



MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

Ministry of the Environment
of the Czech Republic



REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC IN 2024



Report on Water Management in the Czech Republic in 2024

**Ministry of Agriculture of the Czech Republic
Ministry of the Environment of the Czech Republic**

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Dear readers,

You are holding the 28th edition of the water management yearbook, known as the Blue Report. This publication provides a comprehensive overview of the state of water management in 2024 and compares it with previous years. This edition has been expanded to include a chapter entitled "Implementation of Programmes of Measures Adopted by River Basin Plans," which is submitted to the government every three years in accordance with the Water Act. The yearbook provides an overview of the state of surface water and groundwater, and of water resource management in individual river basins. It also covers the implementation of measures aimed at protecting these resources and ensuring their sustainable use.

Since its first edition in 1997, published in collaboration with the Ministry of Agriculture and the Ministry of the Environment, the aim of the yearbook has been to inform the general public about the current state of water management, track its development, and emphasise significant changes. Water is an irreplaceable resource that is essential for life, health, agriculture, industry and ecosystems. Its availability, quality, and management affect the daily lives of all of us. That is why the yearbook covers topics ranging from hydrology, water quality and its pollution, to watercourse management, water supply, and sewerage, legislation, financing, strategic planning, international cooperation, and research.

The yearbook shows that 2024 was climatically exceptional, with an average annual temperature of 10.3°C, the warmest year since 1961. Precipitation was above-average, totalling 776 mm, representing 113% of the long-term average. Significant hydrological extremes, especially floods, occurred almost every month. The most serious situation occurred in September, when extreme rainfall led to the third flood activity degree being exceeded, in some places even to flows corresponding to a hundred-year flood.

The funds invested in water management are the result of a collaboration between the Ministry of Agriculture and the Ministry of the Environment. Both ministries share the common goal of ensuring a safe, high-quality supply of drinking water, while strengthening the landscape's resilience to extreme weather events. Prevention and early forecasting also play an important role. Thanks to these measures, river basin managers were able to respond quickly to last year's floods and mitigate the effects of extreme precipitation. Investing in infrastructure, nature-based measures and high-quality forecasting system is the most effective way to protect communities and residents.

In 2024, the Ministry of Agriculture invested CZK 2.6 billion in water management. Support for water management includes national and transnational subsidy programmes. The largest portion of these funds was allocated to a programme for constructing and improving water supply and sewerage infrastructure (CZK 707 million), as well as to measures to mitigate the effects of drought (CZK 589 million). Following the floods in September, a new programme was launched to repair flood damage, with CZK 10 billion to be allocated until 2030. In 2024, CZK 300 million was released for initial security work, of which CZK 238 million has been paid to the Oder and Morava River Boards.

Support also covered flood protection, revitalisation of small watercourses, construction of small water reservoirs, and land consolidation. The Ministry of Agriculture contributed CZK 67 million to many research projects in the field of water.

Watercourses are managed by the River Boards and Forests of the Czech Republic, which are state enterprises, under the auspices of the Ministry of Agriculture. In 2024, more than CZK 3.3 billion was spent on this management. The yearbook also provides an overview of management and development over longer periods.

The amount of water invoiced to households increased by 1.2 litres per person per day, reaching 88.3 litres per person per day. The average water supply charge was CZK 57.79/m³ and the average sewerage charge was CZK 52.10/m³. The water supply network was extended by 2,441 km to reach 83,867 km, while the sewerage network increased by 3,052 km to reach 55,425 km. The number of wastewater treatment plants increased by 457 last year, bringing the total to 3,416.

I hope that you find this yearbook valuable and that it deepens your understanding of water management. Water is an essential element for life on Earth, and protecting it, using it efficiently and managing it well are vital for our future. Let us care for it with respect and responsibility.



Marek Výborný
Minister of Agriculture

Dear readers,

I am pleased to present the latest edition of the “Blue Report,” which summarises the key events, challenges, and progress in water management over the past year. The events of 2024 served a stark reminder of the importance of addressing the challenges posed by climate extremes, managing watercourses and water resources effectively, and implementing further legislative and infrastructural measures.

As Minister of the Environment, I would like to highlight the flood that affected a large part of the Czech Republic in September 2024. Intense rainfall resulted in all flood activity degrees to be exceeded in many watercourses, including major rivers such as the Vltava and the Elbe. This caused extensive devastation in some areas. As Chairman of the Central Flood Commission, I was personally present to manage and coordinate the rescue services and oversee their work. Thanks to excellent forecasting and the efforts of the rescue services and collaboration with crisis teams and flood authorities, it was possible to minimise damage and mitigate the impact on the population and infrastructure. This event once again confirmed the importance of preparedness and cooperation across all levels of public administration.

Against this backdrop, significant legislative progress was also made. The so-called emergency amendment to the Water Act was published in the Collection of Laws of the Czech Republic. This amendment provides a comprehensive legislative solution for dealing with accidents on surface waters. It introduces digital and preventive tools that can prevent accidents to a certain extent and help identify the source of an accident and/or the perpetrator more quickly. At the European level, a revised directive on urban wastewater treatment (EU) 2024/3019 was adopted in November 2024. Among other things, the directive introduces stricter requirements for urban wastewater treatment, including the introduction of a fourth stage of treatment at larger plants, aimed at removing micropollutants such as pharmaceutical and cosmetic residues. In the coming years, these requirements will need to be incorporated into national legislation, alongside the establishment of a financing and technical support system for municipalities and operators, to ensure the system is effective and the desired objectives are achieved.

The year 2024 also saw continued investment in the modernisation and renewal of water management infrastructure. Key components of water reservoirs, sewerage systems and drinking water treatment plants were renovated. Measures aimed at increasing the landscape's retention capacity and enhancing its resistance to extreme weather continued to be implemented. In 2024, the Ministry of the Environment and the State Environmental Fund of the Czech Republic supported projects totalling CZK 8,278 million.

The ongoing development of digital tools for water resource management is also worth mentioning. As part of the emergency amendment to the Water Act, a new central register of discharges from sources of pollution into surface waters was established and launched in 2024. The register is designed to serve as an important tool for monitoring and planning the protection of watercourses. This will enhance transparency and enable more effective supervision of polluters and investment planning.

Finally, I would like to thank all the experts, water management companies, local governments, and public administration employees who have contributed to ensuring stability and security in the field of water management. This report is not just a summary of figures and data; it is also a testament to our collective efforts to protect one of our most precious natural resources: water.



A handwritten signature in blue ink, appearing to read 'P. Hladík'.

Petr Hladík
Minister for the Environment



1st prize of the jury, T. Dvořáková, Last Glacier

1. HYDROLOGICAL BALANCE

1.1 Temperature and precipitation

The year 2024 was extremely above-average in terms of temperature in the Czech Republic, the average annual air temperature of 10.3°C was 2.0°C higher than the 1991–2020 average. Therefore, 2024 was the warmest year in terms of average annual air temperature since 1961. The average temperature of the warmest years to date, i.e., 2023 (9.7°C), 2018 (9.6°C), 2019 (9.5°C), 2014 and 2015 (9.4°C), was exceeded significantly.

In 2024, all months except November recorded a positive deviation of the average monthly air temperature in the Czech Republic from the 1991–2020 average. February (deviation of +6.1 °C) and March (deviation of +3.8 °C) were exceptionally warm. These months were the warmest February and March ever recorded in the Czech Republic since 1961, with February seeing a record high deviation of the average monthly temperature from the 1991–2020 average. The following months, April to October, were between above-average and strongly above-average in temperature (deviations between +1.4°C and +2.3°C). January and the final months of the year, November and December, were average in terms of temperature.

Interval limits for assessing normality (or abnormality) are defined for each month separately, meaning the limits may vary for different months. The table below shows what the intervals mean and how they are determined. Abnormality of a phenomenon is generally defined by quantile values Q_p , for which the following is true: $P(X \leq Q_p) = p$ (i.e. the probability that a phenomenon reaches the quantile value of Q_p or lower equals to p). Temperature and precipitation are assessed in accordance with the classification in Table 1.1.1.

Table 1.1.1

Interval limits for assessing normality (abnormality)

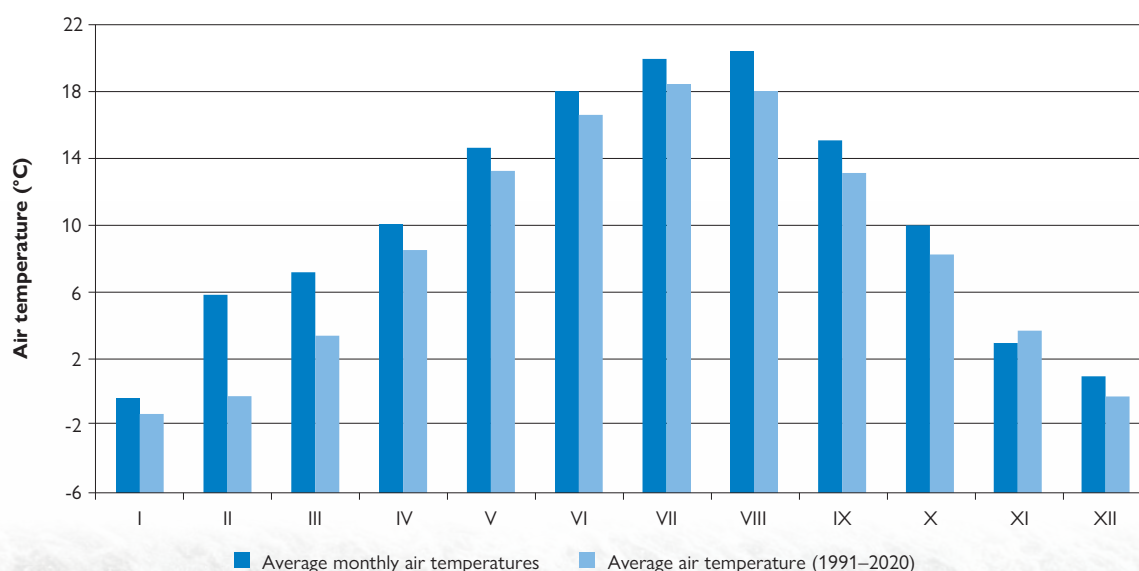
Degree	Interval limits by quantiles	Exceedance probability (climate hedge in %)
Extremely below-average	$<Q_{0.02}$	>98
Strongly below-average	$<Q_{0.02}, Q_{0.10}$	(90, 98>
Below-average	$<Q_{0.10}, Q_{0.25}$	(75, 90>
Average	$<Q_{0.25}, Q_{0.75}$	<25, 75>
Above-average	$(Q_{0.75}, Q_{0.90})$	<10, 25)
Strongly above-average	$(Q_{0.90}, Q_{0.98})$	<2, 10)
Extremely above-average	$>Q_{0.98}$	<2

Source: CHMI

The winter of 2023/2024 was very warm in the Czech Republic. The average air temperature in the winter season (+2.4°C) was 3.1°C higher than the 1991–2020 average. This makes it the second warmest winter season in a row since the 1961/1962 season. Only the winter of 2006/2007 was warmer, with an average temperature of +2.7°C. All winter months had a positive deviation from the average monthly air temperature in the Czech Republic. December 2023 was very warm (deviation of +2.5°C) and January 2024 was normal in temperature (deviation of +0.9°C). February 2024 was exceptionally warm, with a record-breaking deviation from the average monthly air temperature of +6.1°C.

Graph 1.1.1

Average monthly air temperatures in the Czech Republic in 2024 compared to the 1991–2020 average



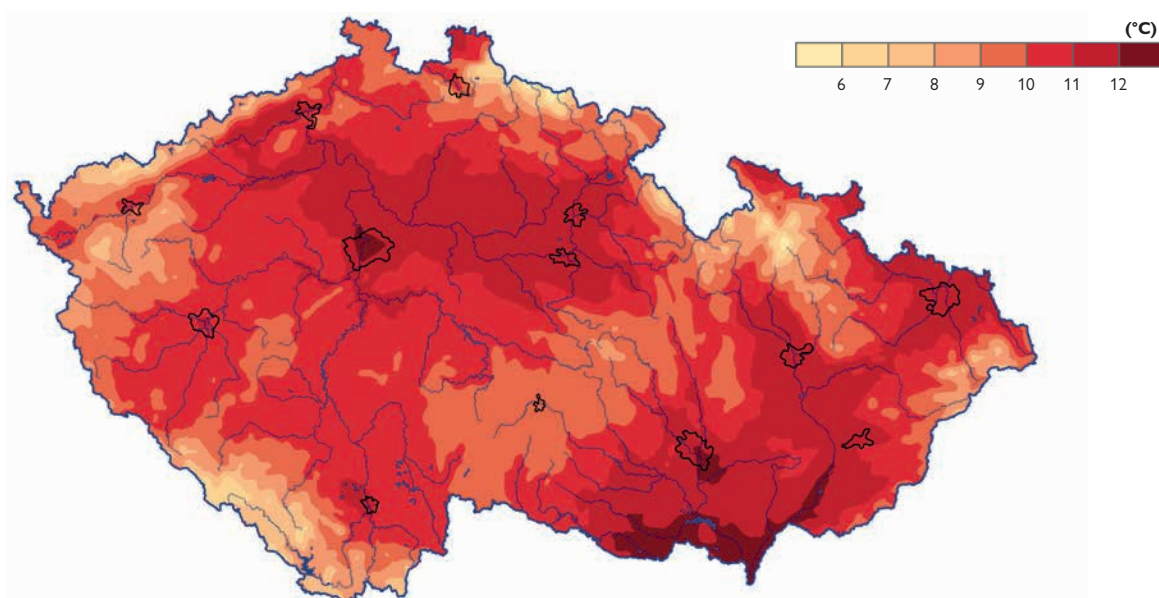
Source: CHMI

Two colder periods were recorded during the winter; namely the first ten days of December 2023 and the period from 7 to 21 January. On 1–5 December and 8–20 January, most stations recorded frost throughout the day. For the rest of the winter season, temperatures remained above-average, often very significantly. The first very warm period lasted from 11 December to 6 January and ended with a sharp drop in temperatures. The average air temperature in the Czech Republic between 6 and 8 January fell by more than 10°C. The period from 22 January until the end of the winter season was exceptionally warm, with the average temperature in the Czech Republic exceeding the normal value by more than 5°C on 20 days during this period. In February, daily maximum temperatures exceeded 10°C on almost all days and on 6 days rose above 15°C one CHMI station at least. The highest daily

maximum air temperature for the winter season, 18.7°C, was recorded on 27 February at the Karviná station.

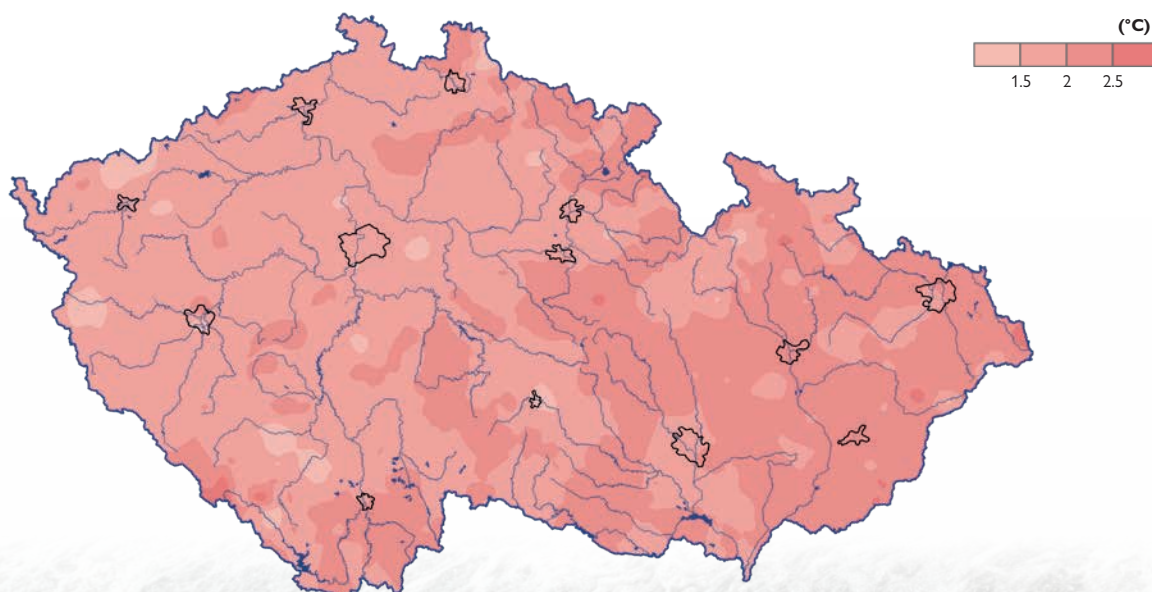
The spring was exceptionally warm, with the average air temperature in the Czech Republic (10.5°C) being 2.2°C above the average. It was the warmest spring ever recorded in the Czech Republic since 1961. March was exceptionally warm (average temperature deviation of +3.8°C) and became the warmest ever. April and May were above-average in temperature (deviations of +1.5 and +1.4°C). In March, the temperature was mostly above-average. The period from 23 March to 15 April was very warm, with daily maximum air temperatures often exceeding 20°C. 1 April was the first summer day of 2024, with daily maximum temperatures reaching 25°C or more at 11 CHMI stations. On 7 April, the first tropical day (a day with

Figure 1.1.1
Average annual air temperature in 2024



Source: CHMI

Figure 1.1.2
Deviation of the average annual air temperature in 2024 from the 1991–2020 average



Source: CHMI

a maximum air temperature of 30°C or higher) was recorded at three CHMI stations (České Budějovice 30.9°C, Prague, Komořany 30.6°C and Čáslav 30.1°C). This was the earliest tropical day ever recorded. From 16 to 26 April, a cooler period with below-normal temperatures followed. For most of May, the average daily air temperature remained above-average. Daily maximum air temperatures often exceeded 25°C, but the next tropical day did not occur until 18 June.

The summer in the Czech Republic, with an average air temperature of 19.3°C, was 1.7°C warmer than normal. It was the 2nd to 4th warmest summer in a row since 1961. June and July were warmer than normal, with the average temperature in the Czech Republic deviating from the average by +1.4 and +1.5°C. August was significantly warmer than normal (deviation of +2.3°C). The first half of June was cooler, but throughout the second half of the month, temperatures were above-average, with daily maximum air temperatures often reaching tropical levels of 30°C and above. In July, the warmest period was between 9 and 22 July, when daily maximum air temperatures measured at the stations often exceeded 30°C. A very warm period occurred in the middle and at the end of August, with average temperatures of 5°C and more above the long-term average. During these hot days, daily maximum air temperatures in the Czech Republic often exceeded 34°C. The hottest day of the summer and of the entire year was 14 August, when daily maximum air temperatures exceeded 35°C at 15 CHMI stations. The highest temperature of 37.1°C was measured at the Strážnice station.

The autumn was 1.0°C warmer than normal, with an average air temperature of 9.2°C in the Czech Republic. September and October were above-average (average temperature deviation from normal +2.0 and +1.6°C), while November was average (deviation of -0.7°C). The very warm period at the end of August continued until 8 September, with daily maximum air temperatures often exceeding tropical 30°C and the deviation of the average daily temperature in the Czech Republic from normal being higher than 7°C on most days during this period. The first ten days of September were thus the warmest ever recorded in the Czech Republic in terms of average temperature. This was followed by a significant drop in temperature below the long-term average, with daily maximum air temperatures not even reaching 20°C between 12 and 16 September. Warmer and colder periods alternated throughout the autumn. A longer warm period occurred in the second half of October, when daily maximum air temperatures still exceeded 20°C, most recently on 29 October in České Budějovice. In contrast, a longer colder period occurred in the first half of November, when daily minimum air temperatures fell below 0°C in most of the Czech Republic. On 21 and 22 November, an ice day (a day when the maximum air temperature did not reach 0.0°C) was recorded at more than 100 CHMI stations.

December 2024 was assessed as average in the Czech Republic, with an average monthly temperature of 0.9°C, which is 1.3°C above normal. In the first half of the month, the average daily air temperature fluctuated around normal values. In the middle of the month, it warmed up significantly and the temperature remained above-average until 25 December. The end of the month was colder with temperatures mostly slightly below normal.

In terms of precipitation, 2024 was above-average in the Czech Republic, with an average annual precipitation of 776 mm, representing 113% of the 1991–2020 average. This is the 9th highest annual total recorded since 1961.

There were months with higher and lower precipitation during the year. September was extremely above-average in terms of precipitation, with record high precipitation totals (179 mm, 298% of the average) recorded in the country, associated with extreme precipitation from 11 to 16 September, leading to devastating floods. January, February and May were also above-average in precipitation, with totals of 55 mm (125% of the average), 56 mm (151% of the average) and 92 mm (131% of the average). In contrast, March was below-average, with 27 mm of precipitation (59% of the average).

In 2024, an average of 758 mm of precipitation fell in Bohemia (111% of the average), and 808 mm in Moravia and Silesia (117% of the average). In all regions, the annual precipitation total was higher than the 1991–2020 average. The highest precipitation compared to the long-term average was in the South Moravian and Olomouc Regions, where annual precipitation totals were higher than 120% of the average. In contrast, the lowest precipitation compared to the long-term average (less than 105% of the average) was in the Ústí and Liberec Regions.

The winter months of January and February were rich in precipitation. In January and February, an average of 55 and 56 mm of precipitation fell in the Czech Republic, which represents 125% and 151% of the average, respectively. In both months, total precipitation was higher than normal in most of the country. In January, total precipitation did not reach average levels only in the Vysočina Region (98% of the average), while in February, below-average precipitation totals fell mainly in the south of the country. In the Liberec and Hradec Králové Regions, precipitation in February was even over 200% of the average. In January, most precipitation occurred in the first ten days of the month, initially as rain, later as mixed precipitation and snow. Snowfall also occurred in most of the country in the middle of the month. The heaviest snowfall was in the mountainous areas of Šumava (the Bohemian Forest) and Krkonoše (the Giant Mountains). The highest snow cover (162 cm) was measured in the network of standard stations of the Czech Hydrometeorological Institute on 17 January at the Labská bouda station, and outside the standard network 170 cm at the Blatný vrch station. In February, precipitation occurred throughout the month, with almost no precipitation at the end of the month (from 25 February). Due to high temperatures, precipitation in February was mainly rainfall. The most snow (160 cm) fell on 8 February at the Luční bouda station.

March was below-average in terms of precipitation in the Czech Republic (27 mm, 59% of the average). More precipitation was recorded on average in Moravia and Silesia (40 mm, 89% of the average) than in Bohemia (21 mm, 45% of the average). High precipitation totals occurred in the South Moravian Region, which was the only region with an average monthly total above normal (123% of the average). Precipitation during the month was rainfall, with only isolated snowfall in mountainous areas. April was normal in terms of precipitation in the Czech Republic (37 mm, 98% of the average). However, precipitation was very unevenly distributed. While the east and west of the

country received relatively high precipitation, totals were low in the central part. The lowest precipitation was recorded in the South Bohemian (69% of the average) and Vysočina (59% of the average) Regions, while the highest was in the Pilsen (150% of the average), Karlovy Vary (138% of the average) and Zlín (124% of the average) Regions. In higher elevations, snowfall also occurred in the second half of the month. May was above-average in terms of precipitation in the Czech Republic (92 mm, 131% of the average). However, the spatial distribution of precipitation was again very uneven. More precipitation fell in Bohemia (98 mm, 144% of the average) than in Moravia and Silesia (78 mm, 105% of the average). Very high totals were recorded in western Bohemia, with the Pilsen and Karlovy Vary Regions receiving more than 200% of the average. In the northeast of Bohemia and the Moravian-Silesian Region, precipitation was lower than normal. The third decade of the month was the wettest, with precipitation often accompanied by thunderstorms and hail. Very high precipitation totals were recorded especially on 21 and 31 May, when more than 50 mm

was measured at some stations. The highest daily total was measured at the Kdyně station (Domažlice District), where 106.6 mm fell on 21 May.

All summer months were assessed as average in terms of precipitation in the Czech Republic, but the spatial distribution of precipitation was again very uneven. In June, an average of 88 mm (107% of the average) fell in the Czech Republic, whereas in July it was 71 mm (80% of the average) and 67 mm (86% of the average) in August. In June, the eastern part of the country was much richer in precipitation. In Moravia and Silesia, an average of 135 mm (163% of the average) fell, while in Bohemia it was only 65 mm (79% of the average). In July and August, on the other hand, there was very little precipitation in the east of the country. In Moravia and Silesia, only 65% of the average precipitation fell during these two summer months. However, the average precipitation totals for July and August did not reach normal values in most regions, with only the Hradec Králové Region seeing more precipitation than normal in the two months.

