas, on decline since the 2nd RBMP, the Czech Republic should define additional environmental objectives and additional measures for such water bodies in view of their particular importance for the protection of these areas.

5. A further improvement of governance and a better coordination between the different administrative levels and authorities dealing with the implementation of the WFD and other related pieces of legislation. This also includes removing obstacles identified in the implementation of measures, such as insufficient administrative capacities and resources.

    Points of attention are:

    - Strengthening synergies and coordination between the WFD, MSFD and other EU legislation (notably BHD) by taking adequate and coherent measures.

    - cooperate with neighbouring countries such that Czechia is able to consider pressures on terrestrial and aquatic ecosystems depending on transboundary rivers when pursuing, in cooperation with neighbouring countries, plans to abstract waters from the Danube for irrigation purposes and/or plans to build a canal connecting Danube-Oder-Elbe.

6. Further close knowledge gaps and improve data availability, access to data, as well as data quality and comparability by harmonising methods and electronically collected data across river basin districts and marine regions, on monitoring, assessments, projections, economic assessment, etc. and make all data openly available through timely publication in line with the requirements of the INSPIRE, Open Data/Public Sector Information (PSI) Directives and the public sector High Value Datasets (Commission Implementing

[46] See also CIS Guidance Document no. 31.

Regulation (EU) 2023/138) to help eliminate the need for reporting. This implies better connecting data and information systems of all administrations involved in the implementation (also others than the water competent authorities) and make better use of the opportunities from digitalisation and earth observation.

This requires now:

a. adopt a legally binding standard for establishing the ecological potential of river stretches and lakes that are qualified as "heavily modified"; and the maps all measures needed to achieve such a good ecological potential, in particular for lakes considering that almost all lake water bodies in Czechia are "heavily modified", (making the threshold of "good ecological potential" in practice by far more relevant for lakes than "good ecological status");

b. monitoring of surface water bodies to determine the status of all lakes and rivers currently still in "unknown" chemical status (18.4% of all SWB);

c. monitor PFOS and PFAS in groundwater and surface water bodies;

5. monitor and contain more aggressively invasive alien species and in particular adopts measures to constrain the spreading of North American crayfish[47].

This requires until the next RBMPs:

a. conducting a more comprehensive gap assessment for diffuse pollutant loads from industry and manufacturing across all RBDs and link them clearly and directly to mitigation measures in the 3rd RBMPs (as per WFD Article 11(3)(h)); to facilitate the achievement of WFD objectives; and increase measures to protect surface water bodies against run-off from fertilizers and pesticides, and promote and subsidise organic farming.

b. conduct more economic appraisals, in particular cost-effectiveness analysis, which can help to identify and prioritise the most cost-effective combinations of measures to achieve faster progress towards the environmental objectives;

c. be transparent how different users contribute and how the Polluter-Pays-Principle is applied, in particular as regards the cost of cleaning up contaminated industrial sites and reducing nutrient and pesticide pollution;

d. monitoring of the quantitative status of ground waterbodies to increase the certainty of status assessments, currently being only at a medium level of confidence for a majority of GWB, in particular by always taking into consideration the status of related GWAAEs and GWDTEs which are not yet comprehensively considered in the groundwater quantitative status assessment of all RBDs;

e. monitoring of biological quality elements including in particular of macrophytes, phytobenthos, benthic invertebrates, and fish in lakes, and their salinity and nitrogen conditions; for rivers, include in monitoring also of all general physico-chemical quality elements including still missing parameters (e.g.: for rivers the general physico-chemical quality elements, transparency and salinity conditions; for lakes biological quality elements, macrophytes, phytobenthos, benthic invertebrates, and fish); and

f. assign all rivers to an intercalibration type where not yet done.

[47] E.g.: the release of predator fish that feast on invasive crayfish, such as eel, burbot, pike perch, catfish, chub, as well as dragonfly larvae, which successfully destroy juvenile crayfish; or the sterilization of males or emptying fish ponds to allow them to freeze during winters etc.