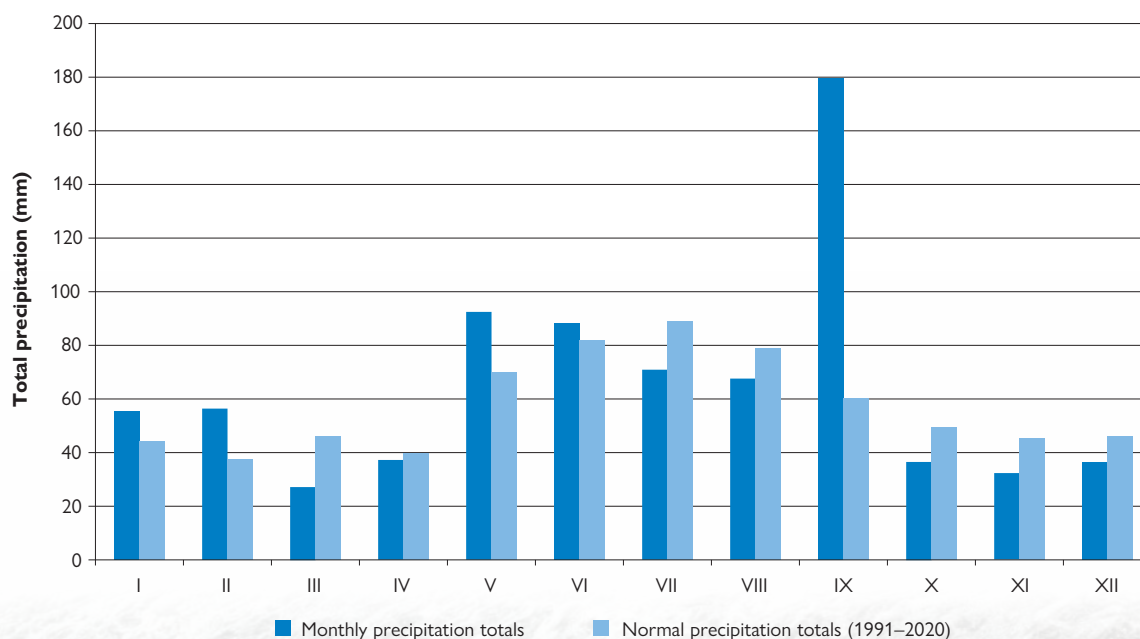
Table 1.1.2
Renewable water resources 2015–2024

Item	Annual totals (million m ³)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Precipitation	41,957	50,240	53,868	41,170	50,004	60,411	53,674	49,984	57,150	60,724
Evapotranspiration	32,165	40,223	43,424	33,305	40,369	47,477	41,719	41,365	37,475	43,386
Annual inflow to the Czech Republic from neighbouring countries	398	402	339	320	405	840	785	593	819	1,017
Annual runoff from the territory of the Czech Republic	10,190	10,419	10,783	8,185	10,040	13,774	14,035	10,043	13,864	17,322
Exploitable surface water resources ¹⁾	3,591	4,421	4,258	3,355	3,732	5,000	5,692	4,771	3,974	4,605
Exploitable groundwater resources	939	925	911	765	789	978	1,213	817	962	1,436

Source: CHMI

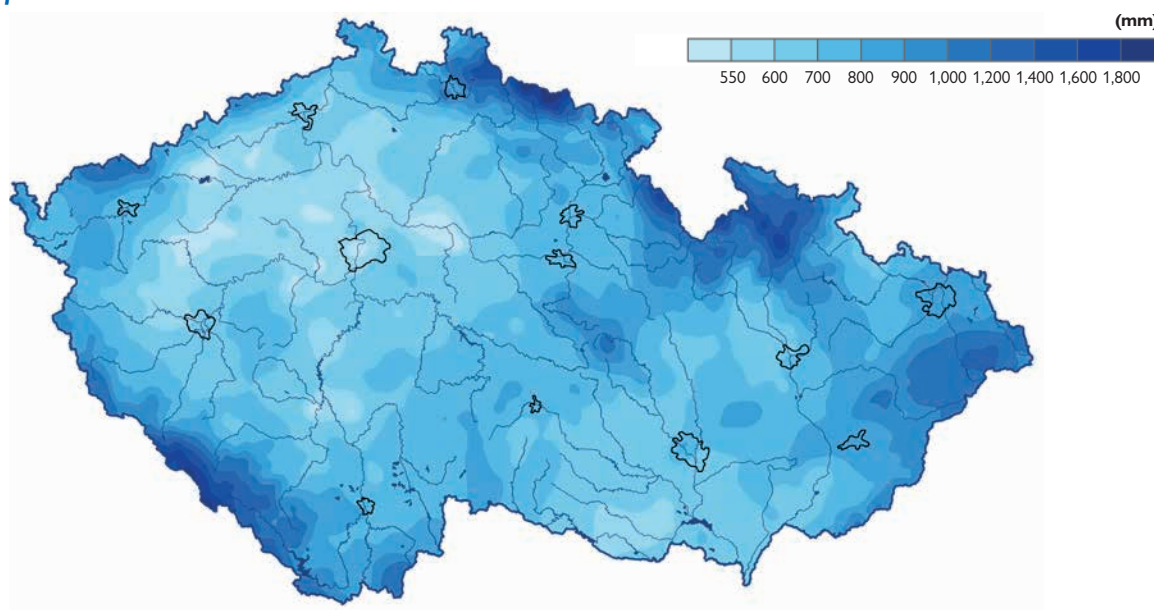
Note: ¹⁾ Flow rate in the major river basins with 95% confidence.

Graph 1.1.2
Average monthly precipitation in the Czech Republic in 2024 compared to the 1991–2020 average



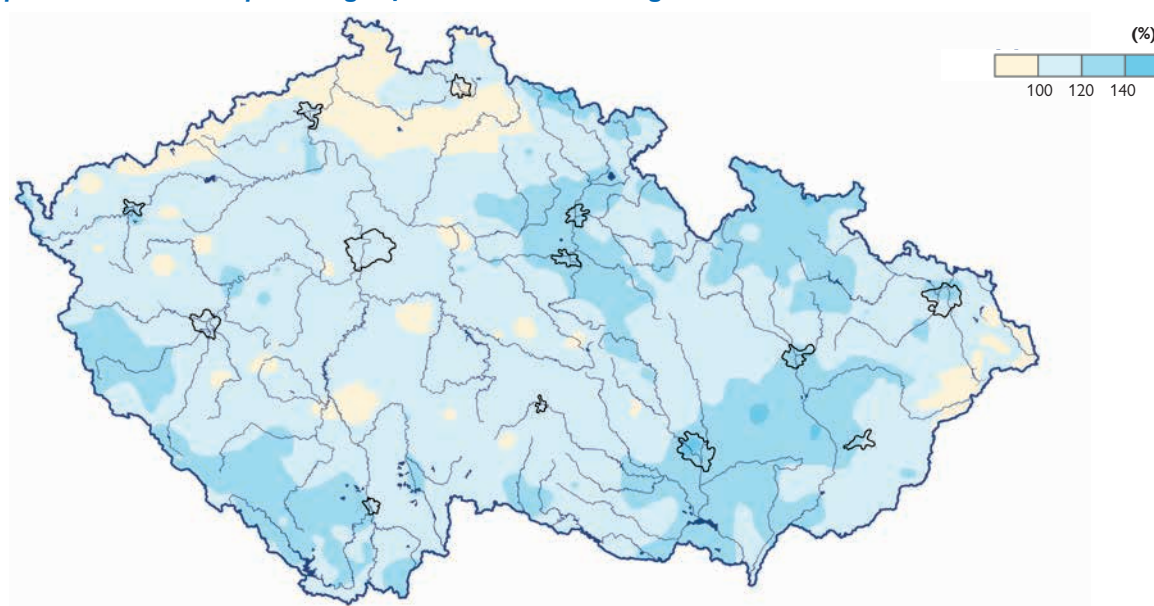
Source: CHMI

Figure 1.1.3
Total precipitation in 2024



Source: CHMI

Figure 1.1.4
Total precipitation in 2024 as a percentage of the 1991–2020 average



Source: CHMI

Precipitation was often associated with thunderstorms in all summer months. On 22 days of the summer season, at least one CHMI station recorded daily totals of 50 mm or more. On 30 June, this was the case at more than 30 stations, and on 18 August at more than 40 stations. Daily totals of over 100 mm were also recorded. On 3 June, this was the case at five stations in the Frýdek-Místek District, with the highest amount recorded at the Ropice station (142.2 mm). On 1 August, 144.4 mm fell at the Kubova Huť station (Prachatice District) and on 18 August, 110.6 mm fell at the Zbiroh station (Rokycany District).

September was exceptionally wet in the Czech Republic. The average monthly precipitation in the country was 179 mm, which is 289% of the long-term average. This is the highest

rainfall total for September and even the second highest monthly rainfall total in the Czech Republic since 1961. The high monthly total was caused by extreme rainfall from 11 to 16 September, which was accompanied by a devastating flood. The eastern and southern parts of the country were particularly affected. The average monthly precipitation for Moravia and Silesia was 212 mm, i.e. 316% of the 1991–2020 average. The most extreme totals were recorded on 14 September, particularly in the east of the country in the Jeseníky and Beskid Mountains, where daily precipitation exceeded 200 mm. The highest value (385.6 mm) was recorded at the Švýčárna station (Šumperk District), exceeding the historically highest daily precipitation total measured in the Czech Republic of 345.1 mm (Bedřichov, Nová Louka, 29 July 1897). We consider October and November

as normal in terms of precipitation in the Czech Republic, even though the average precipitation was lower than normal. In October, an average of 36 mm (73% of the average) fell in the country, and in November 32 mm (71% of the average). On 13 and 14 October, it snowed on the highest mountain peaks, with a light snowfall at the Lysá hora and Šerák stations. The first heavier snowfall over most of the country was recorded on 20–22 November.

Like the previous months, December was average in terms of precipitation, but the average precipitation in the country (36 mm) was only 78% of the average. Precipitation during the month occurred in the form of rain and snow. Most of the precipitation fell in the first ten days of the month, especially on 6 December, when it rained and/or snowed almost everywhere.

1.2 Runoff

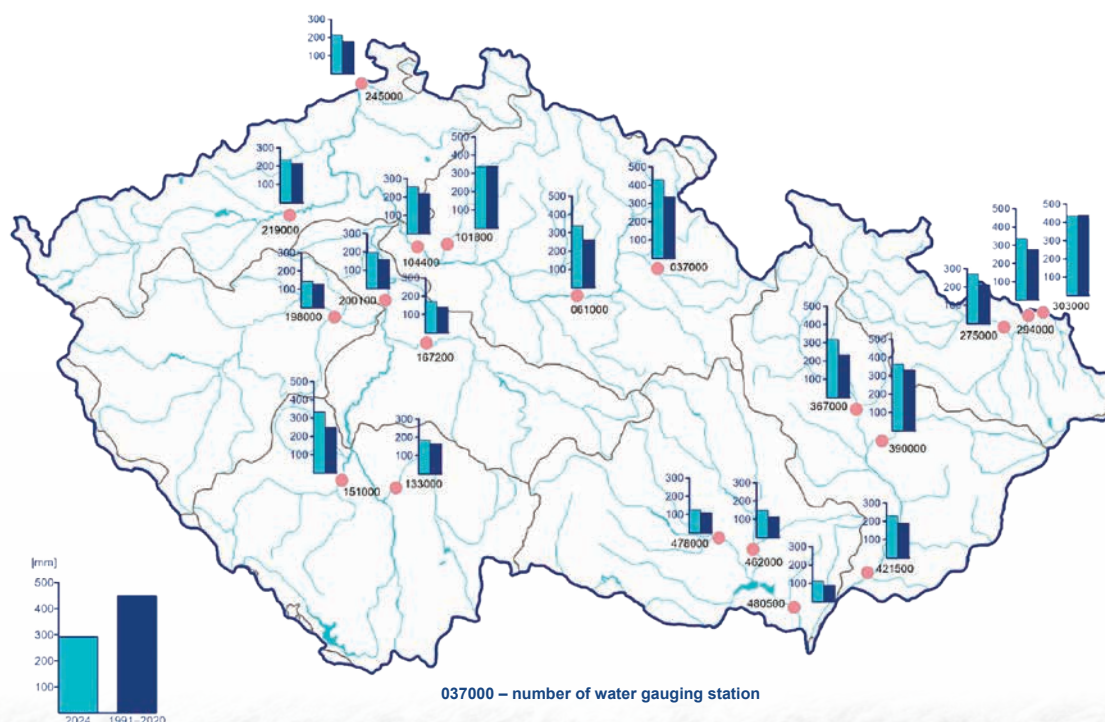
In terms of runoff, 2024 was a very variable year, differing both between individual major river basins and in terms of seasonal assessment. Overall, all major river basins displayed slightly above-average flows, with the exception of the Olše River Basin, which were around the long-term average. When comparing the major river basins, the Oder River had the highest flow, followed by the Morava, Thaya and Vltava Rivers. On the other hand, the lowest volume of water flowed in 2024 from the Olše River Basin, where the average annual flow rate was near to the long-term average. Regarding the number of operational hydrological profiles where hydrological drought was recorded in 2024 (i.e. a flow rate reached or exceeded at a given profile

for the average of 355 days a year), the period from July to August and the first ten days of September was hydrologically the driest. The year 2024 was also specific with runoff events reaching one of the flood activity degrees (FAD) occurring in almost every month, with the exception of December. The most significant runoff event in terms of peak flow and the extent of the affected area occurred in the second third of September, when the Czech Republic was hit by extreme precipitation. Watercourses responded to very heavy rainfall with significant rises of water levels, which led to extensive flooding with frequent instances of flood activity degree 3 being exceeded. The most affected areas were the upper reaches of the Elbe, Vltava, Morava and Oder Rivers, where peak flows reached values corresponding to approximately 5- to 100-year floods.

The winter months (January and February) were above-average in runoff in all major river basins, with January being more significant as the flood situation from the end of 2023 continued. In both months, precipitation and snowmelt caused frequent exceedances of FADs, especially in January.

January was a strongly above-average month in all major river basins. Relatively the most water flowed through the Vltava (249% of Q_l) and Morava (240% of Q_l) Rivers, slightly less through the Elbe (211% of Q_l), Oder (199% of Q_l) and Thaya (196% of Q_l), and the least through the Olše (183% of Q_l). Throughout the month, flows in most of the monitored rivers ranged between above-average and strongly above-average due to significant flood episodes in the last ten days of December 2023. However, in terms of maximum runoff, the first ten days of the month were the most significant in all river basins, where

Figure 1.2.1
Annual runoff compared to the 1991–2020 long-term average



Source: CHMI

flows reached up to nine times the average January values. At the beginning of the month, FAD III was exceeded at several profiles, in the Elbe River Basin on 4 January at the Vestřev profile and on 5 January in Némčice, Litoměřice, Ústí nad Labem and Děčín (all Q_2). In the Vltava River Basin, FAD III was exceeded on 3 January on the Otava River in Rejštejn (Q_2), on 4 January on the upper reaches of the Vltava River in Český Krumlov (Q_{-2}), and on 6 January also in the Morava River Basin on the Svratka river in Brno-Poříčí. FAD II was reached between 3 and 5 January on rivers in all major river basins (all Q_2), except for the Oder River Basin, where only FAD I was exceeded in isolated cases.

February was an above-average month in runoff throughout the Czech Republic. Relatively the most water ran off in the Morava (201% of Q_{II}) and Elbe (196% of Q_{II}), less in the Oder (164% of Q_{II}), Vltava (145% of Q_{II}) and Olše (144% of Q_{II}), and the least in the Thaya (110% of Q_{II}). In most of the monitored rivers, average to above-average flows prevailed during the month, ranging widely from 100% to 280% of Q_{II} . At the beginning of February, flows were mostly in the range of 60% to 200% of Q_{II} compared to long-term February averages, but after two waves of precipitation in the first ten days of the month, they increased to values between 110% and 370% of Q_{II} . After a decrease in flows in the middle of the month, the values at the end of February rose again to 1.5 to 4 times the average values. Rising water levels with frequent exceedances of FADs were recorded mainly in mountain and foothill streams in the north of the Czech Republic after heavy precipitation of 3 and 4 February. On 5 February, the Elbe River peaked above FAD III at the Vestřev profile (Q_5), Les Království and Stanovice (both Q_2) and, on the same day, the Jizera River in Jablonec nad Jizerou (Q_{-2}). At the beginning of the second third of the month (11 February), the Elbe River rose above FAD III level again due to precipitation at the Vestřev profile (Q_{-2}). In the first half of the month, rivers in the Upper Elbe River Basin, i.e. the Elbe, Orlice, Divoká Orlice, Jizera, Úpa, Bystrice, Cidlina and Mrlina culminated (all at Q_2); in the Vltava River Basin it was the Otava (Q_{-2}) and in the Morava River Basin it was the Morava and Moravice (Q_{-2}). In the second half of the month, on 23 February, FAD II was again reached due to significant precipitation on the Elbe at the Vestřev station (Q_{-2}) and on the Úpa at Horní Staré Město (Q_2).

The spring months (March, April and May) differed significantly from the winter period with runoff conditions. In all major river basins, these months were below-average in runoff. A more significant runoff situation occurred first in mid-March, when, after local heavy precipitation, there were temporary rises in river levels, and FAD I was reached at some profiles. The second significant situation occurred in the last ten days of May, when heavy rainfall in western Bohemia led to FAD I being exceeded in most places and even FAD III in some places.

March was a mostly below-average month in runoff in all major river basins. The most water flowed through the Thaya (90% of Q_{III}), Morava (72% of Q_{III}), Oder (66% of Q_{III}) and Elbe (65% of Q_{III}). Conversely, the lowest runoff was recorded in the Vltava (53% of Q_{III}) and Olše (49% of Q_{III}). Average monthly flows in most monitored rivers in March ranged mostly between 35 and 95% of Q_{III} . The water levels of most monitored rivers were typically stable or declining during the first ten days of March. Some smaller watercourses reacted at the beginning of the second third of the month to continuous precipitation, which occurred mainly in the eastern half of the country. The

largest increases were recorded on watercourses in the Thaya River Basin and right-bank tributaries of the Morava River. On 12 and 13 March, FAD I was briefly exceeded on the Jevíčka and Maršovský Stream and, due to controlled discharge, also on the Malá Haná below the Opatovice Reservoir (all at Q_2). In the rest of the month, the water levels of the monitored watercourses were mostly stable with a slight downward trend.

April was also a significantly below-average month in runoff in all major river basins. The highest discharge was recorded in the Olše (63% of Q_{IV}), Oder (54% of Q_{IV}), Morava (53% of Q_{IV}) and Thaya (51% of Q_{IV}), while the lowest runoff was recorded in the Elbe (43% of Q_{IV}) and Vltava (34% of Q_{IV}). Average monthly flow rates in most monitored watercourses ranged mostly between 30% and 75% of Q_{IV} . Water levels in monitored rivers were mostly stable or declining during the first and second third of April. Slight fluctuations only occurred in the Morava and Oder River Basins at the beginning of the month, with isolated exceedances of FAD I, due to controlled manipulation on the Bělá (Q_{-2}) and Luhačovický Stream. At the beginning of the last ten days of the month, river levels responded with slight fluctuations or rises in response to more significant precipitation. Larger rises, but without reaching FAD, were recorded mainly in the left-bank tributaries of the Morava, watercourses in the Berounka River Basin and also in the Upper Vltava. FAD I was reached through controlled manipulation on the Kolelač Stream (Q_{-2}). By the end of the month, the levels of the monitored streams were again mostly stable or slowly declining.

May was also a below-average month in terms of runoff, in some places significantly, throughout the Czech Republic. The most water flowed through the Vltava (76% of Q_V), Thaya (71% of Q_V) and Elbe (69% of Q_V), while the least flowed through the Morava (43% of Q_V), Oder (34% of Q_V) and Olše (34% of Q_V). Average monthly flow rates were mostly in a wide range from 30% to 300% of Q_V , which was mainly caused by significant precipitation at the end of May. During the first and second thirds of May, the levels of monitored watercourses were mostly stable or declining. A single rise above FAD II level occurred only on 7 May on the Pitkovický Stream in Kuří (Q_2), but the level was significantly affected by construction work on the riverbed throughout 2024. Rises above FAD I were recorded on 3 May on the Bělá at Boskovice below the dam (Q_{-2}) and on 6 May on the Jevíčka in Chornice (Q_{-2}) due to temporary precipitation. Further rises reaching FAD were recorded at the end of the second third of May, when watercourses in the Berounka and Ohře River Basins in particular reached mainly FAD I level. On 22 May, FAD III was reached on the Radbuza in Staňkov (Q_2) and on 29 May on the Mže below the Lučina Reservoir (Q_{-2}). FAD II was exceeded more frequently, namely on 19 May on the Sázava in Sázava (Q_{-2}), on 23 May on the Mže River in Stříbro and on the Radbuza below the České Údolí Reservoir (both Q_{-2}) and on 31 May again on the Pitkovický Stream in Kuří (Q_2).

The summer period was average to below average in runoff, but was accompanied by significant hydrological events, mainly related to heavy precipitation. In June, there were significant rises in water levels at the beginning and end of the month, with FAD II and III being reached in some areas, particularly in the Berounka, Oder and Bečva River Basins. Water levels continued to rise during July, often exceeding FAD II and III. August was characterised by frequent thunderstorms, which

caused repeated sharp rises in water levels, especially in smaller watercourses around Prague and in the Oder River Basin, where flood activity levels were also reached.

Heavy precipitation occurred at the beginning of June, leading to numerous short-term exceedances of FADs, especially in the Otava River Basin and on the tributaries of the Vltava River in Prague. At the end of the month, after extreme precipitation, the peak flow on the Zlatý Stream at the Hracholusky profile reached a recurrence interval of 20 to 50 years. Numerous exceedances of FADs also occurred in August.

June was an average month in runoff, with the relatively highest water flowing from the Vltava (113% of Q_{VI}), Morava (109% of Q_{VI}) and Olše (108% of Q_{VI}), slightly less from the Elbe and Thaya (100% of Q_{VI}), and least from the Oder (99% of Q_{VI}). Average monthly flow rates typically ranged between 40% and 140% of Q_{VI} . At the beginning of the month (4 June), there were significant increases in a number of watercourses due to heavy rainfall. FAD III was exceeded on the Ropičanka at the Řeka profile and on the Bystřice at the Bystřička above reservoir profile (both at Q_5), FAD II was exceeded on the Olše in Český

Těšín and Dětmárovice (both Q_2), and also on the Stonávka in Hradiště and on the Bystřice at the Bystřička below reservoir profile (both at Q_2). Further rises occurred on 10 June, when FAD II was briefly exceeded on the Luhačovice Stream in Polichno (Q_2), and in several cases FAD I was exceeded in the White Carpathians. Between 21 and 23 June, due to heavy rainfall caused by thunderstorms, there were significant increases exceeding FADs. FAD III was recorded on 22 June on the Bělá in Boskovice (Q_5), and FAD II was exceeded on the same day on the Svitava in Bilovice nad Svitavou (Q_2). At the end of the month (26–30 June), significant increases were again recorded due to several significant precipitation events. FAD III was exceeded on 30 June on the Ondřejnice at the Kozlovice and Rychaltice profiles (Q_5) and again on the Bystřice River at the Bystřička above reservoir profile (Q_2). FAD II was also recorded on 30 June on the Rusava River at the Chomýž profile (Q_{10}), on the Olešná River at the Palkovice profile and on the Rožnovská Bečva River in Rožnov pod Radhoštěm (both Q_5) and also on the Maršovský Stream in Hubenov above reservoir, on the Juhyně in Rejnochovice, on the Dřevnice in Kašava above reservoir (all at Q_2) and on the Zděchovka in Zděchov (Q_2). Such a runoff situation continued into early July.

Table 1.2.1
Runoff in 2024 as percentage of long-term average monthly runoff in 1991–2020

River	Profile	Catchment Area	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
		[km ²]	[%]												
Orlice	Týniště nad Orlicí	1,556.40	189	243	59	47	61	76	72	67	401	130	82	171	128
Elbe	Přelouč	6,436.43	205	265	71	53	51	63	65	74	368	154	84	135	128
Jizera	Tuřice-Předměřice	2,159.22	187	286	66	41	46	57	47	56	167	65	49	95	99
Elbe	Kostelec nad Labem	13,183.43	195	263	69	48	49	56	57	67	312	130	72	121	118
Lužnice	Bechyně	4,062.89	155	120	60	29	42	65	101	23	491	188	94	113	112
Otava	Písek	2,913.12	239	180	69	47	82	153	71	58	449	217	125	120	134
Sázava	Nespeky	4,038.66	218	138	69	48	80	47	51	36	448	246	97	140	121
Berounka	Beroun	8,284.96	137	151	55	59	167	182	72	49	241	155	67	80	111
Vltava	Prague-Chuchle	26,728.73	235	154	54	35	72	108	62	46	400	210	93	131	123
Ohře	Louny	4,910.80	177	169	60	41	132	165	102	81	86	99	72	101	108
Elbe	Hřensko	51,261.77	211	192	65	44	69	99	67	59	310	164	85	120	119
Opava	Děhylov	2,036.34	223	229	62	32	35	74	62	46	679	118	100	129	129
Oder	Bohumín	4,661.57	198	164	65	54	33	93	65	52	564	104	70	107	121
Olše	Věřňovice	1,077.23	178	144	50	65	31	125	57	50	311	74	55	89	98
Morava	Olomouc-Nové Sady	3,323.43	265	285	97	52	56	98	71	64	386	121	80	144	136
Bečva	Dluhonice	1,592.32	246	156	40	63	37	136	118	38	361	68	55	95	109
Morava	Strážnice	9,145.07	241	203	72	54	44	116	92	51	423	110	65	119	122
Svratka	Židlochovice	3,937.78	220	133	97	61	85	146	92	66	460	142	104	110	132
Jihlava	Ivančice	2,679.70	205	124	92	56	71	85	74	46	352	167	103	124	116
Thaya	Ladná	12,285.42	215	124	95	50	71	111	65	50	541	175	92	95	126

Source: CHMI

Note: % of the average

30	40	50	60	80	100	120	150	200	300
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July was a mostly below-average month in runoff in all major river basins. The highest values were recorded in the Morava (96% of Q_{VII}), Oder (71% of Q_{VII}), Thaya (68% of Q_{VII}) and Elbe (66% of Q_{VII}), while the lowest runoff was recorded in the Vltava (62% of Q_{VII}) and Olše (57% of Q_{VII}). At the beginning of the month flows at several profiles reached 2 to 4 times Q_{VII} , but in the second and third thirds they mostly gradually decreased, with isolated increases. Average monthly flow rates ranged from 35% to 120 % of Q_{VII} . At the beginning of the month, the situation from the previous month still prevailed. On 1 July, Moštěnka peaked at the Prusy profile reaching FAD III (Q_{10}), the Velká Haná at the Vrchoslavice profile and again the Bystřice at the Bystřička below reservoir profile (Q_{-2}). FAD II was reached on 1 July on the Lubina in Petřvald (Q_5), Fryštácký Stream at the Fryšták reservoir profile, on the Jičinka in Nový Jičín, Rožnovská Bečva in Valašské Meziříčí, Vsetínská Bečva in Vsetín, the Bečva in Teplice and Bečva in Dluhonice (all Q_2). Further increases occurred in the first half of the second third of the month, when on 10 July FAD III was reached on the Svinenský Stream at the Trhové Sviny profile, on 12 July on the Želetavka at the Jemnice profile (Q_{10}) and on the Divoká Orlice in Orlické Záhoří (Q_5), on 14 July on the Nežárka in Rodvínov (Q_{10}) and Lásenice (Q_2) and on the Kamenice in Kamenice nad Lipou. FAD II was reached on 14 July on the Želivka at the Želiv profile (Q_2), the Žirovnice in the Žirovnice profile and the Černovický Stream in Tučapy. On the last day of the month (31 July), FAD II was reached on the Bělá at the Boskovice below reservoir profile, but only through controlled manipulation at the reservoir.

August was below-average in terms of runoff in all river basins, with most rivers showing predominantly below-average flows. The most water flowed out of the Elbe (58% of Q_{VIII}), Thaya (56% of Q_{VIII}) and Morava (55% of Q_{VIII}), slightly less from the Oder (52% of Q_{VIII}), Olše (47% of Q_{VIII}) and least from the Vltava (44% of Q_{VIII}). Average monthly flow rates in most watercourses during the month were mostly in the range of 25% to 110% of Q_{VIII} . Significant fluctuations in water levels occurred, especially in smaller watercourses, at the very beginning of the month. On 1 August, FAD II was exceeded on the Volyňka at the Sudslavice profile (Q_5). Further rises occurred on 4 August, when water levels rose in the vicinity of Prague, with FAD II being recorded on the Pitkovický Stream in Kuří. Further storms at the beginning of the month (8 August) caused FAD II to be exceeded again on the Pitkovický Stream, where, however, flows were affected by bridge reconstruction. The most significant rises in water levels occurred on 18 August, when FAD III (Q_5) was recorded on the Botič River at the Jesenice-Kocanda profile. FAD II was reached on the Botič Stream at the Průhonice (Q_5) and Prague-Nusle (Q_2) profiles. Another FAD II was also reached on 18 August on the Mandava River at the Varnsdorf profile (Q_2). Rises reaching FAD I were observed in the Czech part of the Oder River Basin, on the Volyňka, Spůlka and other smaller watercourses in the vicinity of Prague. The following day (19 August), FAD II was exceeded on the Litovický Stream at the Prague-Jiviny profile, where a flow rate of Q_5 was reached. At the beginning of the last third of August, the rises repeated and FAD I and FAD II were again exceeded in the affected river basins. FAD II (Q_{-2}) was reached on the Řasnice River at the Frýdlant-Řasnice profile. Towards the end of the month, the situation calmed down and water levels remained mostly stable.

In terms of runoff, the autumn was mostly average to above average, with September bringing exceptional flood situations. In the Oder, Thaya and Morava River Basins, water levels reached values corresponding to 100-year floods (Q_{100}), often exceeding FAD II and even FAD III. The largest flood episode occurred between 12 and 15 September and was accompanied by significant rises in water levels in many rivers. October and November were characterised by slightly fluctuating flows. In November, there were temporary rises in water levels, especially on the Otava and Křemelná, where FAD I and II were briefly exceeded.

September was above-average in runoff in all monitored river basins. The highest runoff was recorded in the Oder (546% of Q_{IX}), Thaya (507% of Q_{IX}) and Morava (446% of Q_{IX}), followed by the Vltava (384% of Q_{IX}), Elbe (325% of Q_{IX}) and Olše (319% of Q_{IX}). Flow rates in September were mostly above-average, with significantly higher values in the flood-affected river basins. The highest flow rates were recorded during floods in the Lužnice and Malše, where they reached up to 25 times of the average. Flow rates were also significant in watercourses in the Oder River Basin (at some places up to 2,100% of Q_{IX}) and in the Morava and Thaya River Basins (even up to 3000% of Q_{IX}). At the beginning of the month, the water levels of most monitored watercourses were mostly stable or slightly decreasing. In the second half of September, an extreme flood episode occurred, affecting the entire Czech Republic with the exception of western Bohemia.

Description of the flood:

Overall, the highest flow rates (Q_{50} and more), from the perspective of recurrence intervals, were recorded in the Upper Elbe River Basin, where the 100-year flood level was reached by the Novohradka at the Luže and Úhřetice profiles. Q_{50} level was recorded on the Chrudimka at the Hamry and Nemošice profiles. In the Vltava River Basin, the highest water level rises were recorded mainly in the Lužnice and Malše. The Malše in Pořešín and the Lužnice in Pilař exceeded Q_{50} . In the Oder River Basin Q_{100} was exceeded at several places leading to an exceptional flood situation. The Černá Opava at the Mnichov profile even exceeded Q_{100} . The Q_{100} level was also recorded on the Bílovka at the Velké Albrechtice profile, the Oder in Svinov, the Opavice in Krnov, the Hvozdnice at the Jakartovice profile, the Opava in Děhylov, the Stonávka in Hradiště and the Bělá in Mikulovice. Q_{50} was frequently reached by the Lubina, Porubka, Opava, Slavíč, Ostravice, Lučina, Olše and Stěna. Extreme water levels were also recorded in the Morava and Thaya River Basins, with some watercourses reaching 100-year flood levels. Q_{100} was reached by the Krupá in Habartice, the Velička in Velká nad Veličkou and the Thaya in Podhradí nad Dyjí, while Q_{50} was reached by the Desná in Šumperk and the Malá Haná at the Opatovice Reservoir profile.

In terms of runoff, October was a mostly average to above-average month, mainly due to the prevailing effects of flooding from the previous period. Relatively most water flowed through the Vltava (220% of Q_X), Oder (195% of Q_X), Thaya (173% of Q_X) and Elbe (164% of Q_X), slightly less by the Morava (128% of Q_X) and below-average values were recorded by the Thaya (67% of Q_X). Average runoff ranged widely from 40% to 240% of Q_X with the highest values recorded in the Sázava and Lužnice River Basins (3–4 times Q_X). On the other hand, some tributaries of the Lower Elbe, Bečva and Oder had below-average flows.



The Dry Reservoir Kutřín (source: Elbe River Board, s.e.)

Watercourse levels slightly fluctuated in the first half of the month, while in the second half of October, when precipitation was below-average, declines or stable levels prevailed. A single exceedance of FAD II was recorded on 2 October by the Bělá River at the Boskovice profile below the dam due to manipulation at the reservoir. FAD I was exceeded on the Hamerský Stream, Řečice and Romže.

In terms of runoff, November was mostly below-average to average. Relatively the most water flowed in the Thaya (98% of Q_{xi}) and Vltava (92% of Q_{xi}), slightly less in the Oder (84% of Q_{xi}) and Elbe (84% of Q_{xi}), below-average values were recorded in the Morava (65% of Q_{xi}) and the Olše (60% of Q_{xi}). Average monthly flow rates ranged mostly between 40% and 130% of Q_{xi} . Water levels in the monitored rivers were mostly stable or gradually declining in the first and second thirds of the month. At the end of the second third, there were temporary increases. The Pitkovický Stream briefly exceeded FAD II on 20 November. Further increases occurred on 20 November, mainly in mountainous and foothill areas. The Upper Otava at the Rejštejn and Sušice profiles, briefly reached FAD I, as did the Křemelná River at the Stodůlky profile and the Fryštácký Stream at the Fryšták Reservoir profile.

Water levels then kept falling. By the end of the month, they were only slightly fluctuating or stable. In terms of runoff, December was a mostly average to slightly above-average month in most river basins. Relatively most water flowed off through the Vltava (135% of Q_{xii}), Oder (121% of Q_{xii}) and Elbe (119% of Q_{xii}). Slightly less water flowed through the Morava (106% of Q_{xii}) and Thaya (96% of Q_{xii}), and the least through the Olše (83% of Q_{xii}). Compared to long-term December averages, runoff at the beginning of the month was mostly average, ranging widely from 60% to 130% of Q_{xii} . In

the first third of the month, there were temporary increases, especially in watercourses in mountainous and foothill areas, due to heavy precipitation and snowmelt. As a result, FAD II was exceeded on 6 December on the Pitkovický Stream in Kuří (Q_2) and on 10 December on the Jihlava in Dvorce (Q_5). At the end of the second third of the month, due to thawing, there was a single exceedance of FAD I on the Bělá River in Boskovice below the dam due to controlled manipulation. At the end of the month, flows decreased to almost the original values from the beginning of the month, and water levels were again mostly stable or gradually decreasing.

1.3 Groundwater regime

The levels of shallow-circulation groundwaters were strongly above-average in 2024 (14% of the monthly exceedance curve, hereinafter referred to as "ECm", see Table 1.3.1), which was the best condition in the last ten years. Slightly to strongly above-average levels prevailed in most of the country, with the exception of the Ohře and Lower Elbe, Upper Oder and Lusatian Neisse River Basins, where the level was only average (25–44% of ECm, Figure 1.3.1, Table 1.3.1). Spring yield was slightly above-average (23% of ECm, Table 1.3.2), with significant regional differences (Figure 1.3.2). The worst, extremely below-average condition was recorded in the Ohře and Lower Elbe River Basins (97% of ECm), while in the Upper Vltava, Berounka and Lower Vltava River Basins, annual yield was strongly above-average (8–13% of ECm, Table 1.3.2). The share of shallow aquifers and springs with a normal condition was 39% in both cases. 36% of shallow aquifers and 27% of springs were strongly or extremely above-average. In contrast, only 2% of shallow aquifers and 10% of springs were strongly or extremely below-average.

The beginning of the year was extremely above-average due to December 2023 floods and also due to the annual maximum reached (Graph 1.3.1, Graph 1.3.3). The level then declined and the yield decreased, mostly within normal limits, until it reached its annual minimum in August, which was overall average in shallow aquifers (60% of ECm) and slightly below-average in springs (77% of ECm). In September and October, floods caused a significant rise in water levels and an increase in yield to strongly above-average (Graph 1.3.2, Graph 1.3.4). In November, the shallow circulation level fell to slightly above-average (22% of ECm), but in December it rose again to strongly above-average (14% of ECm). Yield decreased to average in November and December.

The groundwater level of deep aquifers in the Czech Republic was average in 2024 (Table 1.3.3). However, the situation varied from region to region. The level was exceptionally below-average in the North Bohemian Cretaceous, and strongly below-average in the Permo-carboniferous of Central and West Bohemia. In contrast, the level was slightly above-average in the Ore Mountains basins and the East Bohemian Cretaceous, and strongly above-average in the Moravian Tertiary and the Permo-carboniferous of East Bohemia. The Cenomanian of the East Bohemian Cretaceous was extremely above-average (Figure 1.3.3). Overall, 12% of the objects were extremely below-average, 8% were strongly below-average and 5% were slightly below-average, 28% of the objects were average, 16% were slightly above-average, 20% were strongly above-average and 11% were extremely above-average.

Nationwide, the level in deep aquifers was slightly or strongly above-average from January to March, then average, with the exception of slightly below-average conditions in May and August (Graph 1.3.5, Table 1.3.3). From January, the level rose

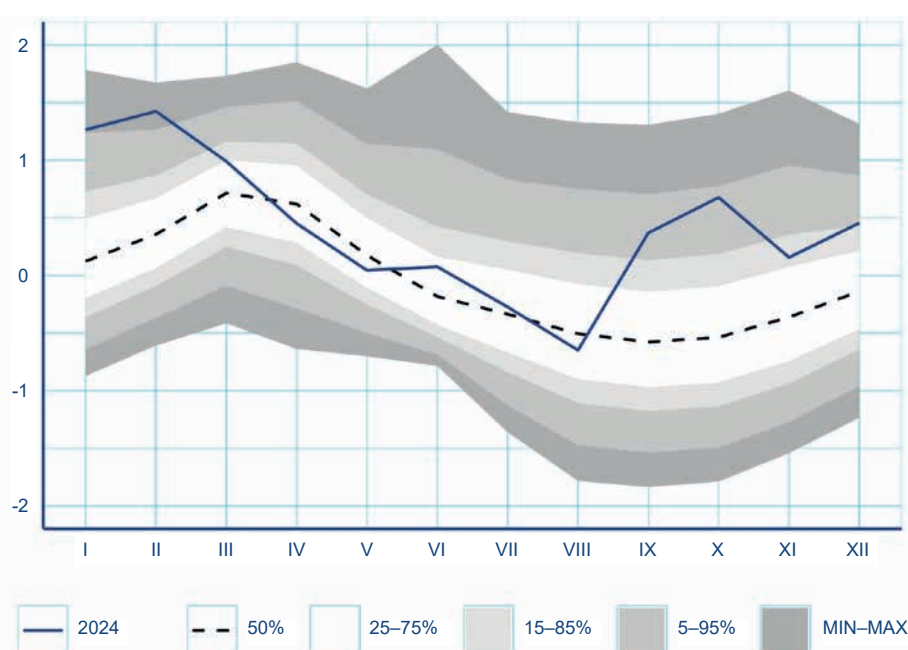
to a slightly above-average annual maximum in March (18% of ECm), then fell to a slightly below-average minimum in August (78% of ECm), rose significantly within normal limits in September and October, and fell slightly again at the end of the year. In the North Bohemian Cretaceous, the level was exceptionally below-average from April until the end of the year, while in the Permo-Carboniferous of Central and West Bohemia, the level was strongly or extremely below-average throughout the year (Table 1.3.3, Graph 1.3.6). In the Moravian Tertiary, on the contrary, the strongly above-average level, caused by the rise in the previous year, continued from January to March, followed by an average level until August. Due to high precipitation totals in September, the level in the Moravian Tertiary was extremely above-average in September and October, falling to strongly above-average at the end of the year. In the Cenomanian of the East Bohemian Cretaceous, water levels remained mostly strongly, sometimes even extremely above-average throughout the year.

Shallow aquifers

In January and February, the levels of groundwaters with shallow circulation were predominantly strongly to extremely high, due to December 2023 floods (Graph 1.3.2, Table 1.3.1). The annual extremely above-average maximum level occurred in February (3% of ECm, Graph 1.3.1), which corresponded regionally to the extremely above-average conditions in the Morava, Upper and Middle Elbe River Basins (1–3% of ECm). In March, the level fell to average values (26% of ECm). Until May, the level fell mostly within average limits (Graph 1.3.2). Exceptions were the Upper Vltava River Basin (April, 86% of ECm), the Upper Oder River Basin (May, 85% of ECm) and the Lusatian Neisse River Basin (May, 94% of ECm), where the situation deteriorated to strongly below-average (Table 1.3.1).

Graph 1.3.1

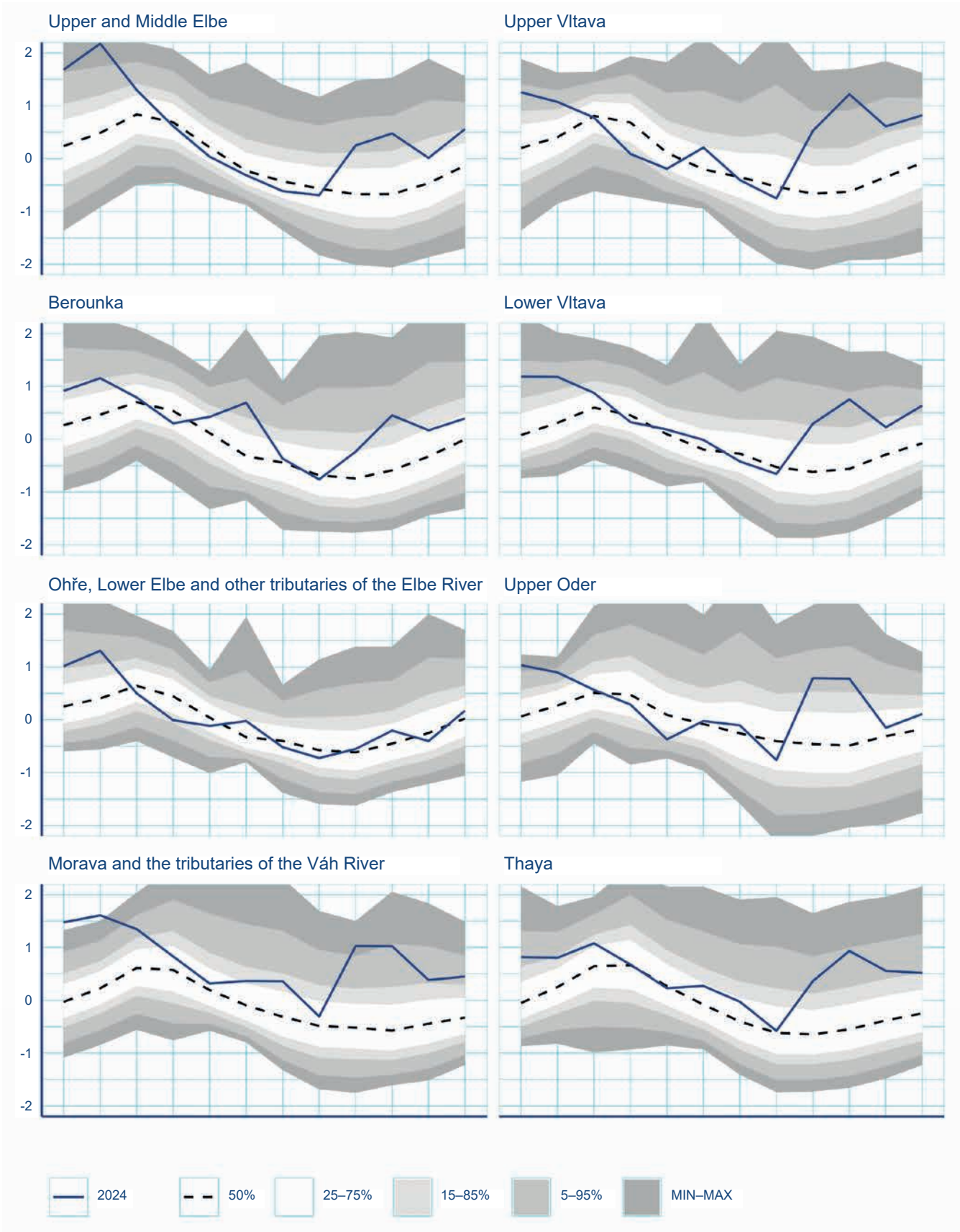
Average standardised groundwater levels at shallow aquifers in the monitoring network of the Czech Republic in 2024 (blue) compared to the 1991–2020 long-term average



Source: CHMI

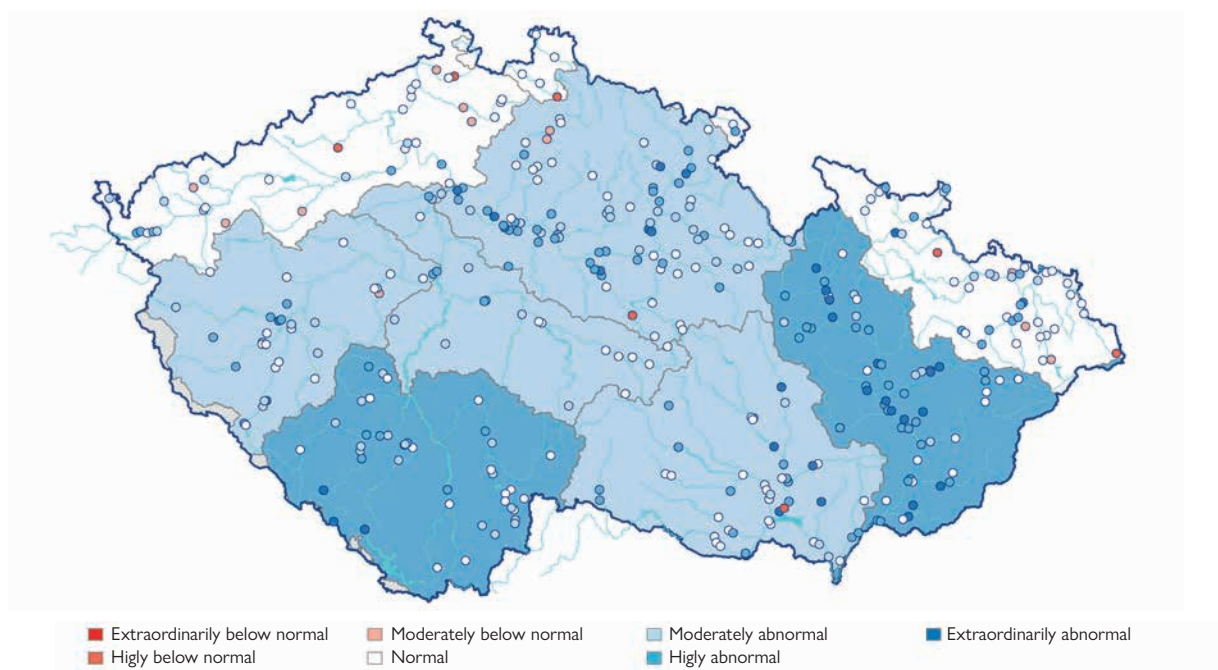
Note: The graph also shows quantiles of monthly exceedance probability curves (ECm).
The vertical axis shows the standard deviation.

Graph 1.3.2
Average standardised level of shallow aquifers in the monitoring network of the river basins in 2024 (blue) compared to the 1991–2020 long-term average



Source: CHMI
Note: The graph also shows quantiles of monthly exceedance curves (ECm).