7. Enhance the consideration of climate change in all its RBMPs ensuring that the actions identified under the new National Water Strategy are already implemented during the 3rd RBMP. Although not explicitly required by the Directive, failure to do so will make it increasingly difficult to achieve the Directive's objective and, in some case, even lead to a deterioration of waters where progress has been achieved.

   Points of attention are:

   a. promoting measures to increase water efficiency across all sectors using water, be it in the agricultural, the manufacturing, the energy (cooling) or the public water supply sectors;

   b. more regularly monitoring water abstractions and their compliance with conditions;

   c. making water abstractions permits more flexible to allow for adapting the volumes of water abstractions in line with changes to the water balance; and to gradually adapt abstractions such that ground water bodies are no longer at risk of losing their good quantitative status;

   d. adopting measures to reduce the sealing of soils in regions where groundwater bodies are at risk of losing a good quantitative status, and/ or where climate change predictions suggest that pressures will increase significantly to put ground water bodies at risk in the foreseeable future; this applies in particular for urban areas (see Czechia's State of the Environment report on the increasing extent of built-up areas disrupting the ability of the landscape to retain water and protect against floods);

   e. adopting and putting into practice drought management plans in river sub-basins in particular where ground water bodies are at quantitative risk or may soon be at risk due to significant abstraction pressures;

   f. for agriculture exploring also climate adaptation measures other than the expansion of irrigation, in particular crop diversification and more sustainable soil management techniques that allow for a better retention of rainwater and would also help Czechia achieve its goals under the Nature Restoration Law; more sustainable soil management practices through organic farming could over time significantly reduce pressures both on surface and on groundwater bodies;

   g. for Czechia's forestation policies, exploring alternatives to coniferous trees which are particularly vulnerable to temperature fluctuations and exposed to bark beetle invasion, leading to vast stretches of forest being logged and exposing soils to erosion and reducing the capacity of soils to absorb rainwater and recharge groundwater bodies.

SECTION B:

FLOODS DIRECTIVE

7. Flood risk management under floods directive (FD)

The Directive requires each Member State (MS) to scan its territory for flood risks, assess the potential adverse consequences of future floods for human health, the environment, cultural heritage and economic activity, identify the significant risks, map the flood extent and the potential adverse consequences, and take measures to reduce the flood risk. These activities are reflected in (a) the preliminary flood risk assessments, or PFRAs (including the identification of areas of potential significant flood risk, or APSFRs), (b) the preparation of flood hazard and risk maps, or FHRMs, and (c) the establishment of flood risk management plans, or FRMPs. The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.

There are three Units of Management (UoMs) in Czechia, which are the same as the Water Framework Directive's River Basin Districts (RBD). Fluvial floods are considered as potentially significant sources of flooding in Czechia. Czechia has designated 243 Areas of Potential Significant Flood Risk (APSFRs)[48]. The second PFRA states that the possible impact of climate change on the occurrence and intensity of floods in Czechia was assessed in the first PFRA in 2011. It is considered that there is still no concrete basis for a possible change in hydrological data characterizing the flood regime in Czechia.

7.1 Flood hazard and risk maps

To visualise flood hazard and risks, Czechia uses maps[49] at the national level which covers the whole country. The maps distinguish hazards and risks with low probability (1/500 years), with medium probability (1/100 years) and with high probability (1/5 and 1/20 years). The maps also show clearly flood extents as well as water depth but do not show the number of inhabitants potentially concerned although a methodology for determining numbers of affected inhabitants exists. Czechia derives the type of economic activity within flooded areas from land use. IED installations are not depicted in FHRMs, but there is a description in a report. FHRMs do not show the potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC.

In terms of changes of contextual information (i.e. the way in which information about the maps is conveyed to the public) since the first FHRMs, the portal for the second FHRMs changed into https://cds.mzp.cz/ and information from both the first and second FHRMs can be found in this portal.

In terms of changes in methodologies used to prepare flood hazard maps and flood risk maps since the first FHRMs, the methodologies have not been changed.

As regards the consideration of climate change effects in the preparation of FHRMs, reference is made to section 3.7 on 'adaptation to climate change'.