Figure 1.3.1
Groundwater levels in shallow aquifers in 2024, compared to the 1991–2020 period



Source: CHMI

Table 1.3.1
Probability of exceeding the average level in 2024 in river basins in % of ECm (monthly exceedance curve for 1991–2020)

River Basin	Water level with respect to % of ECm												2024
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Upper and Middle Elbe	5	2	20	56	66	58	65	59	12	9	27	15	15
Upper Vltava	7	10	53	86	74	25	54	61	9	3	12	10	13
Berounka	19	15	43	68	27	10	45	55	25	11	26	29	20
Lower Vltava	8	9	28	61	42	36	61	57	14	6	22	10	20
Ohře and Lower Elbe	14	9	62	83	66	26	62	62	45	32	61	39	40
Upper Oder	3	7	46	62	85	46	43	67	11	11	41	32	25
Lusatian Neisse	6	3	36	81	94	91	97	87	20	21	57	44	44
Morava	1	1	10	35	41	23	19	39	4	5	14	11	7
Thaya	11	16	22	49	53	28	28	48	10	5	12	15	17
Czech Republic	5	3	26	64	62	30	45	60	10	6	22	14	14

Source: CHMI

Note: The red colour scale corresponds to the categories slightly (75–85%), strongly (85–95%) and extremely (95–100%) below-average levels. Blue colours indicate slightly (15–25%), strongly (5–15%) and extremely (0–5%) above-average yield

In June, the level stagnated and average conditions prevailed, but in the Berounka River Basin, the level rose to strongly above-average (10% of ECm). In July and August, the levels of groundwaters with the shallow circulation continued to decline, mostly within normal limits, and reached its annual minimum (60% of ECm). More significant deviations were recorded in the Lusatian Neisse River Basin, where the water level in July and August was extremely and/or strongly below-average (97% and 87% of ECm). In September, as a result of floods in all river basins, there was a significant rise in water levels to strongly above-average nationwide (10% of ECm). In

the Morava River Basin, the water level was extremely above-average (4% of ECm), while in the Ohře and Lower Elbe River Basins it remained average (45% of ECm). In October, water levels continued to rise in most of the country and the situation remained strongly above-average (6% of ECm). In November, water levels fell to normal values in parts of the Czech Republic, with strongly above-average conditions persisting in the Upper Vltava, Morava and Thaya River Basins (12–14% of ECm). In December, water levels rose again to strongly above-average (14% of ECm, Table 1.3.1).



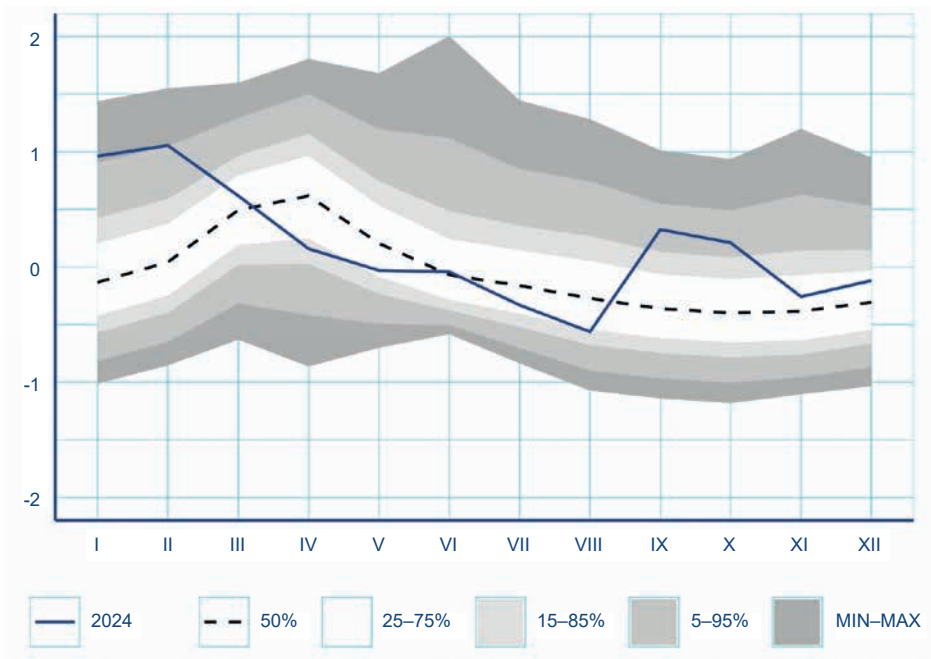
Flood dry reservoir Jelení on Kobyli Creek in Karlovice in operation (source: Odra River Board, s.e.)

Springs

In January and February, spring yield was strongly to extremely above-average in most of the country as a result of December 2023 floods (Graph 1.3.4, Table 1.3.2). The annual strongly above-average maximum yield occurred in February (5% of ECm, Figure 1.3.2), but the situation varied regionally. In the Upper and Middle Elbe, Upper Vltava, Upper Oder and Morava River Basins, yield was extremely above-average, while in the

Ohře and Lower Elbe and Lusatian Neisse River Basins, yield was only average (Graph 1.3.4). In March, the yield decreased to average nationwide (39% of ECm) and in the Ohře and Lower Elbe River Basins to extremely below-average (99% of ECm). Subsequently, the yield decreased until August, when it reached a slightly below-average annual minimum (77% of ECm), with different trends in individual river basins. In some river basins, yield continued to decrease until August within average limits (Lower Vltava, Morava and Thaya, Graph 1.3.4).

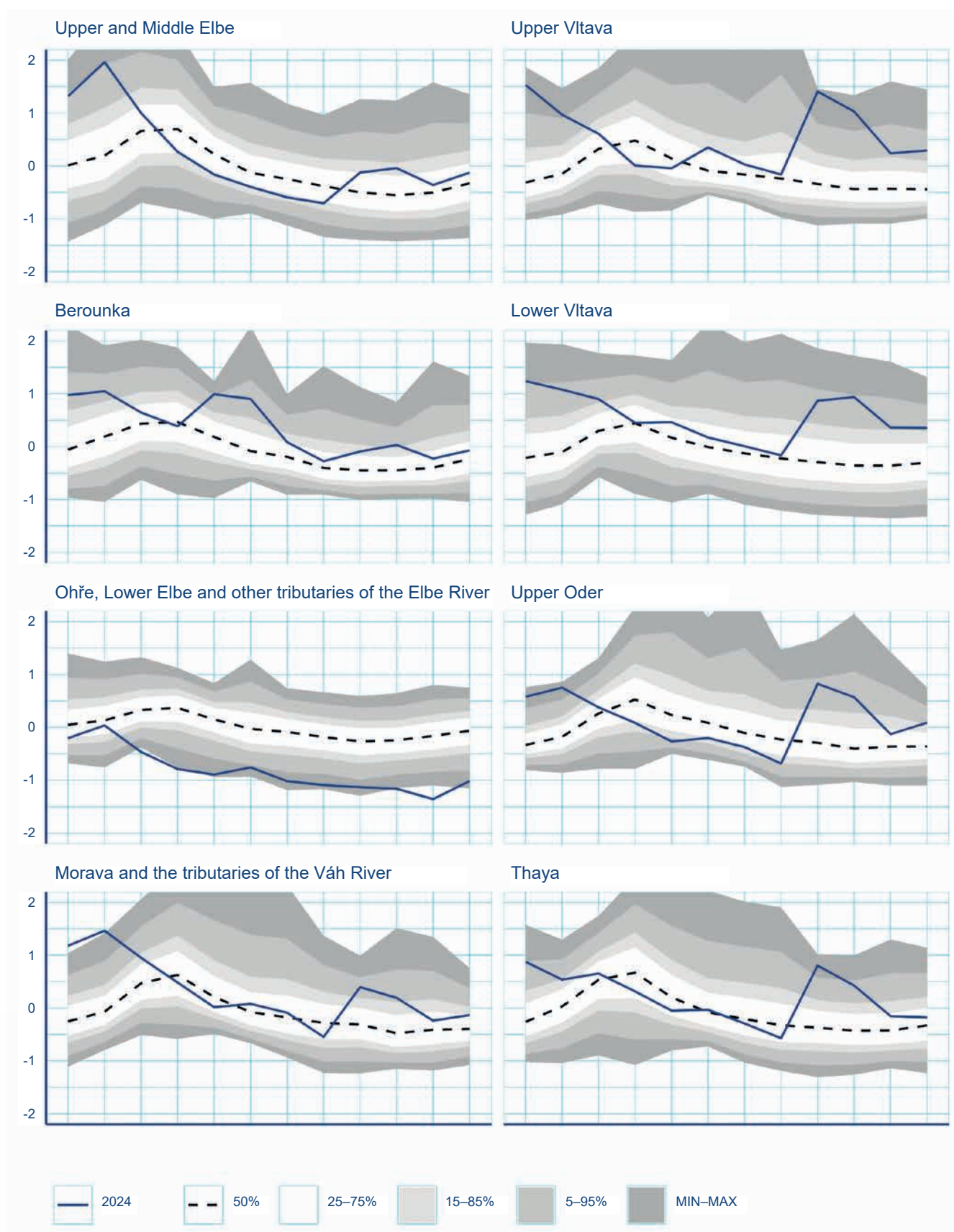
Graph 1.3.3
Average standardised yield of springs in the monitoring network of the whole Czech Republic in 2024 (blue) compared to the 1991–2020 long-term average



Source: CHMI
Note: The graph also shows quantiles of monthly exceedance curves (ECm).
The vertical axis represents the standard deviation.

Graph 1.3.4

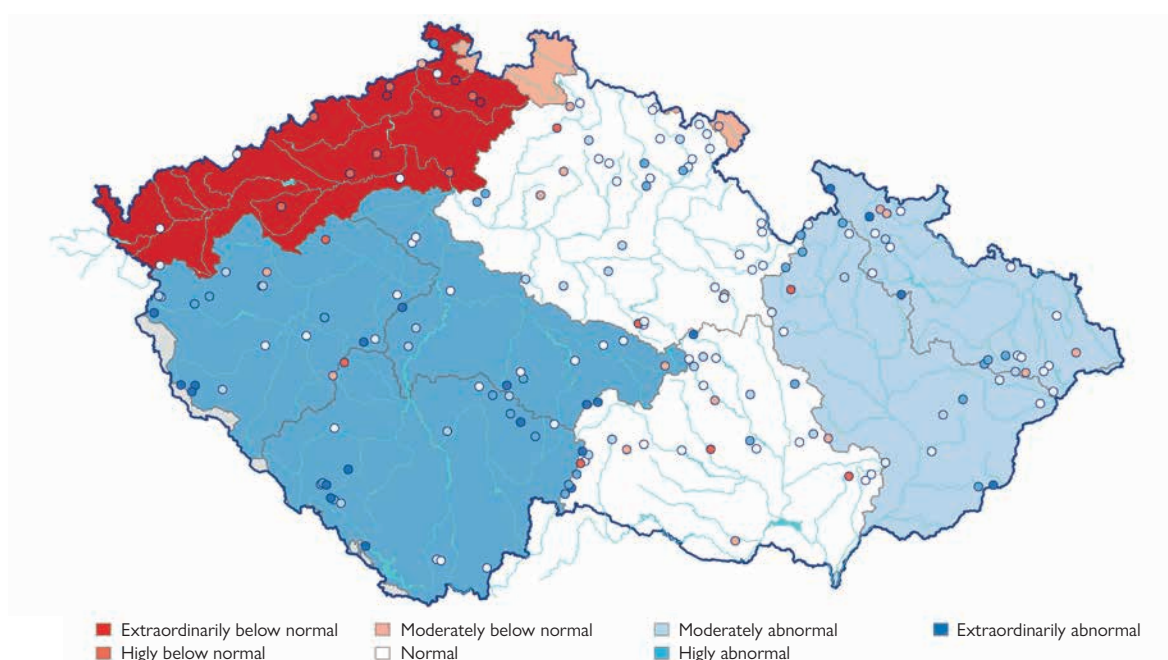
Average standardised yield of springs in the monitoring network in river sub-basins in 2024 (blue) compared to the 1991–2020 reference period



Source: CHMI

Note: The graph also shows quantiles of monthly exceedance curves (ECm).

Figure 1.3.2
Spring yield in 2024, compared to the 1991–2020 reference period



Source: CHMI

Table 1.3.2
Probability of exceedance of spring yield in 2024 in sub-basins in % of ECm (monthly exceedance curve for the 1991–2020 reference period)

River Basin	Yield values in % of ECm												2024
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Upper and Middle Elbe	6	5	32	74	78	75	80	77	25	18	40	35	35
Upper Vltava	3	4	29	78	64	22	34	45	2	3	13	10	8
Berounka	9	10	35	56	4	8	24	38	21	13	35	36	10
Lower Vltava	5	6	13	49	29	38	41	46	7	5	14	13	13
Ohře and Lower Elbe	76	60	99	99	98	96	97	98	97	98	100	97	97
Upper Oder	3	2	39	78	89	77	74	85	6	10	31	14	24
Lusatian Neisse	39	46	67	88	92	90	91	90	63	44	55	65	79
Morava	1	2	19	59	67	38	43	72	8	13	36	24	18
Thaya	5	15	41	69	68	46	57	70	3	6	28	37	25
Czech Republic	4	5	39	80	71	47	68	77	9	11	39	32	23

Source: CHMI

Note: The red colour scale corresponds to the categories slightly (75–85%), strongly (85–95%) and extremely (95–100%) below-average levels. Blue colours indicate slightly (15–25%), strongly (5–15%) and extremely (0–5%) above-average yield.

In contrast, in the Berounka River Basin, yield increased in May and June to extremely (4% of ECm) and strongly above-average (8% of ECm). In the Lusatian Neisse, Ohře and Lower Elbe River Basins, the situation was strongly or extremely below-average from April to August. In September, yield increased significantly in most of the country as a result of floods, reaching a strongly above-average level (9% of ECm), with the exception of the Ohře and Lower Elbe River Basins, where it remained extremely below-average (97% of ECm). In October, the yield decreased slightly but remained strongly

above-average overall (11% of ECm). The decrease in yield to average levels (39%) continued in November. Only the Upper and Lower Vltava River Basins remained strongly above-average until the end of the year (10–14% of ECm). In contrast, in the Ohře and Lower Elbe River Basins, the yield remained extremely below-average until the end of the year. In December, total yield was average, with a more significant increase to a strongly above-average level recorded only in the Upper Oder River Basin (14% of the reference value, Table 1.3.2).



Kostelec nad Labem (author: Hubalová Petra)

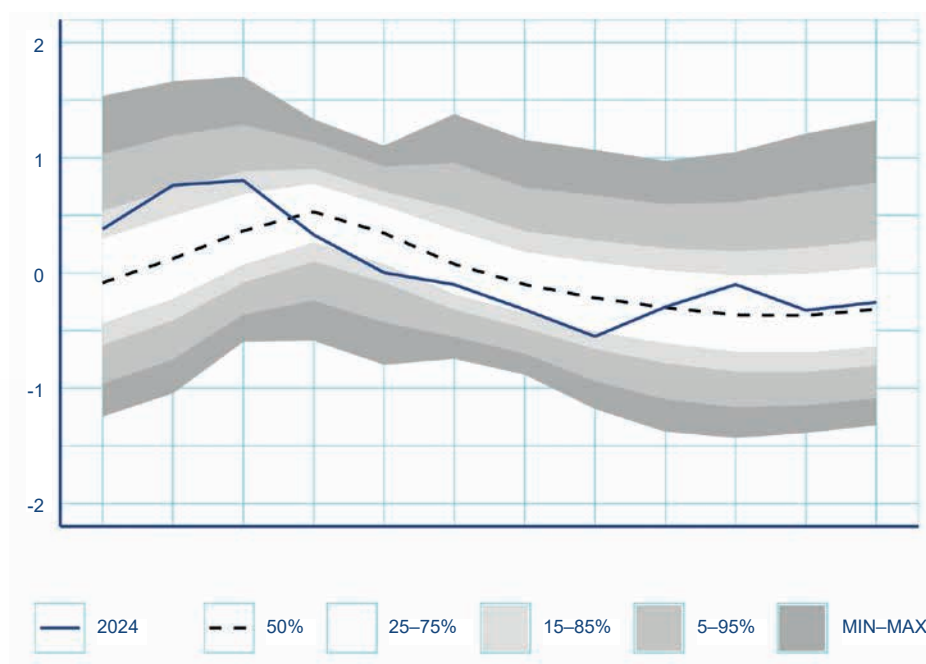
Deep aquifers

Deep aquifer levels in several parts of the hydrogeologic region (HGR) groups were strongly or extremely below-average in 2024. The most affected by drought was part 4B of the North Bohemian Cretaceous, where extremely below-average levels persisted throughout the year (Figure 1.3.3). The Permo-carboniferous of Central and West Bohemia (HGR groups 8A, 8B, 8C), where strongly or extremely below-average situation persisted throughout the year, was the worst since 1991 (Table

1.3.3). The share of extremely below-average aquifers was 67%, 11% of aquifers were strongly below-average, and no object was above-average. Strongly below-average conditions persisted for most of the year in part 4C of the North Bohemian Cretaceous, and parts 4D of the North Bohemian Cretaceous were also strongly or extremely below-average for part of the year (Figure 1.3.4). Overall, the post-2020 condition of the North Bohemian Cretaceous (HGR Group 4) was the second worst since 1991. The share of extremely below-average aquifers was 40% and 40% of aquifers were strongly below-average.

Graph 1.3.5

Average standardised deep aquifer level in the monitoring network in the Czech Republic in 2024 (blue) compared to the long-term values of the 1991–2020 reference period

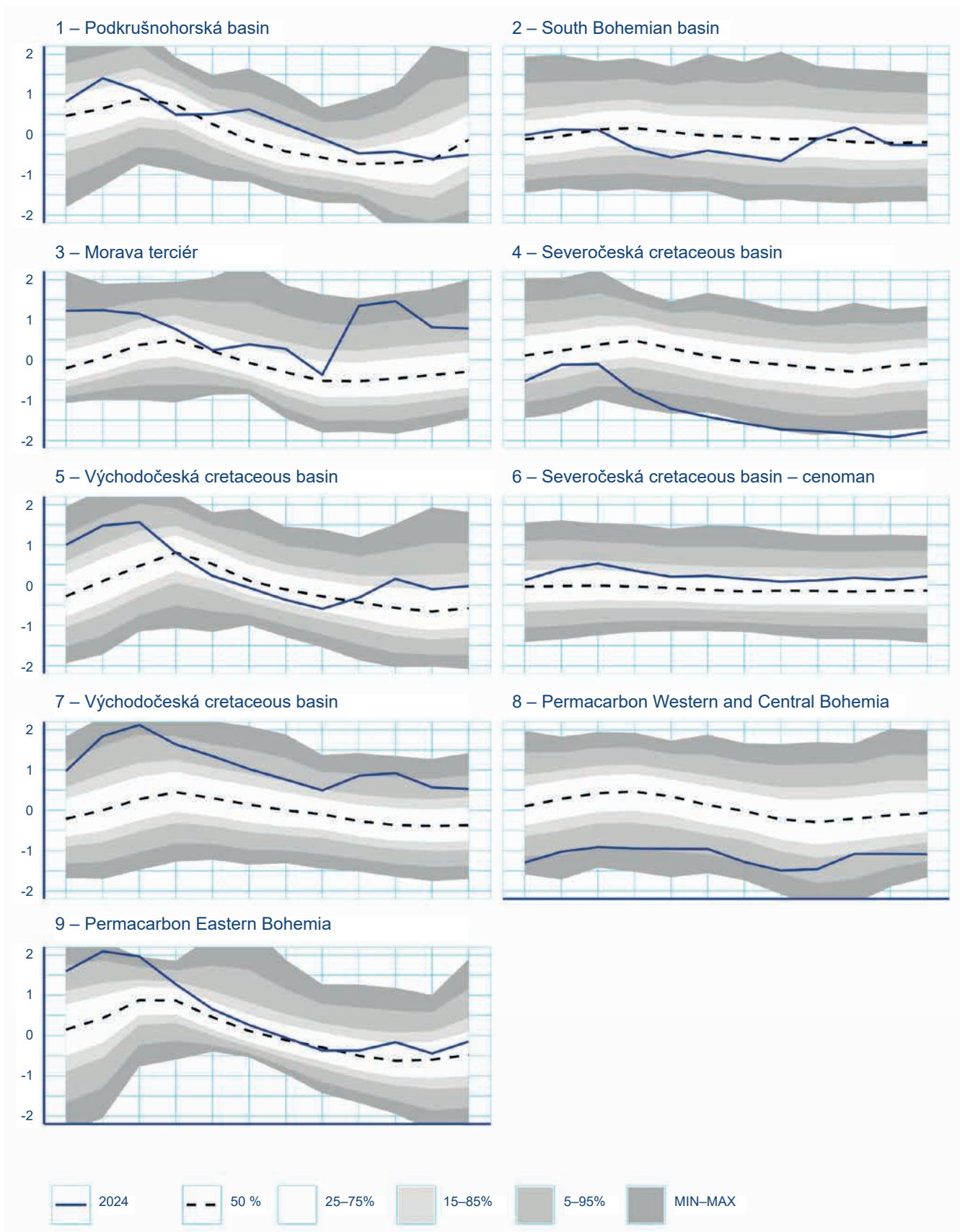


Source: CHMI

Note: The graph also shows quantiles of monthly exceedance curves (ECm).
The vertical axis represents the standard deviation.

Graph 1.3.6

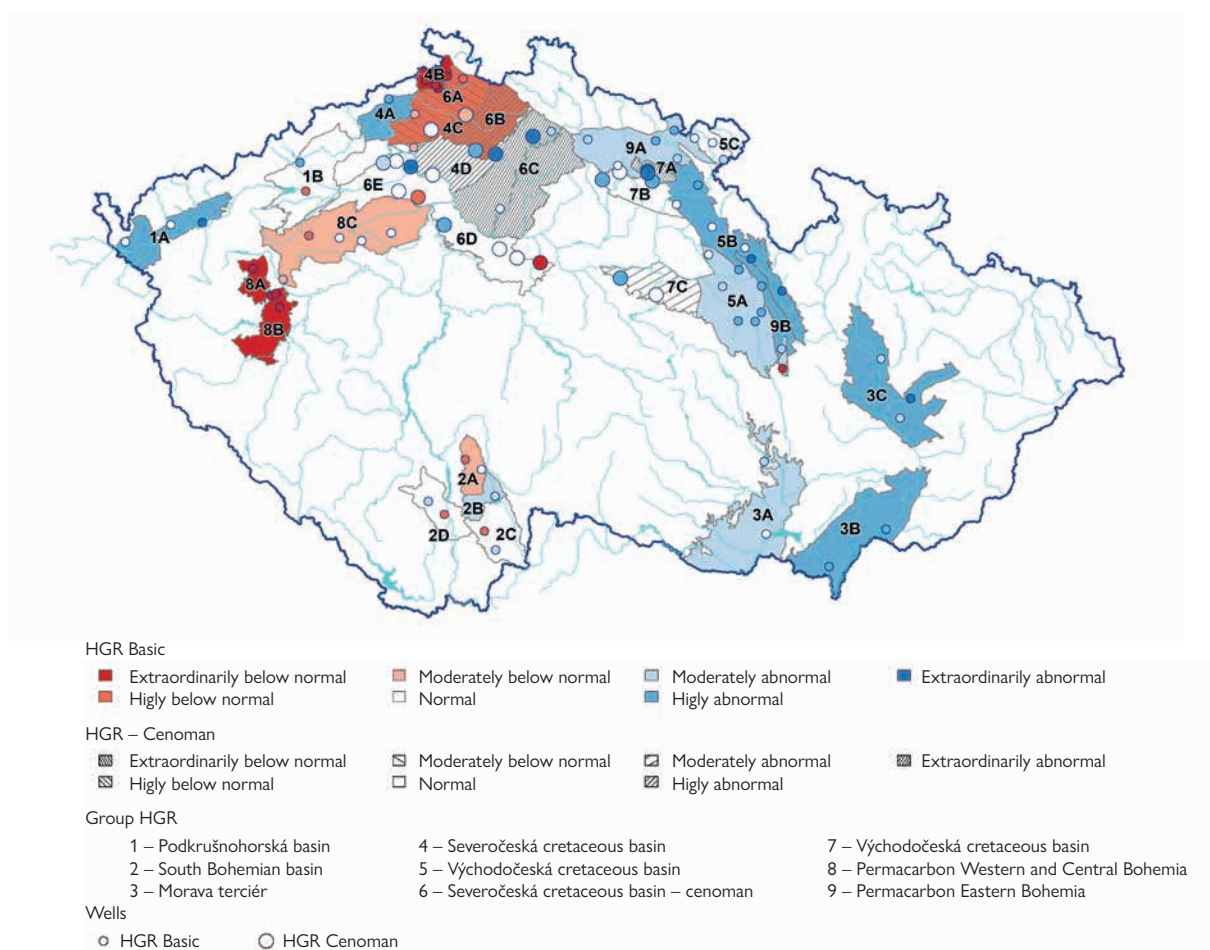
Average standardised deep aquifer levels in the monitoring network in groups of hydrogeological regions in 2024 (blue) compared to the long-term values of the 1991–2020 reference period



Source: CHMI

Note: The graph also shows quantiles of monthly exceedance curves (ECm).

Figure 1.3.3
Groundwater levels in deep aquifers in 2024, compared to the 1991–2020 reference period



Source: CHMI



The Kynšperk Wier (source: Ohře River Board, s.e.)

However, the condition of part 4D of the North Bohemian Cretaceous improved significantly and returned to normal in December. In the South Bohemian basins, the levels fluctuated mainly between average and strongly below-average throughout the year, with relatively worse conditions in parts 2A and 2D. The condition of Ore Mountain Basins was mostly extremely below-average at the beginning of the year, but improved to near normal by December. In East Bohemia the situation was better. The situation in HGRs was normal for most of the year, except for part 5A of the East Bohemian Cretaceous, where the condition was mostly slightly below-average. On the other hand, in part 9A of the East Bohemian Permo-carboniferous and in part 5B of the East Bohemian Cretaceous the condition was slightly or strongly above-average in April, May and December. The condition of the Moravian Tertiary was average to strongly below-average throughout the year (the condition of part 3C was worse), improving to slightly above-average (3C) and strongly above-average (3B) in December. Levels in part 6A of the North Bohemian Cretaceous Cenomanian were slightly below-average throughout the year, while levels in parts 6D and 6E of the Cenomanian fluctuated between average and strongly below-average. Conversely, levels were consistently strongly and extremely above-average in parts 6B and 6C of the North Bohemian Cretaceous Cenomanian, as they have a distinctly perennial regime.

Given the usual annual regime of levels, the condition of deep aquifers was worst in July, when 42% of them were strongly or extremely below-average, and only 5% of them were strongly or extremely above-average (Graph 1.3.5). In contrast, the best condition was recorded in December, when the share of aquifers with strongly or extremely below-average levels

decreased to 26% and the share of aquifers with strongly or extremely above-average levels increased to 16%. Compared to the previous year, only 1% of the aquifers experienced a large drop in levels and 7% of aquifers experienced a drop in level. Conversely, 19% of aquifers experienced a rise in level and 2% of aquifers experienced a large rise in levels.



Tunnel at the Morávka Reservoir (author: Hubalová Petra)

Table 1.3.3

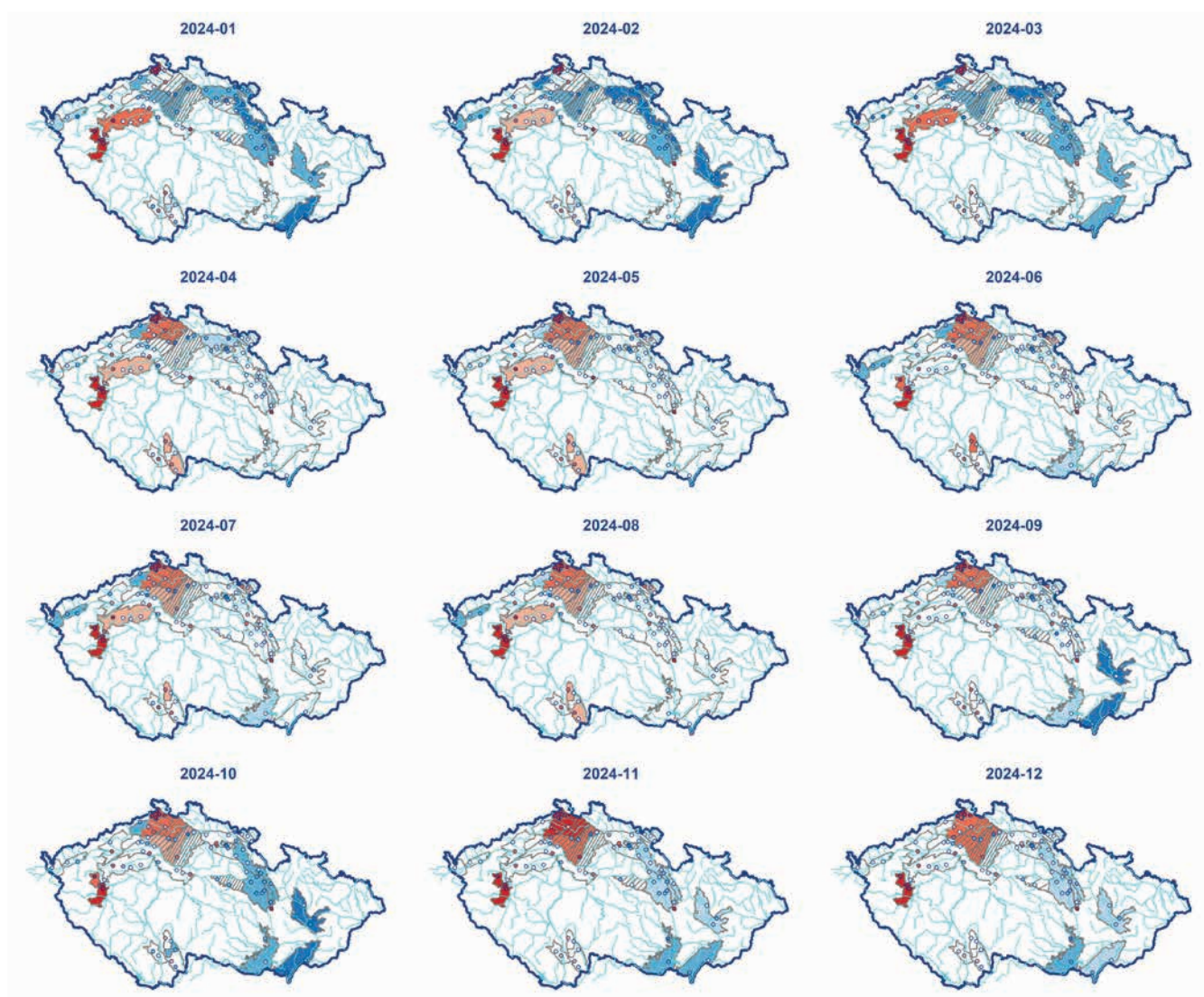
Probability of exceedance in deep aquifers in hydrogeological groups (HGR) in 2024 in % of ECm (monthly exceedance curve for the 1991–2020 reference period))

HGR group	Water level in % of ECm												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	2024
Ore Mountains Basin	32	16	39	67	31	12	13	17	31	35	49	66	21
South Bohemian basins	44	40	51	79	84	72	76	79	51	29	53	55	58
Moravia – Tertiary	5	5	11	32	49	24	20	41	2	2	8	10	5
North Bohemian Cretaceous – Turon	83	71	79	96	98	99	99	98	98	99	99	99	95
East Bohemian Cretaceous – Turonian	8	7	11	50	69	63	69	71	42	17	25	25	21
North Bohemian Cretaceous – Cenomanian	39	24	18	24	29	26	28	33	31	26	30	25	27
East Bohemian Cretaceous – Cenomanian	7	4	3	7	9	12	14	16	6	4	8	10	4
Permo-carboniferous of Central and West Bohemia	97	94	95	95	94	93	95	94	91	85	89	92	94
Permo-carboniferous of East Bohemia	7	3	2	19	35	39	45	56	41	24	41	34	15
Czech Republic	21	14	18	70	80	68	72	78	50	30	46	45	35

Source: CHMI

Note: The red colour scale corresponds to the categories slightly (75–85%), strongly (85–95%) and extremely (95–100%) below-average yield. Blue colour indicates slightly (15–25%), strongly (5–15%) and extremely (0–5%) above-average yield.

Figure 1.3.4
Groundwater levels in deep aquifers in 2024



Source: CHMI

Note: When interpreting the results, it needs to be taken into account that assessment of deep aquifers is carried out on a smaller sample and often on shorter observation series than assessment of shallow aquifers and springs. While most of the deep aquifers have been observed since 1991, some of them have only been observed since 2008.



The Weir in Loket (source: Ohře River Board, s.e.)



2nd prize from the jury, T. Závodníková, *When the Glaciers Melt*

2. HYDROLOGICAL EXTREMES

2.1 Floods

From a hydrological perspective, 2024 was a year rich in major flood events, with flood activity degrees (“FADs”) exceeded in almost every month. In January and February, the effects of extensive floods from the end of 2023, which affected all major river basins, were still perceptible. Further significant floods were caused by repeated heavy precipitation in June. The most severe floods occurred in September, when extreme precipitation caused FAD III being exceeded numerous times and, in some places, flows even exceeded rates corresponding to more than 100-year floods.

Winter

In terms of flooding, the first two months of the winter 2024 (January–April and November–December) were particularly interesting. In these months, consequences of extensive floods from the previous year could still be felt, the river basins were generally heavily saturated, and even relatively light precipitations caused water levels to rise again, even above FADs.

Summer

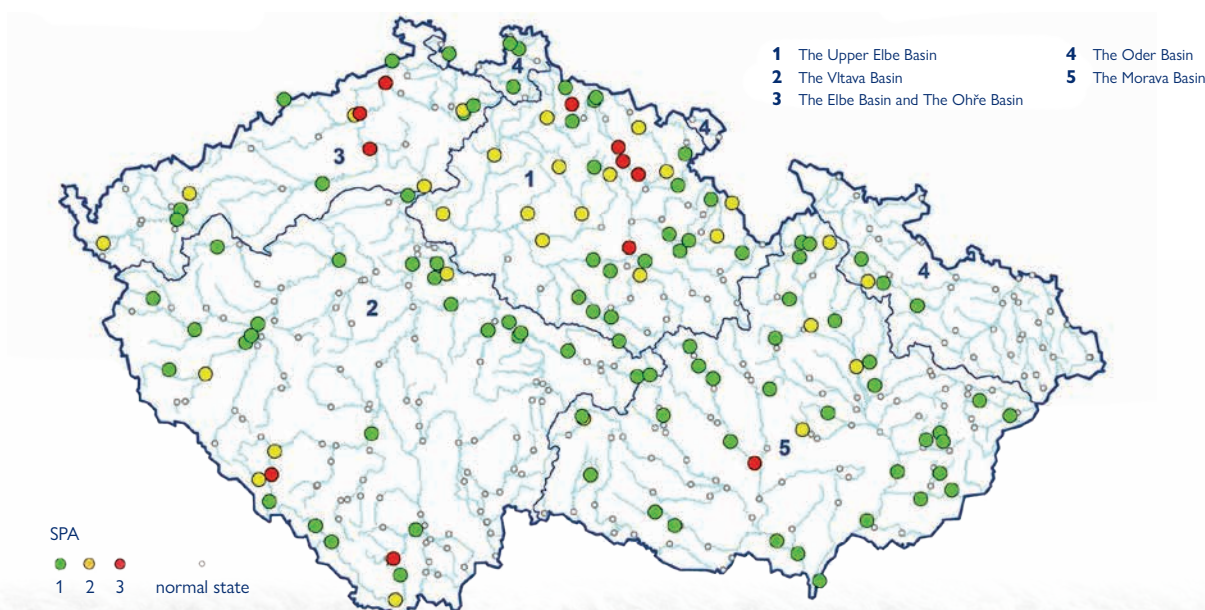
Flood situations occurred in all months of the summer period (May–October). In June, there were several episodes of very heavy precipitation in the Czech Republic, which caused sharp rises in water levels, with FADs being repeatedly exceeded, especially in the Berounka, Oder, Morava and Thaya River Basins. However, in terms of extent and water levels reached, the most significant flood was in September, caused by extreme rainfall, which reached up to 500 mm/5 days in the Krkonoše



The Římov Reservoir, the Flood on September 15, 2024 (source: Vltava River Board, s.e.)

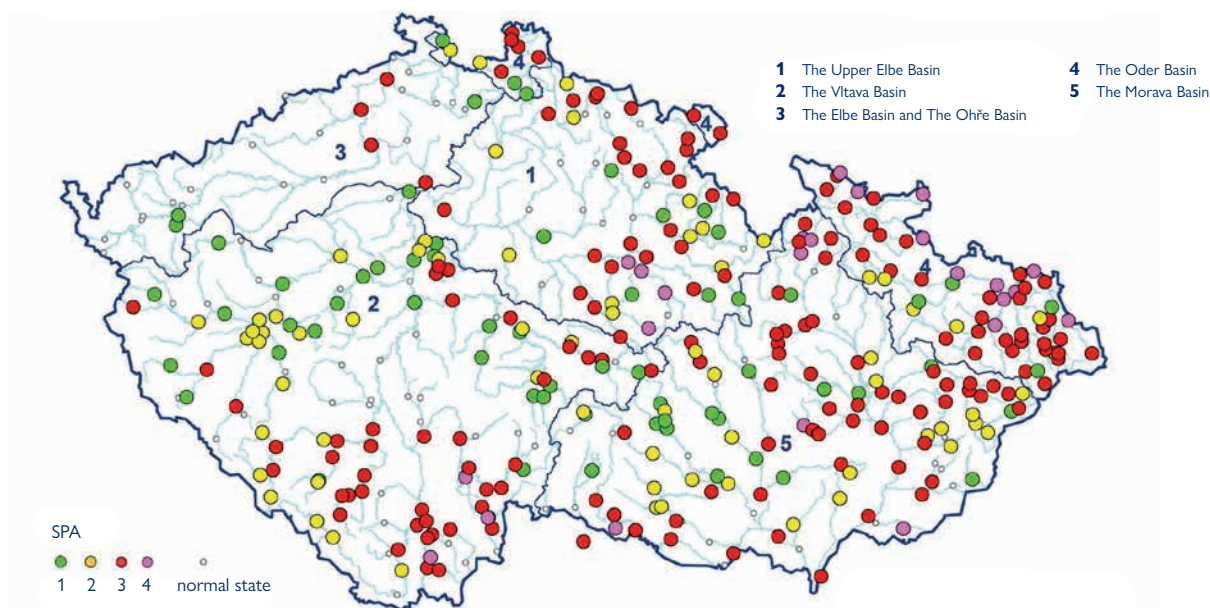
Mountains and especially in the Jeseníky Mountains. Such a large amount of precipitation triggered an extreme flood, especially in watercourses in foothill areas, where precipitation was intensified by orographic effects. The most affected area was the Jeseníky Mountains, specifically the Opava River Basin, Upper Morava River Basin and all tributaries of the Eastern Neisse River, where extreme flood levels were exceeded significantly and reached historic highs at some profiles.

Figure 2.1.1
Highest flood activity degrees reached in winter 2024



Source: CHMI

Figure 2.1.2
Highest flood activity degrees reached in summer 2024



Source: CHMI

Initially low soil saturation at least delayed the runoff response and, particularly in less affected areas, significantly mitigated its course and its consequences. FAD III was exceeded at 180 of the 366 monitored profiles, of which 42 reached or exceeded the extreme flood level.

The assessment of floods in 2024 is described in greater detail in the *Annual Report on the Hydrometeorological Situation in the Czech Republic*, which is compiled annually by the Czech Hydrometeorological Institute (RZ_2024.pdf (chmi.cz)).

Due to the extreme nature of the September 2024 floods and their consequences, the Central Flood Commission commissioned a comprehensive assessment of this event. A more detailed description of the September floods is provided in the preliminary report *Assessment of the floods in September 2024* (hereinafter referred to as the "Assessment"), approved by the government on 2 April 2025 by Resolution No. 226 (Povoden_zari_2024_PZ.pdf (chmi.cz)). The final results shall be submitted to the government in the form of a final report, *The Assessment*, by 30 September 2025.

2.2 Remediating flood damage

Since 2017, new programme 129 320 "Support for Remediating Flood Damage to the Infrastructure of Water Supply and Sewerage Systems II" has been in place, a follow-up to completed programme 129 140.

This programme is available with the view of responding quickly to consequences of damage or even destruction of water supply and sewerage infrastructure resulting from a natural disaster. In 2024, significant damage to the aforementioned infrastructure was recorded as a result of the floods in September 2024. Following an agreement between the Ministry of the

Environment and the Ministry of Agriculture, the distribution of support for the removal of flood damage to water supply and sewerage infrastructure was established in such a way that the Ministry of the Environment will support immediate measures (mainly of non-investment nature), whereas the Ministry of Agriculture will support investment measures for restoration.

The Ministry of Agriculture administered one programme focused on remedying flood damage. In 2024, Programme 129 370 "Remediating Flood Damage to State Water Management Assets III" and sub-programme 129 373 "Remediating Consequences of the 2024 Floods" were approved.

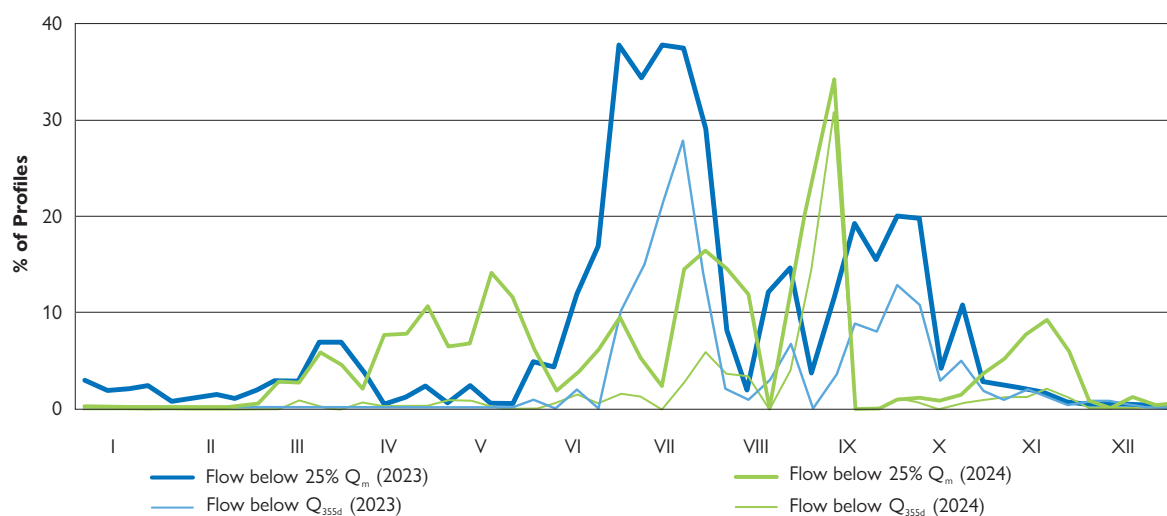
More detailed information, including financial implementation, is provided in Chapter 11 Financial support for water management

2.3 Drought situation

Hydrological drought is defined as a shortage of surface waters and groundwaters. This chapter focuses on drought concerning surface waters; it is assessed according to the following characteristics: the number of profiles with flows lower than 25% of the monthly average ($<25\%$ of Q_m) and the number of profiles with flows lower than Q_{355d} (i.e. a mean flow that was reached or exceeded 355 days per year at a given profile. If it is lower, it indicates hydrological drought) or Q_{364d} (a mean flow that was reached or exceeded at a given profile for the entire year).

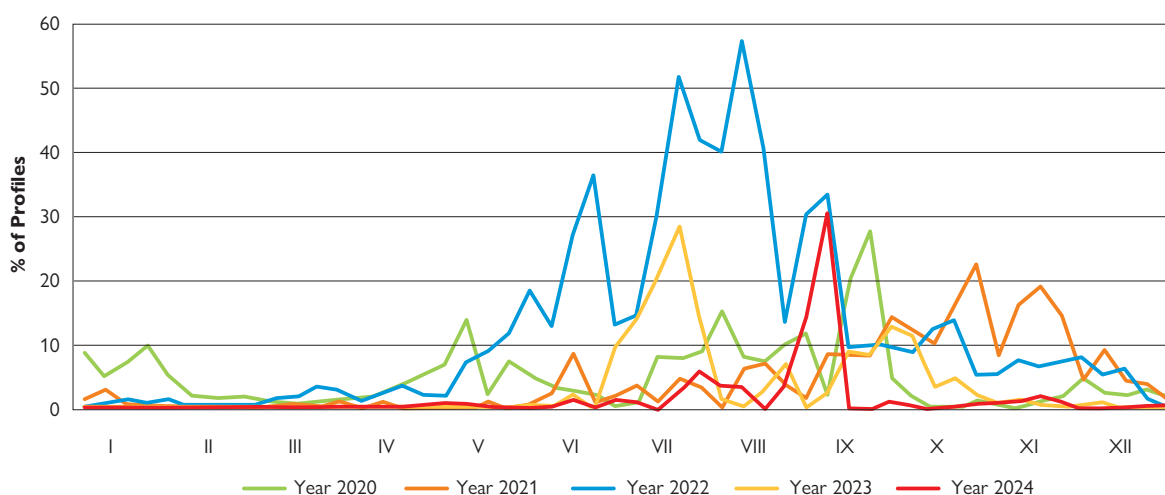
From the drought perspective, 2024 was significantly richer in water flows than the previous year (see Graph 2.3.1). 2024 can be divided into three periods based on the number of profiles that were at or below the hydrologic drought level.

Graph 2.3.1
Drought development in the Czech Republic in 2023 and 2024



Source: CHMI

Graph 2.3.2
Drought development in the Czech Republic from 2020 to 2024



Source: CHMI

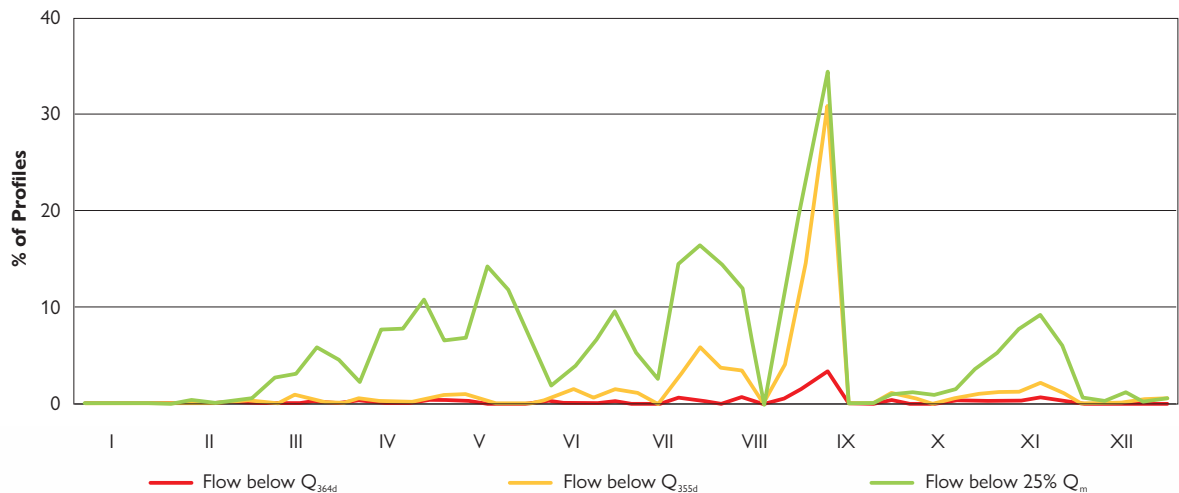


The Flooded Morava Stream damaged the railway tracks near the village of Leština (source: Morava River Board, s.e.)



The Jevišovka Stream during the September floods (source: Morava River Board, s.e.)

Graph 2.3.3
Changes in average water levels in the monitoring profiles in the Czech Republic in 2024



Source: CHMI

From January to mid-July, drought was almost non-existent in the Czech Republic, occurring in less than 2% of profiles. From mid-July onwards, “dry” profiles began to appear gradually. The number of profiles indicating hydrological drought increased until the beginning of September, when heavy rainfall and subsequent floods ended their occurrence. This was followed by a period that lasted until the end of the year when drought was almost non-existent or only occurred sporadically.

The situation was similar at profiles with water flow rate below 25% of Q_m . Compared to previous years, 2024 was the least dry year since 2020 (Fig. 2.3.2).

The first period from January to mid-July continued in the trend from the end of the previous year (2023), when no profiles below Q_{355d} were recorded. In January and February, flow rates in all major river basins were average to above-average

compared to long-term monthly values. From March to mid-July, water levels in rivers decreased and flows reached average to below-average values compared to average monthly values, but mostly did not reach values below Q_{355d} . The proportion of profiles with flows rates of less than 25% of Q_m at the beginning of this period (January–February) was around 0.5% of the profiles, then increased in March and was mostly below 10%.

From mid-July, the occurrence of profiles with water levels below Q_{355d} began to increase gradually and drought began to occur in 31% of profiles. This period lasted until around the end of the first decade of September, when heavy rainfall occurred and rivers started flooding. In this part of the year the proportion of profiles with flows below 25% of Q_m also increased. From mid-July to the beginning of the floods (second third of September), the frequency of profiles ranged from 12% to 35%. Long-term monthly flow rates in this period were below-average or average in most major river basins. The end of August and the beginning of September were the least watery periods of 2024. Drought reached the absolute maximum at the end of the first third of September.