[48] For the second PFRA some APSFRs have been aggregated, others have been removed. There is now a total of 135 APSFRs.
[49] https://cds.mzp.cz/stretches/?version=2

7.2 Flood risk management plans

Objectives and measures

The FRMPs can be downloaded online[50] for its three UoMs. Czechia established common objectives for its three FRMPs, comprised of a strategic goal, general objectives and sub-objectives. The objectives – and in particular the strategic goal – refer to the reduction of adverse consequences of flooding. Sub-objectives refer to a range of non-structural initiatives, including spatial planning, agricultural management, local flood planning, and flood forecasting. The strategic goal refers to human health and a basic indicator of the success of the implementation of the FRMPs is the decrease in the number of inhabitants at risk. Of relevance, the third general objective calls for increasing the preparedness of the population. A sub-objective refers to actions to improve flood forecasting and systems to warn the population. The strategic goal refers to reducing flood risks and increasing resilience for economic activity and infrastructure, the environment and cultural heritage. Czechia's second FRMPs identify structural and non-structural measures. Czechia has reported measures to EIONET, but the number of measures in the FRMP is a different one. Czechia has indicated a level of priority for each measure reported to EIONET. In Czechia's reporting, each measure is assigned one of three of these categories: very high, high and moderate (thus, there are no critical or low priority measures). The largest share of measures is reported as very high priority (27 measures, 47 % of the total), followed by high priority (25 measures, 44 %). The remaining five measures are of moderate priority (9 % of the total), and all are protection measures in the Danube UoM (CZ1000). The second FRMPs also indicate the priority of their measures and the method of prioritisation is described in the FRMPs. The FRMPs identify the authorities that will monitor the implementation of the plan and state that national annual reports will provide monitoring results.

The second FRMPs provide the costs of their structural measures. They also refer to the use of cost-benefit analysis for flood prevention measures; however, the methods and results of the analyses are not provided in the plans. The FRMPs state that their structural measures are funded by the state budget, by river basin agencies (which are state enterprises), by other public sources, including municipalities, and by EU funds, though the specific funds are not specified. The FRMPs moreover identify the amounts expected from each source. The three FRMPs include nature-based solutions that will regenerate natural areas e.g. through water retention, but water retention reservoirs are also included in the plans. The non-structural measures include the elaboration or update of spatial plans and building permissions to implement restrictions in flood zones. The second FRMPs indicate that the WFD's objectives were considered in the identification and assessment of measures and structural measures need approval from local environmental authorities. The FRMPs cite Czechia's Strategy for adapting to climate change; however, they provide little information on potential impacts of climate change on flooding or on measures to be taken.

The second FRMPs provide an overview of the progress made by the first FRMPs, using indicators such as the population at risk of flooding. The second FRMPs also list 17 indicators to monitor their own progress. The second FRMPs state that, for all the indicators, a baseline is available for the evaluation of progress of their implementation.

Czechia reported to EIONET the progress of implementation of its measures using the following categories: In preparation: 36 measures; Ongoing (recurrent e.g. maintenance works): 22 measures; and Ongoing construction: 6 measures. Thus, Czechia did not report any completed or

[50] http://www.povis.cz/html/index.html?pzpr2_plany.htm

abandoned/interrupted measures. Most of the measures in preparation are located in the Danube UoM (CZ1000, 21 measures, which is 58 % of all measures in preparation). The remaining 15 measures in preparation are split fairly evenly between the other two UoMs (Elbe, CZ5000 and Oder, CZ6000). Of the six ongoing construction measures, four are in the Elbe UoM and two are in the Oder UoM. Of the measures reported as ongoing, seven are in the Danube UoM, six in the Elbe UoM and nine in Oder UoM. All 12 preparedness measures, and six of the seven prevention measures are reported as ongoing. Of the 36 measures reported as in preparation, 35 are protection measures, and one is a prevention measure. All six ongoing construction measures are protection measures.