The third period can be defined as the period from the beginning of the floods (the second third of September) until the end of the year, when the occurrence of profiles indicating drought was less than 2% of all profiles in all major river basins. The situation is similar with profiles with flows below 25% of Q_m where there was a slight increase in November to 10%, but then the frequency decreased again to a minimum of 2% of profiles (Fig. 2.3.3).

2.4 Interdepartmental commission WATER-DROUGHT

At its meeting on 11 January 2024, the Executive Committee approved the content of the Position Report for 2023 and, as activities in the individual ministries continued in accordance with expectations, it was not necessary to convene another meeting.

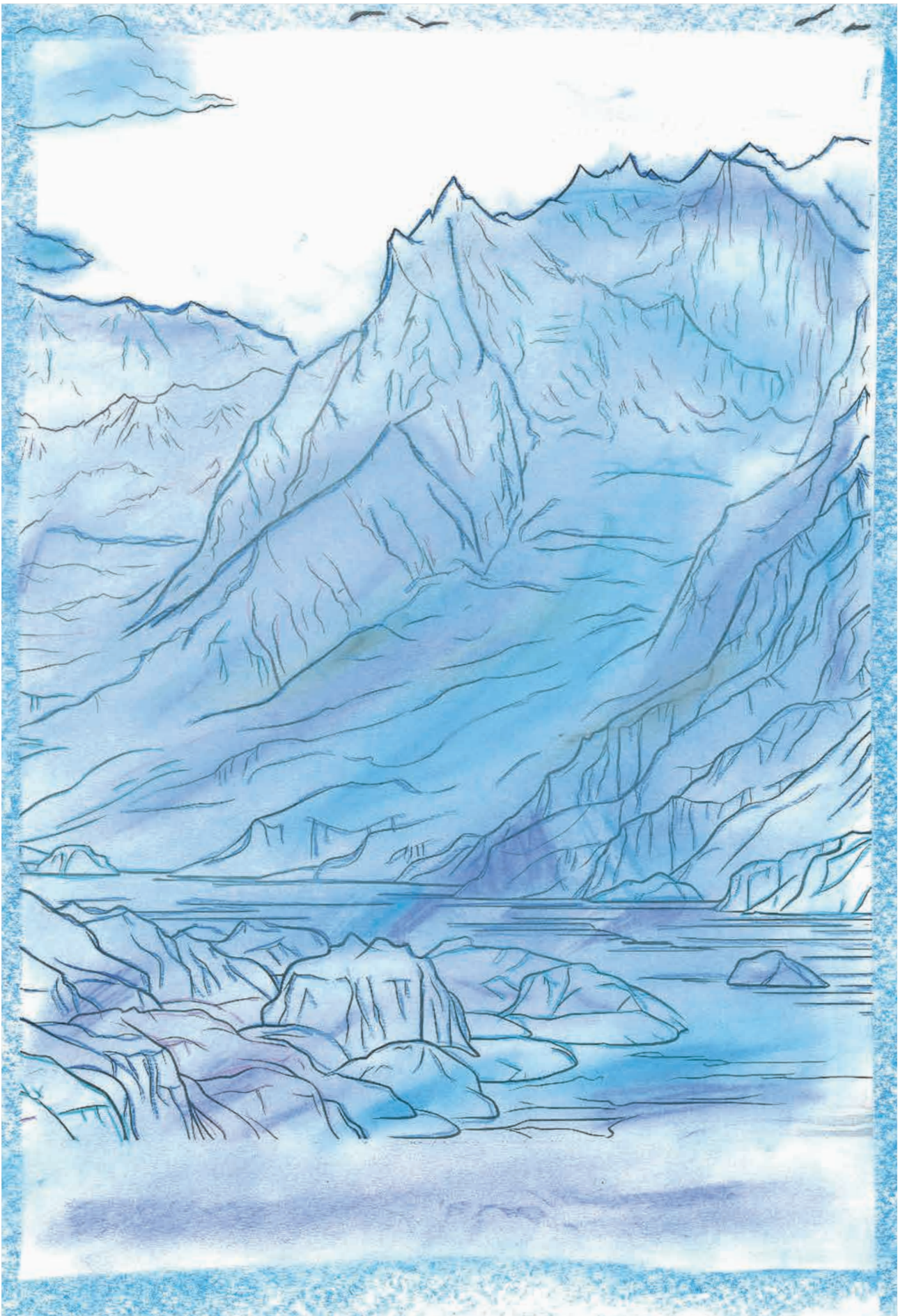
The implementation of the measures contained in the Drought Protection Concept for the Czech Republic for 2023–2027 was underway, and the individual coordinators at the relevant ministries devoted the necessary effort to preparing background documents for the 2024 Position Report to describe their implementation.

The scope of implementation of the necessary measures was influenced by the availability of financial resources from national support; the measures were typically financed using EU funds, which mainly concerned measures in the field of agriculture. The floods in September naturally required adjustments to activities performed, particularly in the monitoring the situation of water bodies, as a number of equipped stations were damaged not only on watercourses, but also devices monitoring groundwater. This will clearly be reflected in activities in the following period, i.e., in 2025 and beyond.

The postponement of the submission of the annual position report to the government until the end of February significantly contributed to the quality of the reports, as it was possible to submit information on the final status of financial support for the past year.



Activated flood protection for the village of Leština (source: Morava River Board, s.e.)



2nd place, N. Buksová, Last Glacier

3. QUALITY OF SURFACE WATERS AND GROUNDWATERS

3.1 Surface water quality

Current surface water quality according to ČSN 75 7221 compared to the two-year period 1991–1992

A map of surface water quality on selected watercourses in the Czech Republic was first compiled for the two-year period 1991–1992 in accordance with ČSN 75 7221 Water quality – Classification of surface water quality. Since then, the same maps have been compiled annually so that they can always be compared with the current state of water quality. Due to the scope of the indicators monitored in the 1990s, only a comparison according to the basic classification is compiled. On 1 December 2017, the amended standard ČSN 75 7221 Water quality – Classification of surface water quality came into force, replacing the previous standard ČSN 75 7221 Water quality – Classification of surface water quality, which had been in force for 19 years.

The purpose of the amendment was to take into account the requirements for the current level of surface water protection, both in terms of pollution indicators and permissible pollution levels. Both the scope of indicators and the limit values for quality classes were revised. Therefore, for the purposes of objective comparison, the surface water quality map for the two-year period 1991–1992 (Figure 3.1.1) was also redrafted in accordance with the amended ČSN 75 7221.

The indicators used for assessing the surface water quality were COD_{Cr} , BOD_5 , N-NH_4 , N-NO_3 and P_{total} . Figure 3.1.2 shows that water quality has improved over the past 31 years, however, there are still watercourse sections classified in Class V. Most watercourses are classified in Class III – polluted water. Slowly but surely, more and more watercourse sections are classified in Classes I and II.

For the preparation of the abovementioned map of water quality in the watercourses of the Czech Republic for the 2023–2024 period, the resulting assessment from selected profiles of the water quality monitoring network in watercourses provided by the Czech Hydrological Monitoring Institute (from primary data sent by individual River Boards) was used. The classification of the monitored profiles in terms of contamination according to the amended ČSN 75 7221 is as follows:

- Class I unpolluted water – surface water status that was not significantly affected by human activity, with water quality indicators do not exceed values corresponding to the common natural background of the respective watercourse,
- Class II slightly polluted water – surface water status that was affected by human activity to an extent that water quality indicators attain values allowing for the existence of a rich, balanced and sustainable ecosystem,
- Class III polluted water – surface water status that was affected by human activity to an extent that water quality indicators attain values that may not be conducive to conditions allowing for the existence of a rich, balanced and sustainable ecosystem,
- Class IV heavily polluted water – surface water status that was affected by human activity to an extent that water quality indicators attain values that are conducive to conditions allowing for the existence of only an unbalanced ecosystem,
- Class V very heavily polluted water – surface water status that was affected by human activity to an extent that water quality indicators attain values that are conducive to conditions allowing for the existence of only a heavily unbalanced ecosystem.

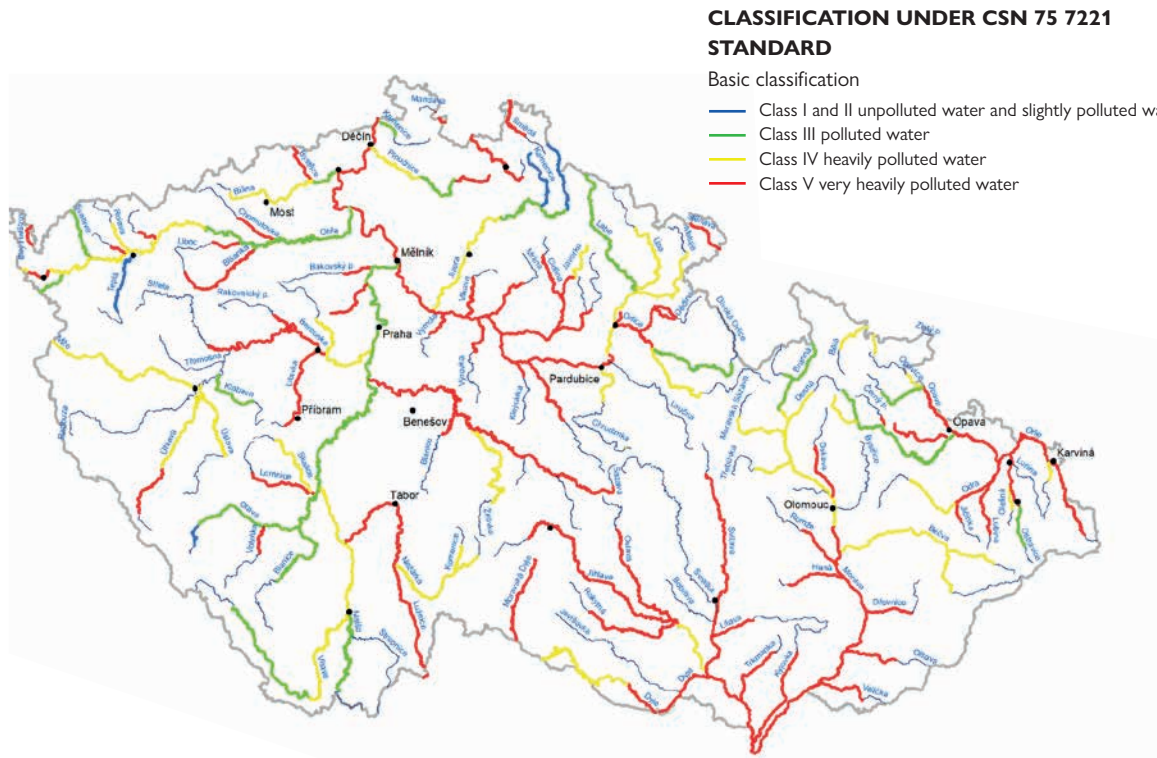


Jesenice Small Hydroelectric Power Plant (source: Ohře River Board, s.e.)

Of the selected profiles of the watercourse quality monitoring network, 20% were classified in Class I and II as unpolluted or slightly polluted water, 47% of the profiles were classified in

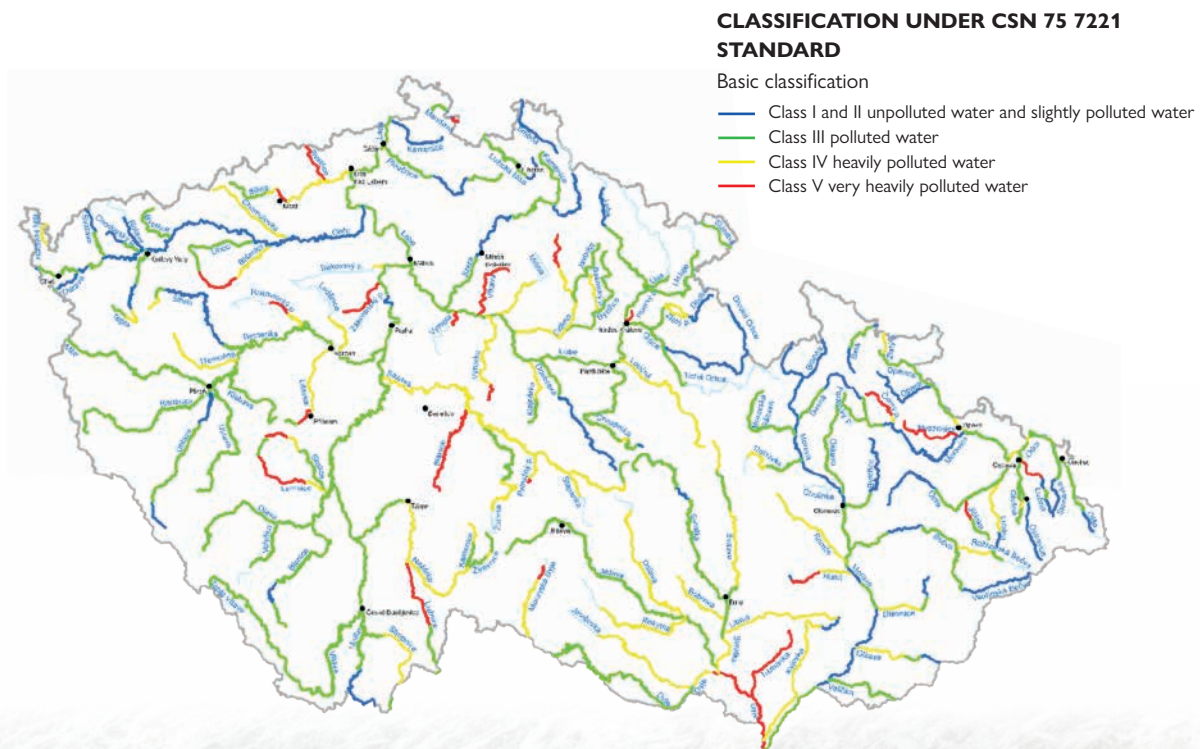
Class III as polluted water, 23% of the profiles were classified in Class IV as heavily polluted water and 10% of the profiles were classified in Class V as very heavily polluted water.

Figure 3.1.1
Surface water quality in the Czech Republic in 1991–1992



Source: T. G. Masaryk Water Research Institute, p.r.i., using data provided by the CHMI

Figure 3.1.2
Surface water quality in the Czech Republic in 2022–2024



Source: T. G. Masaryk Water Research Institute, p.r.i., using data provided by the River Boards and the CHMI

Radioactivity

In selected profiles of the state monitoring network, radiological indicators are monitored in surface waters on a long-term basis. The sampling profiles are located at existing nuclear facilities and in watercourse sections affected by mine water discharges and seepage from refuse dumps at locations where uranium ores were formerly mined or processed.

In 2024, the highest tritium activity value of $355 \text{ Bq} \cdot \text{l}^{-1}$ was detected in surface waters of the Vltava River, at the Kořensko Reservoir profile, downstream the Temelin Nuclear Power Station wastewater discharge point. The highest acceptable pollution limits for tritium in surface waters under the environmental quality standard (EQS) or annual mean tritium value as per Government Decree No. 401/2015 Coll., were not exceeded.

In surface waters of the Jihlava River at the Mohelno profile, downstream discharge point of wastewater from the Dukovany Nuclear Power Plant, tritium activity values in the range of $57.8\text{--}152 \text{ Bq} \cdot \text{l}^{-1}$ was detected, the values being lower than in 2023. The mean value does not exceed the EQS limit value for tritium in surface watercourses. According to the characteristic value for tritium (ČSN 75 7221 Water quality), the Kořensko Reservoir profile and the Mohelno profile on the Jihlava River re classified in Class III (polluted water).

The highest uranium concentrations of up to $217 \mu\text{g} \cdot \text{l}^{-1}$ were detected in surface waters in the vicinity of the Dolní Rožínka uranium mine in the Bohemian-Moravian Highlands. Based on the uranium content, the quality of surface water at the Skryje profile on the Hadůvka River corresponds with Class V (very heavily polluted water). Elevated uranium content in surface waters is the source of elevated total alpha activity concentration reaching a value of $7,560 \text{ mBq} \cdot \text{l}^{-1}$. The maximum value of the indicator of volume alpha activity concentration exceeding the limit value (EQS) was detected at this profile, and at the Boudy profile on the Loučka River and at Veverská Bítýška on the Svatka River.

Significant pollution with uranium and radioactive indicators persists at a number of profiles also in the vicinity of the Příbram deposits. Maximum uranium concentrations of $39\text{--}61 \mu\text{g} \cdot \text{l}^{-1}$ were detected in surface waters of the Kocába River at the Višňová profile, of the Drásovský Stream at the Drásov profile and of the Příbramský Stream at the Brod profile. Such typical values of uranium at these profiles classifies the watercourses in Class V. The Štěchovice profile on the Kocába River is classified as Class IV (heavily polluted water) for characteristic uranium content values (same classification as in 2023). With respect to the total alpha activity concentration indicator, the monitored profiles remain in Class V (heavily polluted water).

The mean annual values as well as maximums of the total alpha activity concentration in surface waters exceed EQS limit value at many profiles on the Ploučnice River (Stráž pod Ralskem, Noviny pod Ralskem, Mimoň, Horka, Brenná) in the vicinity of the Stráž pod Ralskem deposit area.

Based on the total volume alpha activity concentration, the quality of the waters is classified as Class V, despite a temporary improvement in 2023. The activity of the radium-226 isotope

was highest in the vicinity of the uranium deposit near Horní Slavkov at the Stoka Loket profile, reaching $217 \text{ Bq} \cdot \text{l}^{-1}$, although it is higher than in the previous year, it still falls within Class IV.

In the Jáchymov District, in Ostrov nad Ohří in the Bystřice and in its tributary, the Jáchymovský Stream, radioactive substance pollution from former mining and processing of radioactive raw materials persists; the surface water quality corresponds to Class V.

In the Tachov District, on the Hamerský Stream (Brod nad Tichou and Broumov profiles), the water quality is affected by the activity of radium 226 isotope and total alpha activity concentration. Based on lower activities of radium-226 isotope, reaching $26 \text{ Bq} \cdot \text{l}^{-1}$ at most, the surface water is classified in Class II (slightly polluted water).

At the site of the former uranium mines in the Jindřichův Hradec District, contamination of surface water with uranium and elevated alpha activity concentration persists at the Nekrasín profile in the Račí Stream, the water quality is ranked in Class V.

The total alpha activity concentration in surface waters in the vicinity of the Okrouhlá Radouň deposit in the Jindřichův Hradec District reaches values of around $1,300 \text{ mBq} \cdot \text{l}^{-1}$, activity of the radium-226 isotope was measured to be below $32 \text{ mBq} \cdot \text{l}^{-1}$ and uranium concentrations with a maximum of $51 \mu\text{g} \cdot \text{l}^{-1}$ (Class V). In the area of the uranium ore deposit near Licoměřice on the Kurvice Stream at the Ronov profile, the total alpha activity concentration increased, the highest value being $649 \text{ mBq} \cdot \text{l}^{-1}$ (Class V).

Raw water samples are analysed once every 3 to 6 months, while radioactivity is detected by monitoring the total alpha and beta activity concentrations at several water treatment plants and tributaries to reservoirs. At the Marklín water treatment plant on the Eliášův Stream, elevated radon activity of up to $8,000 \text{ mBq} \cdot \text{l}^{-1}$ and total alpha activity concentration of up to $1,162 \text{ mBq} \cdot \text{l}^{-1}$ were detected. The total alpha activity concentration exceeds both the maximum and average annual permissible pollution set by Government Regulation No. 401/2015 Coll. At the Morávka dam on the same stream, one of two measurements showed a total beta activity of up to $1,170 \text{ mBq} \cdot \text{l}^{-1}$, which also exceeds the maximum permissible pollution limit set by Government Regulation No. 401/2015 Coll. No other limit values set by this regulation were exceeded at the other monitored water treatment plants.

Water quality in water supply and other reservoirs

The water quality in vast majority of reservoirs (except ponds) is relatively stable, which means the water quality is quite balanced in the long term, but traditional problems persist. The year-on-year variability depends not only on hydrological conditions of a given year, but also on the situation in each reservoir.

The year 2024 was close to average in terms of precipitation, with relatively elevated water inflows into reservoirs in May and September. This meant for some reservoirs (Lučina, Římov, Lipno, Karhov) a significant input of humic substances, impairing the treatability of water abstracted by water supply companies.



The Jizera Stream in Mladá Boleslav (source: Elbe River Board, s.e.)

However, these phenomena recur regularly and water supply companies have the technology to deal with such situations.

2024 was generally a year of average water quality at the reservoir profiles, which is related to the aforementioned considerable stability of reservoir ecosystems. However, the fact that eutrophication phenomena in a number of reservoirs show long-term unfavourable trends, such as a decrease in average water transparency, an increase in phytoplankton biomass and, in some cases, an increase in total phosphorus concentrations in surface water layers, should not be overlooked in the average figures for individual years. This concerns, in particular, the Lučina, Žlutice, Karhov and Římov Reservoirs and, to some extent, the Lipno Reservoir. Although there are more specific factors in each case, there is a clear link to climate change (rising water temperatures with an impact on temperature stratification, longer growing seasons, increased leaching of humic substances and phosphorus compounds from natural catchment areas with peat soils) and, at the same time, to the fact that the concentration of phosphorus compounds in inflowing water has not changed for 10–20 years, meaning there has been no improvement. The deterioration of conditions in water reservoirs is also reflected in the deterioration of the quality of water flowing from the reservoirs into the river basin below. This is primarily a direct threat to the ecological status due to increased concentrations of iron and ammoniacal nitrogen or a reduction in the oxidation-reduction potential. Moreover, some water reservoirs also discharge increased volumes of phosphorus, which then poses a risk of eutrophication downstream in the river basin.

In deep, long, trough-shaped water reservoirs (Orlík, Švihov, Klíčava, Hracholusky), no deterioration in eutrophication has yet been observed at the dam area, as these reservoirs display an improvement in water quality in their lower parts in dry years. However, if we take into account the water quality upstream towards the inflow into the reservoir, the water quality (transparency, cyanobacterial blooms) deteriorates rapidly and today their very important recreational use is severely impaired (Orlík, Hracholusky). The content of the key

nutrient, phosphorus, in the inflowing water in these reservoirs has developed in such a way that concentrations of compounds have remained almost unchanged over the last 10–20 years.

The phosphorus compound content in the inflows is the first and most important factor determining the water quality in the entire reservoir. However, there has been no or only a slight improvement in this indicator in the past two decades; the current annual average phosphorus concentrations are far from reaching the required low values. For this reason, it is necessary to continue focusing on tightening wastewater treatment requirements at all levels and on reducing systematically the amount of wastewater discharged from municipal sewerage systems. At the same time, we must be aware that standard operational monitoring carried out by river basin administrators, based on twelve samples per year, provides systematically more favourable results, as it does not capture episodic waves of substances (especially phosphorus) that occur during precipitation events (diluted wastewaters). Furthermore, monitoring and WWTP substance balances systematically produce lower, i.e. more optimistic, results that do not correspond with the actual level of pollution emitted into surface waters with municipal wastewater, as – again – precipitation events are not specifically monitored.

Commercial fishing in ponds also contributes to phosphorus entering surface waters, especially where ponds have been fertilised for a long time and where waterfowl or semi-wild ducks are kept (hunting and culling). Inappropriate management of ponds can pose a significant risk to the nutrient regime in its catchment area. Massive phosphorus emissions occur regularly during pond harvests with escaping stirred-up sediment. The above stated facts imply that all the problems mentioned for water reservoirs apply in a similar extent to ponds. Furthermore, pond management can pose a significant risk to the nutrient regime in the catchment area. One of the reasons for this is the lack of a decree by the Ministry of the Environment and the Ministry of Agriculture regulating pond management (pursuant to Section 39(8) of the Water Act).

Remedial measures are very simple: significantly improving the efficiency of phosphorus removal from treated wastewaters from towns and municipalities of any sizes and reducing significantly pollution emissions during precipitation events by building retention basins and, in particular, green-blue infrastructure. There is currently insufficient support for such measures in the current legislation. It is essential to actively implement the requirements of Directive No. 2024/3019, on municipal wastewater treatment, and start using existing water planning tools.

In the sphere of threat posed by pesticides and their impact on water quality, the situation at the Švihov Reservoir has been monitored in great detail over a long period of time. There is long-term pollution from pesticide degradation products. High levels of highly hazardous PFAS substances were found in the Velešínský Stream, which flows into the Římov Reservoir from the left side, which is why targeted monitoring of not only water quality but also sediments was planned for 2023 and 2024. While monitoring the situation is important, it is not a solution. The most important is to eliminate the source. However, in order to identify the source of the pollution, a risk

analysis must be carried out and its final report will clarify this issue. The source of these substances could be the premises of Jihostroj, a. s., Velešín.