The FRMPs provide information on the phase of development of structural measures. The second FRMPs moreover include a review of structural measures in the first FRMPs. The second FRMPs note that some measures had not been implemented: the reasons include complicated or blocked property negotiations with landowners. In addition, in many cases where measures were not yet completed, there were delays in the preparatory or other phases of the project, in some cases due to administrative procedures such as a change in a spatial plan or unsuccessful negotiations with the nature protection authorities; in other cases, a measure was planned as part of a system of measures, or otherwise depended on the implementation of other measures, and the above-mentioned problems and delays occurred to those other measures. The FRMPs thus provide an overview of the reasons why certain measures have been delayed. It should be noted that the plans do not indicate that any structural measures have been abandoned, though some were not implemented and are included in the second FRMPs.

The FRMPs describe coordination with the WFD on measures. Moreover, Czechia's river basin authorities are responsible for both WFD and FD measures and will coordinate implementation of FRMP and RBMP measures. In addition, the Water Planning Commission, a permanent advisory body, supports coordination between FRMPs and RBMPs.

Governance

The three FRMPs mention that coordination with neighbouring countries was carried out via work for the international FRMPs of the Danube, Elbe and Oder river basins. The FRMPs however do not provide further detail on international coordination, except the FRMP for the Oder which mentions one measure that was negotiated on international basis with Poland, for the reconstruction of dykes[51].

The FRMPs provide little detail on the public consultation or on the active involvement of stakeholders, and in particular little detail on possible private sector or NGO involvement. While separate documents list comments received from government authorities on the draft plans, together with the responses, no information is provided on possible comments from the public or from private stakeholders.

Climate change consideration

Information on how Climate change considerations have been taken into account in the development of the Plans can be found in section 3.7.

[51] Measure HOD217501 - Olše, Karviná, Loukyn/O – reconstruction of dikes, bed drops and dredging, Oder UoM.

Progress identified in the second FRMPs

Czechia's second FRMPs identify indicators, which together with the main indicator provided in the first FRMPs will be used to monitor the plans as a whole. The second FRMPs state that, for all the indicators, a baseline is available for the evaluation of progress of their implementation. Further. the second FRMPs have addressed, at least partly, three recommendations on the first FRMPs: the method for the prioritisation of measures is provided, cost estimates and an overall budget for structural measures are also included (though not for non-structural measures); and timetables for structural measures (though not all measures) are also provided. While most measures were reported as 'not started' in the first FRMPs, all the measures in the second FRMPs are either ongoing or in preparation. The second FRMPs now include nature-based solutions. The second FRMPs do refer to the updated Czech Climate Change Adaptation Strategy; the first FRMPs did not refer to the previous version of this strategy. The second FRMPs refer to work on floods within the updated strategy, though they provide few details.

As regards the consideration of climate change effects in the preparation of FRMPs, reference is made to section 3.7 on 'adaptation to climate change'.

8. FD recommendations

On the basis of the assessment performed, and in addition to the progress achieved already- Czechia should:

- present potential future impacts of climate change in the FHRMs and/or discuss them in a related background document;
- provide in the FHRM more references to studies or documents where further details on the methodologies are available. This relates in particular to the indicative number of affected inhabitants;
- consider pluvial flooding in the FHRM;
- provide details on how the FHRM was used for choosing objectives and measures in the FRMP;
- make the objectives of the FRMPs more specific and where possible linked to quantitative indicators and be timebound. An assessment of the progress made towards the achievement of the objectives should be included in the FRMP;
- link measures to objectives in the FRMP;
- base the likely impact of climate change in the FRMP also on future climate scenarios;
- consider insurance as a measure for adaptation to climate change;
- set out in more detail the progress of the measures in the FRMP

- provide in the FRMP more information on potential climate impacts and any studies of these impacts. Measures should be considered to fill any knowledge gaps.
- provide in the FRMP detail on the public consultation and stakeholder involvement, such as the specific stakeholders that participated, the meetings and advisory groups convened, the comments received, and how they were taken into account. All relevant stakeholders should be involved in consultations, including the public, private sector and NGOs.
- set out in the FRMP clearly the international cooperation and coordination activities carried out.
- where appropriate, consider in the FHRM flow velocity or the relevant water flow and the FRMP flood conveyance routes, as these are relevant to emergency response.
- depending on the nature of the measures, subject the FRMP to a Strategic Environmental Assessment.