Another persistent factor is the inflow of eroded material from agricultural land. Although this is not related to eutrophication, it does contribute to silting up of the upper parts of water reservoirs and intensive silting up of the forebay of the Švihov Reservoir.

In the Vltava River Basin, basic studies have been carried out for a number of water reservoirs (Orlík, Lipno, Hracholusky, České údolí, Římov, Švihov), including proposals for measures to improve the situation. With the exception of the Švihov Reservoir catchment, where measures with the aim of improving water quality have been implemented for a long time, such as more efficient phosphorus removal at selected WWTPs in the reservoir basin or a project to reduce pesticide inputs supported by the Ministry of Agriculture (also underway at the Římov Reservoir) or the planned land consolidation measures including also measures from the River Board plans to reduce pollution from agricultural land, measures to improve water quality in the catchment areas of other reservoirs have so far been implemented rather sporadically.

Special attention should be paid to the Lipno Reservoir, particularly in connection with new plans to build additional recreational areas, whose wastewaters will be discharged directly into the reservoir, and, what is even worse, absolutely inadequately treated. The Lipno Reservoir is highly vulnerable to eutrophication and its chemistry (nitrate ions almost lacking). All these characteristics promote phosphorus recycling in the aquatic ecosystem, where cyanobacterial blooms can have very intense effects. Additional new sources of phosphorus entering the reservoir will contribute to increasing its trophic status, which could negatively affect the current attractiveness of the area.

Climate change, as observed over the long term in the area covered by the Vltava River Board, state enterprise, also brings changes in the behaviour of ponds. Ponds currently tend to retain less phosphorus, which means an increased risk of eutrophication for water reservoirs located downstream in the river basin. This is another reason why pond management in general needs to be paid increased attention.

In the territory managed by the Morava River Board, 2024 was a year characterised by a warm winter, followed by a relatively cold and rainy spring, followed by a warm summer with August being the warmest month. September was affected by floods with all the negative and positive consequences for water quality in reservoirs. The positive effects include flushing of reservoirs at the peak of the growing season, i.e., at the time of highest development of phytoplankton and cyanobacterial blooms. A negative consequence may be the introduction of nutrients and cyanobacterial inoculum.

The Karolinka and Slušovice Reservoirs corresponded to oligotrophic conditions in 2024, as did Bojkovice to a smaller extent. Landštejn and Nová Říše could be classified as weakly mesotrophic, and Koryčany as mesotrophic. The Opatovice, Boskovice and Ludkovice Reservoirs were among the weakly eutrophic reservoirs in 2024. The Hubenov, Mostiště, Vír and

Znojmo Reservoirs were eutrophic. The Fryšták Reservoir was characterised by strong eutrophication with a possible transition to hypertrophy.

Compared to 2023, the biological water quality of the Hubenov, Vír, Opatovice, Karolinka and Slušovice Reservoirs corresponded to the previous vegetation season. Improvements were observed in the Mostiště (a particularly pleasant change), Nová Říše, Landštejn, Bojkovice, Znojmo and even Fryšták Reservoirs (with a positive shift from hypertrophy to strong eutrophication). Only the Boskovice and Koryčany Reservoirs showed a slight deterioration in biological terms.

Blue-green algae blooms occurred only in Mostiště in August and in Vír in September and August. In the Fryšták Reservoir, they were merely an addition to the intense vegetation turbidity caused by a freshwater dinoflagellate *Ceratium furcoides*. A similar situation occurred at the Hubenov Reservoir, where, besides *Ceratium furcoides* and blue-green algae, also freshwater algae *Gonyostomum semen* ("hair ice") also significantly contributed to the occurrence of cyanobacteria.

The recreational reservoirs of Dalešice and Mohelno, Letovice, Vranov-Bítov and Vranov-Hráz, Upper Nové Mlýny Reservoir, Bystřička and Horní Bečva, Výrovce and Luhačovice, which shifted from hypertrophy, could be classified as eutrophic in 2024, Jevišovice, Middle and Lower Nové Mlýny Reservoirs, Moravská Třebová, Plumlov, Podhradský Pond and Bidelec were hypertrophic. Improvements were observed in Jevišovice, Letovice, at the Farářka profile near the Vranov Reservoir, in Luhačovice and in Vranov. On the other hand, the biological condition deteriorated at the Upper and Middle Nové Mlýny dam, at the Vodárna and Hráz profiles in Vranov and in the Plumlov Reservoir. Cyanobacteria developed massively mainly in the Jevišovice Reservoir and Podhradský Pond, at the Vranov Farářka profile, in the Bidelec Pond and mainly in the Middle and Lower Nové Mlýny Reservoirs, less intensively at the Vodárna and Hráz profiles in the Vranov Reservoir and in Letovice and in the Brno Reservoir in September. Generally, it can be said that 2024 was a favourable year for the development of cyanobacteria and phytoplankton, especially in water supply reservoirs, influenced by a cold spring and floods.

The quality of raw water managed by the Oder River Board, state enterprise, in the water-supply reservoirs of Šance, Kružberk and Morávka was, as usual, very good in 2024 and did not require any complex treatment to make it suitable for drinking. The vast majority of the parameters assessed were classified in the best category A1 (as per Annex 13 to Decree No. 428/2001 Coll. as amended). Such a favourable situation is ensured mainly through the implementation of certain measures provided for in the Water Act within the designated water source protection zones, such as restrictions on development in the area, including tourism, regulation of farming, etc. The reservoirs are further favoured by their location in mountainous areas with low population density and minimal municipal pollution. As usual, organic pollution indicators (COD_{Mn} , BOD_5 , TOC) fell into categories A2 and A3 (as per Decree No. 428/2001 Coll.), which is caused by distortion due to the higher occurrence of phytoplankton in the epilimnion of the reservoirs from which the mixed samples are taken. The actual sampling for water supply purposes is carried out from deeper layers and is therefore not significantly affected by phytoplankton growth.

No objections were raised by raw water users in this respect. Strong vegetation turbidity developed in the Morávka Reservoir during the growing season due to excessive cyanobacterial abundance. However, the cyanobacteria were detected only in the epilimnion of the reservoir and did not affect the quality of the raw water abstracted.

At reservoirs used for purposes other than water supply, a problem with deteriorating water quality occurred in Olešná and Žermanice in 2024. As for the Olešná Reservoir, an increase in green algae was noticeable from the beginning of the season, joined by cyanobacteria in July. The situation culminated at the beginning of August, when the water was classified as “water dangerous for bathing – bathing prohibited” according to the Rules for the Assessment of Bathing Water Quality (Annex No. 6 to Decree No. 238/2011 Coll.). A virtually identical course of events was at the Žermanice Reservoir, where the water was classified as “unsuitable for bathing” according to the above-mentioned Annex No. 6 to Decree No. 238/2011 Coll. In the Těrlicko and Slezská Harta Reservoirs, the growing season was without any significant manifestations of green biomass abundance. In the Těrlicko Reservoir, at the Pacalůvka bathing site, there was only a warning of a possible risk of cercarial dermatitis. Due to ongoing modernisation, which involved draining of the reservoir, water quality in the Baška Reservoir was not monitored.

Water reservoirs administered by the Ohře River Board, s. e., are located mainly in the upper reaches of rivers in the Ore Mountains. Due to the lower population density, there is a lower anthropogenic impact on water quality, in particular the input of pollution (nutrients) from municipal wastewater is limited. The pollution of water supply reservoir inflows is given by the natural conditions in their catchment areas, e.g. the presence of peat bogs. The indicators TOC, COD, humic substances, Fe and Mn regularly exceed the limits set by Government Regulation No. 401/2015 Coll., as amended, and the limit values for the treatability of raw water to drinking water of category A3 as per Decree No. 448/2017 Coll., as amended.

Water quality in 2024 was comparable to previous years. Elevated values of faecal pollution indicators were recorded in both main inflows to the Stanovice Reservoir, which is probably due to an increase in the number of cattle and inhabitants in the Stanovice Reservoir catchment area. However, compared to previous years, the water quality is comparable, with microbiological pollution regularly ranging between categories A1 and A2. Raw water from the Horka Reservoir improved slightly compared to 2023 in terms of AOX, TOC (shift from category A3 to A2) and C10-C40 hydrocarbons (above category A3 up to A1). There has been a slight deterioration (from category A1 to A2) in humic substances, COD_{Mn} , Fe_{total} and pH values. Raw water from the M. Lázně Reservoir is contaminated with humic substances and higher levels of COD_{Mn} and Mn. Apart from increased values in the summer months (AOX, TOC, humic substances, COD_{Cr} , COD_{Mn} , Mn), the quality of raw water is comparable to previous years. The quality of raw water in the Podhora Reservoir improved slightly compared to the previous year. Values exceeding the threshold for category A3 were recorded for TOC and Fe_{total} indicators, and there was an improvement in AOX (in A3), BOD_5 (in A2) and Mn (in A2) indicators. The quality of raw water in the Fláje Reservoir is comparable to the previous year, with a slight improvement

in water quality in the inflows to the Fláje Reservoir (e.g. in the Radní Stream, the AOX, TOC and C10-C40 hydrocarbon indicators were not exceeded, unlike in the previous year) and an overall decrease in pollution values. At the Chřibská Reservoir, there was an improvement in water quality and a reclassification of microbiological pollution indicators (from category A2 to A1), Fe_{total} (from A3 to A2) and Mn (from A2 to A1). There was a deterioration in AOX, TOC and C10-C40 hydrocarbons, which exceeded the A3 category limit in 2024 (deterioration by one quality class). Deterioration was recorded in samples taken in the winter months (maximum AOX = 0.035 mg/l in February, maximum TOC = 12 mg/l in January), while in the case of C10-C40 hydrocarbons, deterioration was recorded in samples taken in June (value 0.11 mg/l). The increased values may be caused by massive logging in the reservoir catchment area in recent years and subsequent soil runoff. No significant changes in water quality were observed in other reservoirs. In general, increased pollution levels may also be caused by the hydrological situation in the Czech Republic, where pollution concentrates in dry periods and is then washed out during rainfall.

The largest reservoirs not used for water supply in the Ohře River Basin include the Skalka, Jesenice and Nechranice Reservoirs, and Mácha Lake and Stráž pod Ralskem in the Ploučnice River Basin. Despite being polluted by phosphorus, pesticides, etc. (municipal and agricultural pollution), the water quality in the reservoirs is generally between good and excellent. In June 2024 (i.e. one month earlier than in 2023), the Ohře River Board, s.e., recorded an increased occurrence of cyanobacteria and water bloom in the Skalka Reservoir, which led to the water being classified as unsuitable for bathing. According to monitoring by the Ohře River Board, s. e., the water quality for bathing deteriorated in the Jesenice (from August 2024) and Nechranice (from July 2024) Reservoirs. Furthermore, due to high mercury concentrations, the consumption of fish from the Skalka Reservoir is prohibited. The situation of flooded pits after surface mining of brown coal is specific. These reservoirs have no natural inflow or outflow. Farming in them (mainly fish) is strictly regulated. In terms of water quality, indicators of natural pollution (iron, manganese, phosphorus) are present.

At the beginning of spring, the reservoirs managed by the Elbe River Board, s.e., were sufficiently filled in accordance with the applicable operating rules. The inflow volume increased significantly during the floods in September, which had a major impact on the total inflow into the reservoirs. In 2024, the average water temperature during the growing season at some reservoirs was the highest ever recorded since 1979. The increased water temperature results to a longer period of increased evaporation and acceleration of chemical and biological processes in the reservoir. Temperatures above 20°C were often measured at the surface of the mountain reservoirs of Souš, Josefův Důl and Labská. In 2024, there were fifty-two such days at Souš, while not a single such day was recorded there in the 1980s. Later in the spring and summer, temperature stratification formed as usual in deeper reservoirs. This development is typically accompanied by varying degrees of oxygen depletion, causing further negative phenomena.

The bridge deck of the Křižanovice Reservoir underwent repairs. For this reason, the operating water level was reduced by approximately 2 metres for almost the entire growing season. Although the reservoir has a relatively high turnover coefficient,



Rakovnický Stream, Rakovník, removal of sediment from the riverbed (source: Vltava River Board, s.e.)

intensive phytoplankton growth deteriorated significantly its water quality in July. The dominant species was the *Microcystis* cyanobacteria. Transparency dropped from 290 cm to 60 cm. The water was treatable throughout the period. At the Vrchlice reservoir, water quality developed in a similar way to previous years until mid-September. There was again a clear temperature and oxygen stratification. Transparency exceeded 200 cm for most of the season, with highest chlorophyll-a concentrations reaching 25 µg/l in October after the flood. In cooperation with EM Fluids, a Canadian company, an EMF 1120 device was installed on a trial basis to explore the possibilities for improving water quality. The location below the Švadlenka tributary, where the device was installed from May to October, was monitored in detail using multiparametric probes. The measurement results were significantly influenced by increased inflows into the reservoir in mid-September. As every year, significant eutrophication also occurred at the Hamry Reservoir. The unfavourable development is illustrated by chlorophyll-a concentrations (an indicator of the presence of green algae and cyanobacteria). The highest values for this parameter exceeded 60 µg/l in September. Here, too, oxygen conditions deteriorated in the summer. Anoxia began to form at the bottom in July and filled the space from one to two metres above the bottom, i.e., approximately one third of the water column. No significant deterioration in water quality was recorded at the Josefův Důl and Souš Reservoirs in the Jizera Mountains.

At the Labská Reservoir, which supplies water to the town of Vrchlabí in Herlíkovice, water quality was variable. Transparency decreased from 450 cm in June to 70 cm in September. There was also a significant increase in primary production during the summer, with a maximum chlorophyll-a value of 90 µg/l. From 15 July, regularly appearing greenish-brown coatings saturated with bubbles attracted considerable attention from the public and the competent authorities on the surface of the Seč Reservoir: this was a massive development of dinoflagellates (a type of algae) of the *Peridinium* genus in a state of inactivity (dormant stage) – cysts, planozygotes or hypnozygotes. It was a relatively unusual phenomenon, both in terms of its extent and

its unusual visual effect. Fortunately, this condition did not last long. The results of extraordinary monitoring by the reservoir administrator showed that the number of dinoflagellates was gradually decreasing. As this type of algae does not produce toxins, the bathing season was not endangered and water abstraction from the reservoir was not affected.

In 2024, as part of the assessment of surface waters intended for bathing carried out by the health authorities, the water quality in the Pastviny Reservoir in the Pardubice Region was found to have deteriorated (August). The water quality in the Mšeno reservoir was suitable for bathing. Sonar equipment was installed at this reservoir to improve the water quality. At the Rozkoš Reservoir, in its southern part, the water quality was suitable for bathing throughout the season. Due to the long-planned extraction of sediment in the northern part of the reservoir below the mouth of the Úpa feeder, the water level was gradually reduced by more than 4 metres in October. During the extraordinary manipulation, the water quality was monitored on an ongoing basis for any adverse changes with a possible impact on the fish population.

Development of water quality in such a type of reservoirs was similar to previous years. In the Bedřichov and Fojtka Reservoirs, transparency was reduced during the growing season to around 150 cm. The poorest water quality was found in the Pařížov Reservoir (transparency well below 100 cm and chlorophyll-a concentrations exceeding 320 µg/l) and Les Království (transparency well below 100 cm and chlorophyll-a concentrations of 220 µg/l).

Quality of water used for bathing in the 2024 bathing season

Act No. 258/2000 Coll., on the protection of public health and on amendments to some related acts, as amended, regulates the rights and obligations of natural and legal persons that must be fulfilled in the field of protection and promotion of public health; it also establishes the system of public health

protection bodies, their scope and authority. One of the areas protected by this Act is outdoor bathing, the operation of outdoor swimming pools, artificial swimming pools, swimming pools and saunas. Decree No. 238/2011 Coll., on the establishment of hygiene requirements for swimming pools, saunas and hygiene limits for sand in outdoor play areas, as amended, addresses the equipment of outdoor swimming pools and the requirements for the method of sampling and frequency of inspection and for the quality of bathing water.

For each holiday season, the Ministry of Health, in cooperation with the Ministry of Agriculture and the Ministry of the Environment, draws up a list of natural bathing sites on surface waters where the operator offers bathing services and other surface waters for bathing. This is a list of sites where the water quality will be monitored in the coming summer holiday season with respect to its use for bathing.

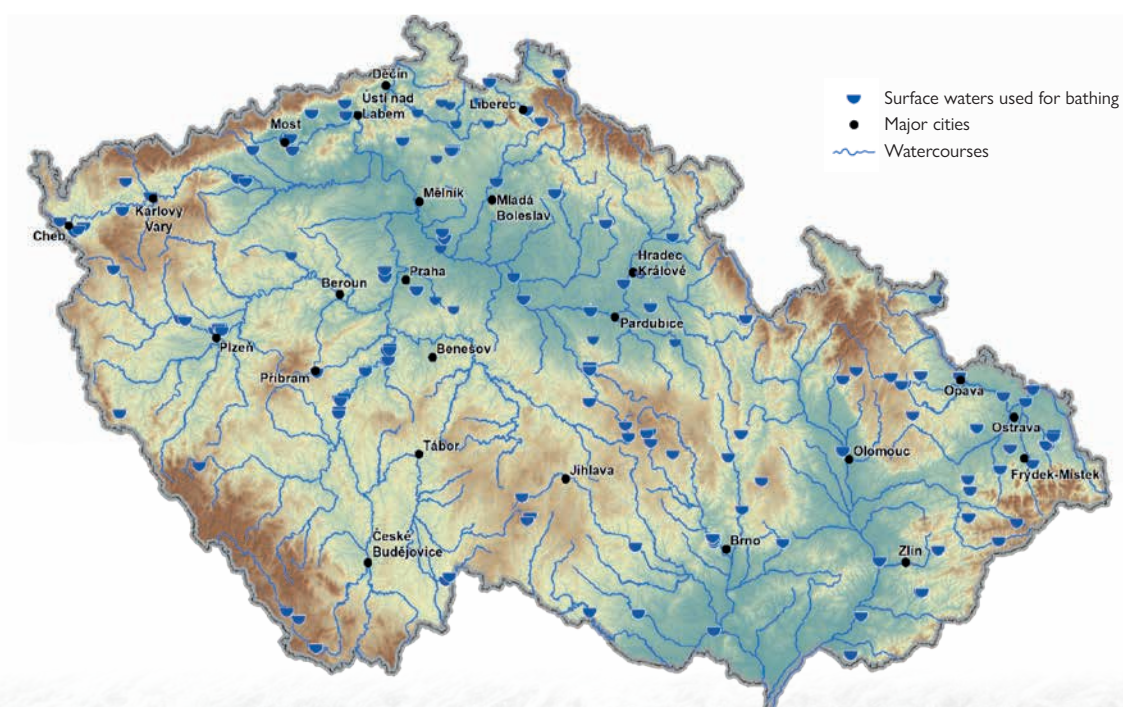
In the 2024 bathing season, a total of 285 bathing sites were regularly assessed by public health authorities, including 166 natural outdoor bathing sites and 119 bathing areas. A total of 1,037 water samples were taken by public health authorities and 927 samples were taken by operators. On the basis of the assessment of the bathing water parameters monitored, a bathing ban (black symbol) was issued by the public health authorities at 21 sites in the Czech Republic in the summer 2024 holiday season. Water quality classified as unsuitable for bathing was found at 34 sites. Thus, a total of 55 sites, i.e. 19.3% of all sites monitored, had unsatisfactory bathing water quality.

Even during the 2024 holiday season, a significant number of natural outdoor bathing sites had problems with excessive growth of cyanobacteria, which was also the main reason

for issuing bathing bans. Cyanobacteria occur in our waters primarily due to high concentration of phosphorus in surface waters. In order to improve water quality, priority should be given to preventing nutrients, especially phosphorus, from entering surface waters, which can be achieved by completing the third stage of wastewater treatment at all existing wastewater treatment plants and by building new wastewater treatment plants in municipalities that do not yet treat wastewater consistently. Other measures (e.g. fish stocking, promotion of aquatic plant growth, precipitation of phosphorus by various coagulants) can be applied directly in reservoirs. Elimination of already developed cyanobacterial blooms by algicides is highly risky from the point of view of protecting the health of bathers and the aquatic ecosystem (the use of such substances is, as per Section 39(7) of Act No. 254/2001 Coll., on water and on amendments to certain acts, as amended, subject to authorisation by the competent water authority), while it does not eliminate the root-cause, which is excessive nutrient supply; it is only a short-term solution.

During the 2024 recreational season, none of the monitored sites were designated as unsuitable for bathing, and no bathing bans were issued due to the occurrence of cercarial dermatitis pathogens. In pre-season samples, cercarial dermatitis pathogens were detected at two sites and two suspected occurrences were reported at two other sites. However, this suspicion was not confirmed by subsequent sampling of host snails and laboratory testing. Cercarial dermatitis is a parasitic disease that manifests itself in humans by the formation of spots, blisters, reddening of the skin and is often accompanied by intense itching. It is caused by tiny parasitic animals whose life cycle is linked to aquatic gastropods and water birds, such as wild ducks. During their development, the parasites go through a so-called cercarial stage, when the cercariae are

Figure 3.1.3
Surface waters used for bathing



Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards, MoA and ©ZABAGED

released from snails into the water and actively seek a suitable host – a water bird. However, if they come into contact with a human, they can penetrate their skin. This attempt is accompanied by an immune response of the body, which manifests itself clinically as cercarial dermatitis. Although this disease is very unpleasant, it does not pose a serious health risk in most cases.

Swimming in polluted water poses a health risk, especially for young children, the elderly and immunocompromised individuals, so the public must be thoroughly informed about such risks. In the 2024 recreational season, the water at 21 monitored sites was assessed as unsafe for swimming (bathing bans issued). There was massive cyanobacterial growth at 20 sites, and high levels of microbiological contamination were recorded at one site (the bathing site is classified as a so-called biotope).

The number of swimming pools and water bathing sites monitored by regional public health authority did not change much compared to previous years.

Quality of suspended matters and sediments

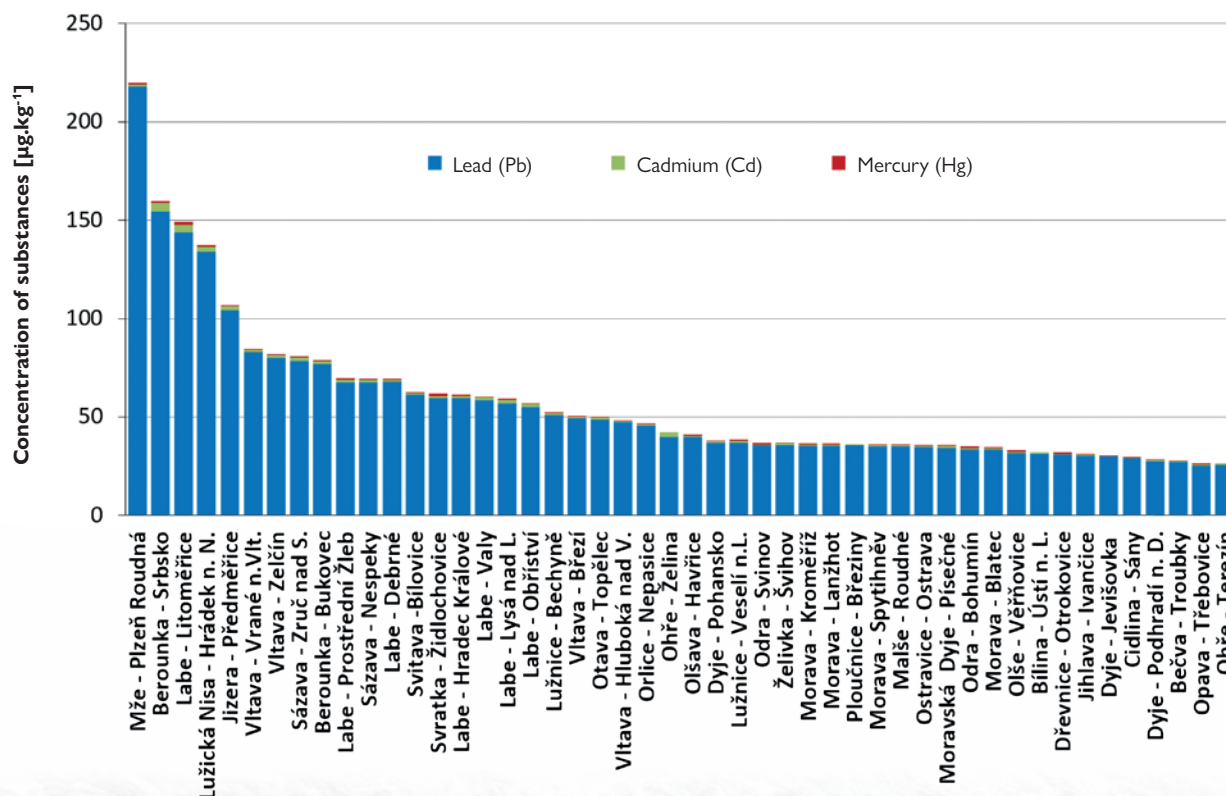
Stream load (i.e. suspended solids) and sediments are an important part of the aquatic environment, onto which inorganic and organic pollutants are sorbed that subsequently affect negatively life in fluvial ecosystems. Monitoring the quality of stream load and sediments makes an important contribution to the overall assessment of the quality of surface waters of the Czech Republic's watercourses. Their analyses

provide information on the presence of hazardous foreign substances in the aquatic environment, which subsequently allows for analysing the causes of pollution at individual sites. Long-term monitoring of the state of fluvial ecosystems is highly desirable and allows for the assessment of the development and environmental impacts of pollution. European Union Directives 2000/60/EC (the Water Framework Directive), 2008/105/EC and 2013/39/EU require long-term trend monitoring for a set of 25 selected priority hazardous substances for solid matrices.

For this purpose, concentrations of heavy metals, metalloids and specific organic substances were monitored at 48 profiles in 2024, with a focus on water policy priority substances for a total of 130 chemicals, of which 20 are on the priority list. These substances are hazardous to the health of humans, animals and entire ecosystems, often being carcinogenic (e.g. polyaromatic hydrocarbons, perfluorooctane sulfonate), mutagenic (e.g. organochlorine pesticides) and harmful to the nervous, hormonal and immune systems (e.g. hexabromocyclododecane, polybrominated diphenyl ethers, tributyltin). Assessment of the monitoring results was conducted in accordance with Government Decree 401/2015 Coll., following an analysis of long-term trends in concentrations of selected priority substances that tend to cumulate in sediments and stream load. The degree of contamination was assessed on the basis of the average annual concentration of foreign substances in a given matrix with the ICPER sediment quality limits (used for assessment of the burden in the Elbe River), as these limits are not currently anchored in Czech legislation.

Graph 3.1.1

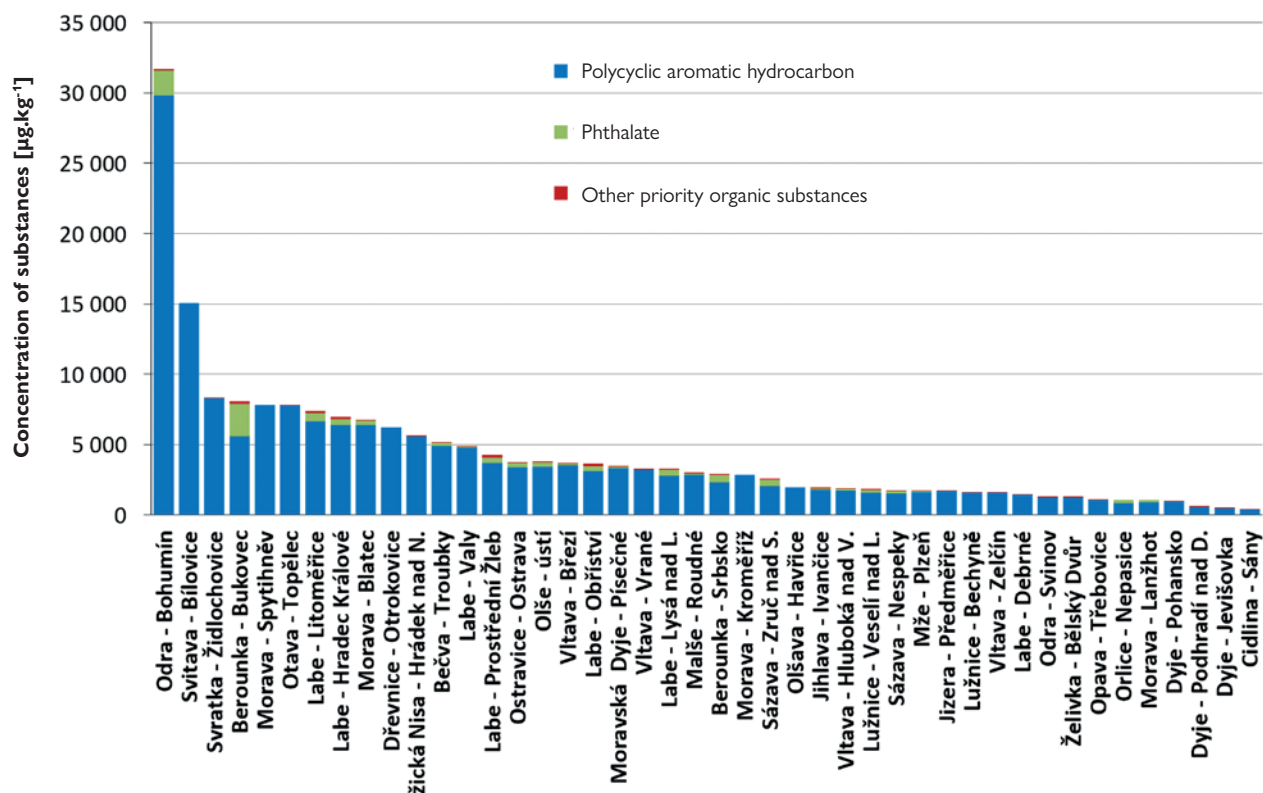
Average concentrations of selected heavy metals in sediments at monitored sites



Source: CHMI

Graph 3.1.2

Average concentrations of priority organic pollutants in sediments at monitored sites



Source: CHMI

The contamination of sediments, stream load and sedimentable stream load is highly heterogeneous in the Czech Republic and throughout all river basins, is related to geomorphology, land use and settlement. Often, excessive concentrations of different foreign substances are found downstream of industrial and urban agglomerations as well as areas affected by resource extraction.

The highest concentrations of heavy metals were found in sediments in North, West and Central Bohemia. The highest mean lead concentrations were recorded in the Mže River in Plzeň (251 mg·kg⁻¹), the Berounka River in Srbsko (166 mg·kg⁻¹), the Elbe River in Litoměřice and the Lusatian Neisse River in Hrádek nad Nisou (Graph 3.1.1). The highest cadmium concentrations were found in the Berounka River in Srbsko (5 mg·kg⁻¹) and in the Elbe River in Litoměřice. The highest concentrations of mercury were found in the Svratka in Židlochovice (1.4 mg·kg⁻¹). The highest arsenic concentrations were recorded in the Otava River in Topělec (40 mg·kg⁻¹). For a number of organic substances from the group of phenols and chlorinated phenols, chlorinated pesticides (aldrin, endrin, dieldrin, isodrin, dicofol, heptachlor epoxide, methoxychlor), their values were found below the quantification limit. Chlorinated benzenes (trichlorobenzene, tetrachlorobenzene, pentachlorobenzene) were also below the quantification limit, with isolated cases of hexachlorobenzene and 1,2,4-trichlorobenzene found in low concentrations (i.e. above the determination threshold). Organic substances used as flame retardants (PBDEs – polybrominated diphenyl ethers) were also found below the quantification limit, with the exception of PDBE209 congener, which was found in the highest concentrations in the Elbe River in Hradec

Králové (24,000 µg·kg⁻¹ and Lysá nad Labem (4,000 µg·kg⁻¹). The most frequent organic substances were polyaromatic hydrocarbons, which are mainly produced by incomplete combustion. The highest average annual concentrations of polyaromatic hydrocarbons were found in the Oder River in Bohumín (29,830 µg·kg⁻¹, Graph 3.1.2), where many times higher concentrations (of fluoranthene, phenanthrene, benzo(a)anthracene, pyrene) were recorded, particularly during autumn sampling after extensive floods. Significantly high average annual concentrations of these substances were also found in the Svitava River in Bílovice (15,059 µg·kg⁻¹). The highest concentrations of phthalates (DEHP), which are used as plastic softeners, were analysed in sediments of the Berounka River in Plzeň (2,333 µg·kg⁻¹, Graph 3.1.2), of the Oder River in Bohumín (1,771 µg·kg⁻¹) and of the Elbe River in Litoměřice. In the Bílina at the Ústí nad Labem profile, high concentrations of chloroalkane pesticides (230 µg·kg⁻¹) and hexachlorocyclohexane mixtures (HCH – 63 µg·kg⁻¹) were recorded among other organic substances. The highest values of total polychlorinated biphenyls (ΣPCB) were recorded in the Vltava River in Vrané nad Vltavou (403 µg·kg⁻¹). High levels of the pesticide AMPA (530 µg·kg⁻¹) were found in the Berounka River in Plzeň, and the highest values of ΣDDT (70 µg·kg⁻¹) were found in the Elbe River in Prostřední Žleb.

The highest concentrations of lead and cadmium in suspended load – as the case was with sediments – were found in the Berounka River in Srbsko (Pb – 121 mg·kg⁻¹, Cd – 4 mg·kg⁻¹) and in the Lusatian Neisse in Hrádek nad Nisou (Pb 129 mg·kg⁻¹, Cd 3.5 mg·kg⁻¹). The highest concentrations of mercury were recorded in the Bílina River in Ústí nad Labem (Hg – 1.7 mg·kg⁻¹).

The highest concentrations of arsenic were found in the Bílina River in Ústí nad Labem ($110 \text{ mg} \cdot \text{kg}^{-1}$) and in the Ohře River in Terezín ($66 \text{ mg} \cdot \text{kg}^{-1}$). Similar to sediments, the highest average annual concentrations of polyaromatic hydrocarbons in sedimentable suspended matter were found in the Oder River in Bohumín ($11,964 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, Graph 3.1.2) and in the Svatka River in Židlochovice ($10,307 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$). The highest concentrations of phthalates (DEHP) were found in the Lusatian Neisse in Hrádek nad Nisou ($5,480 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$) and in the Bílina in Ústí nad Labem ($5,390 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$), elevated concentrations above $2,000 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$ were recorded on the Oder River in Bohumín and in the Svatka River in Židlochovice. The highest loads were: trichlorobenzene $16 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, pentachlorobenzene $11 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, hexachlorobenzene $600 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, hexachlorobutadiene $15 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, octachlorostyrene $8 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, perfluorooctane sulfonate $22 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, from pharmaceuticals methyltriclosan $47 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$, from pesticides AMPA $3,200 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$ were detected in the Bílina River in Ústí nad Labem. The highest concentrations of $\Sigma \text{ PCB}$ were recorded in the Elbe River at the Schmilka profile ($458 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$) and in the Bílina River in Ústí nad Labem ($113 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$).

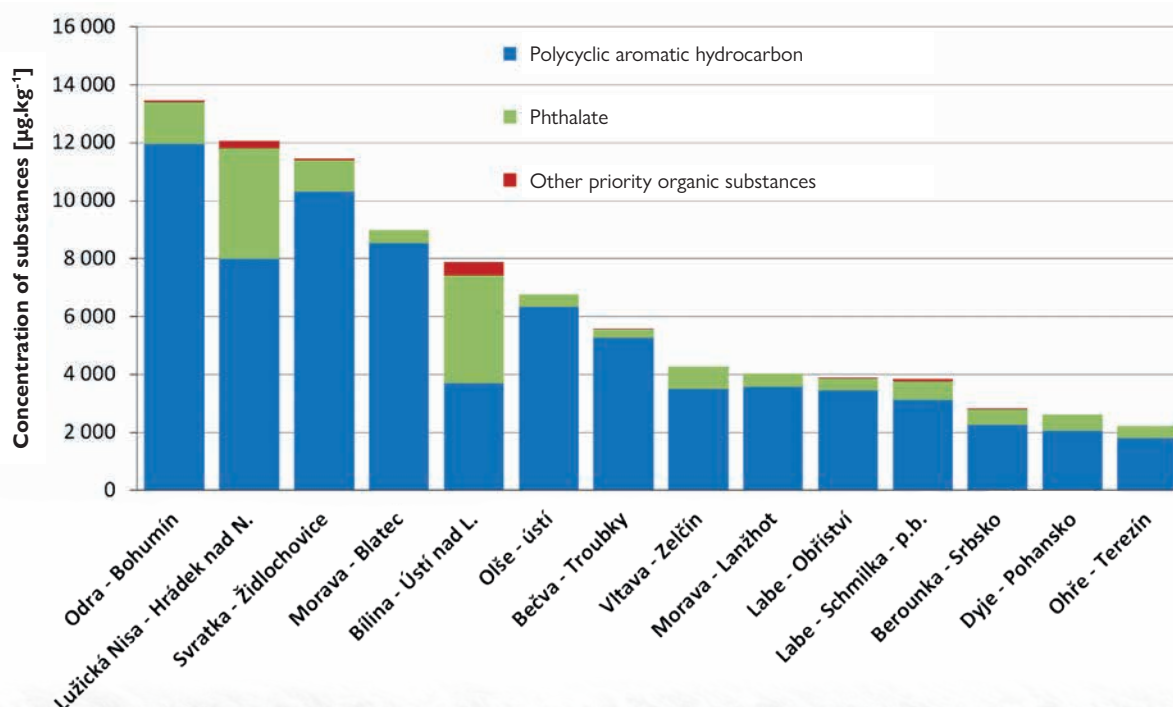
In the stream load matrix, the highest concentrations of lead were found in the Berounka River in Pilsen ($135 \text{ mg} \cdot \text{kg}^{-1}$) and in the Lusatian Neisse River in Hrádek nad Nisou ($131 \text{ mg} \cdot \text{kg}^{-1}$). The highest concentrations of cadmium ($7.2 \text{ mg} \cdot \text{kg}^{-1}$) and arsenic ($126 \text{ mg} \cdot \text{kg}^{-1}$) were found in the Ohře River in Želina, and mercury ($0.9 \text{ mg} \cdot \text{kg}^{-1}$) was found in the Ploučnice River in Březiny. In alluvial sediments, the highest values of polyaromatic hydrocarbons were found in the Svitava River in Bílovice ($11,270 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$), the Morava River in Blatec ($6,286 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$) and the Ostravice River in Ostrava and the Oder River in Bohumín. The highest values of $\Sigma \text{ PCB}$ ($102.7 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$) were recorded in the Ohře River in Terezín. Pesticides were found in the highest concentrations in the Bílina River in Ústí nad Labem ($\Sigma \text{ DDT}$

$171 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$), in the Vltava River in Hluboká nad Vltavou, in the Elbe River in Prostřední Žleb and also in the Svatka River in Židlochovice. Chloroalkanes were found in high concentrations in the Bílina River in Ústí nad Labem ($350 \text{ } \mu\text{g} \cdot \text{kg}^{-1}$) and in the Lusatian Neisse River in Hrádek nad Nisou.

Time series in sedimentable suspended matters (2013–2024) and sediments (2000–2024) were used to assess long-term trends and analysed using the Mann-Kendall test. Statistical analyses showed a significantly increasing trend at the monitored sites for a number of selected pollution indicators (priority hazardous substances) between the monitored matrices (sedimentable suspended matter and sediments) in 2024. A significantly increasing trend in sedimentable suspended matters was recorded at a total of six sites for four priority hazardous substances: cadmium (Thaya – Pohansko and Svatka Židlochovice), mercury (Berounka – Srbsko), fluoranthene and hexachlorobenzene. An increasing trend in fluoranthene was recorded at the Ohře – Terezín and Vltava – Zelčín sites, but the remaining polyaromatic hydrocarbons remained relatively stable. An increasing trend in hexachlorobenzene was recorded only in the Bílina River in Ústí nad Labem. A total of 10 cases of an increasing trend were recorded in sediments for the monitored hazardous substances. An upward trend in sediments was statistically confirmed at seven sites for six priority hazardous substances: cadmium (Elbe – Litoměřice, Thaya – Podhradí, Bečva – Troubky, Dřevnice – Otrokovice and Oder – Svinov), mercury (Moravian Thaya – Písečné), anthracene and fluoranthene (Lusatian Neisse – Hrádek nad Nisou), benzo[ghi]perylene (Moravian Thaya – Písečné) and indeno[1,2,3-cd]pyrene (Elbe – Litoměřice). A downward trend was recorded at most of the monitored sites for almost all the monitored substances. Statistically confirmed cases of a downward trend were recorded in sediments (215) and sedimentable suspended matters (94).

Graph 3.1.3

Average concentrations of priority organic pollutants in sedimentable load at the monitored sites



Source: CHMI

Raw water quality

Data from 3,134 raw water abstraction points (135 surface water abstraction points and 2,999 groundwater abstraction points) from 741 operators were used to assess raw water quality in 2024. The treatability of raw water was classified in 4 treatability categories according to Decree No. 428/2001 Coll., as amended, see the table below with definitions of treatability categories. Due to the amendment of legislation (Decree No. 256/2023 Coll.) in 2023, the following indicators were added for the calculation of treatability categories: bisphenol A, total PFAS, benzo(a)pyrene and uranium, while the BOD₅ indicator was removed from the treatability assessment.

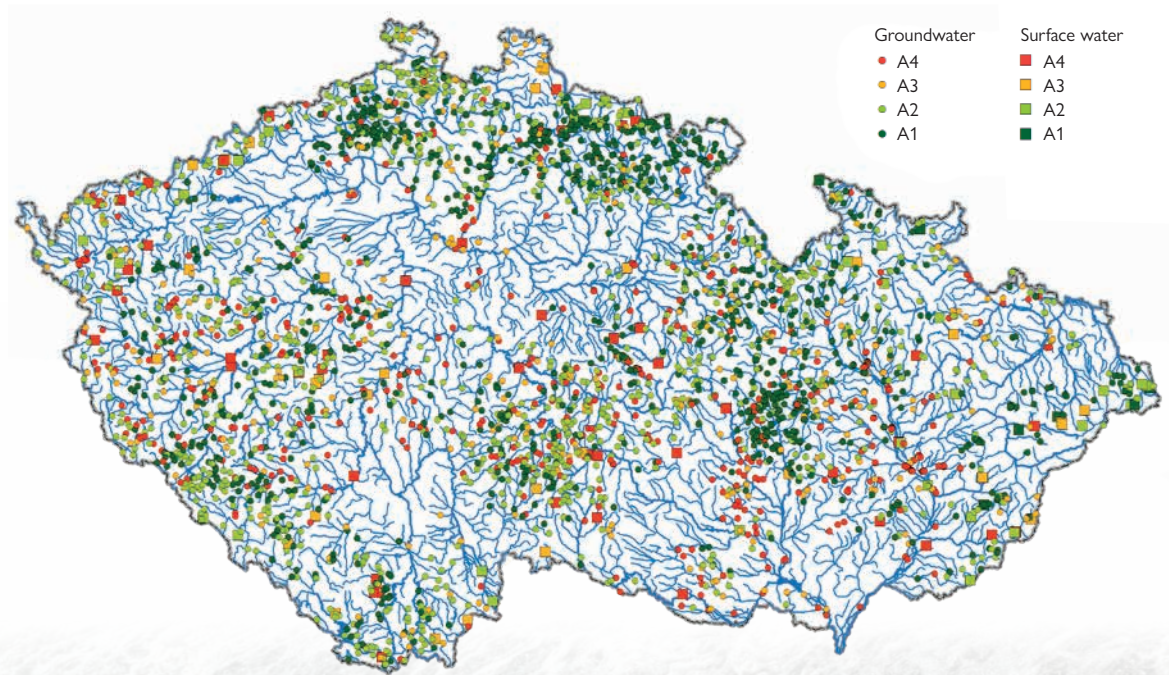
Overall, more than 71% of abstraction points were of A2 or better quality in 2024. Surface raw water sources tend to be of poorer quality than groundwater sources, hence the higher proportion of surface water abstraction points with poorer treatability categories (only approx. 40% of these abstraction points had raw water qualities of A2 or better, in the case of groundwaters it was 72% of abstraction points). When comparing the quality of raw water in individual regions, it can be noted that the best quality (more than 80% of abstraction points in category A2 and better) in 2024 was found in raw water sources in the Hradec Králové, Ústí and Liberec Regions and the worst in the Zlín Region (only 49% of abstraction points in category A2 and better).

Table 3.1.1
Treatability categories and corresponding treatment types

Category	Types of treatment
A1	Treatment of raw water with possible disinfection to remove compounds and elements that may affect its further use, in particular to reduce the aggressiveness towards the materials of the distribution system, including domestic installations (chemical or mechanical deacidification), as well as the removal of odours and gaseous components by aeration. Simple filtration to remove suspended solids and improve quality.
A2	Raw water requires simpler treatment, e.g. coagulation filtration, single-stage de-icing, de-manganisation or infiltration, slow biological filtration, treatment in a rock environment, all with final disinfection. Water stabilisation is suitable to improve the properties.
A3	Treatment of raw water requires two or more stages of treatment by clarification, oxidation, de-ironing and de-manganisation with final disinfection, or a combination of these. Other suitable processes are, for example, the use of ozone, activated carbon, flocculant aids and flotation. More economically demanding technically justified processes (e.g. sorption on special materials, ion exchange, membrane processes) shall be used on an exceptional basis.
A4	Exceptionally, water of this quality may be abstracted for the production of drinking water with an exemption granted by the competent regional authority. For the treatment of drinking water, technologically demanding processes consisting of a combination of the types of treatment specified for category A3 must be used, while ensuring the stable quality of the drinking water produced. However, the preferred solution in these cases is to eliminate the causes of pollution or to find a new source of water.

Source: CHMI, Decree No. 428/2001 Coll.

Figure 3.1.4
Raw water treatability categories at abstraction points in 2024

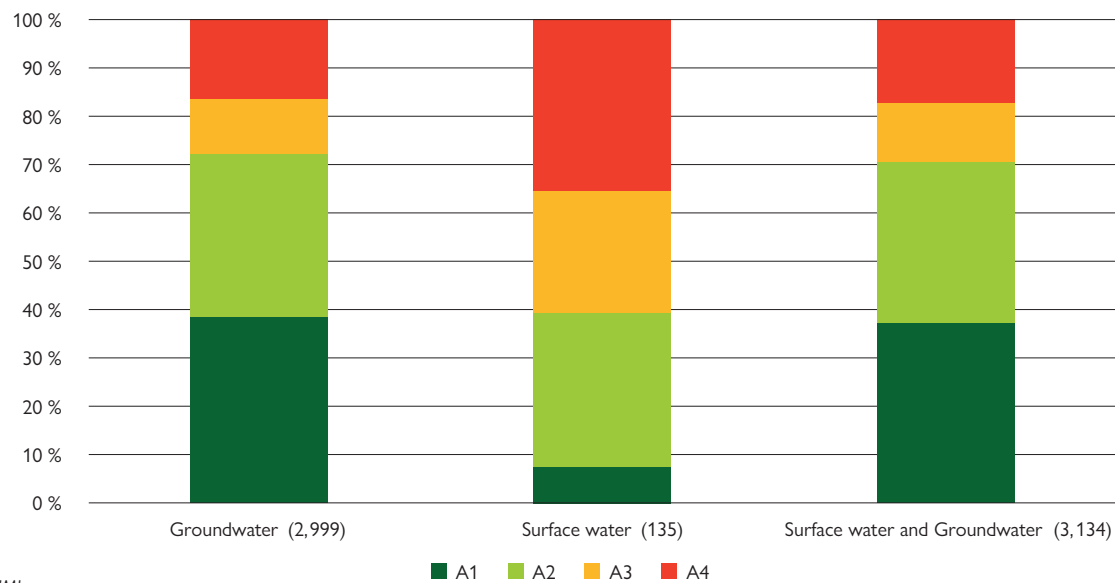


Source: CHMI

The most problematic indicators for raw surface water quality in 2024 were microbiological indicators, total organic carbon, adsorbable organically bound halogens (AOX), COD_{Mn} , iron, humic substances and pesticides, namely metazachlor ESA and metazachlor OA (metabolites of the herbicide metazachlor used for treating canola), metolachlor ESA (a metabolite of the herbicide metolachlor used for treating maize) and AMPA (a metabolite of the total herbicide glyphosate). The most problematic indicators of groundwater quality were adsorbable organically bound halogens (AOX), iron and manganese (less than 4% of abstraction points), and pesticides, namely

chloridazon-desphenyl and chloridazon-methyl-desphenyl (metabolites of the herbicide chloridazon used until 2020 for the treatment of canola), alachlor ESA (metabolite of the herbicide alachlor used for the treatment of canola, banned since 2008), metazachlor ESA (a metabolite of the herbicide metazachlor used for the treatment of canola), metolachlor ESA (a metabolite of the herbicide metolachlor used for the treatment of maize) and acetochlor ESA (a metabolite of the herbicide acetochlor used mainly for the treatment of maize, banned since 2014). Nitrates were problematic in only 6% of groundwater sources in 2024.

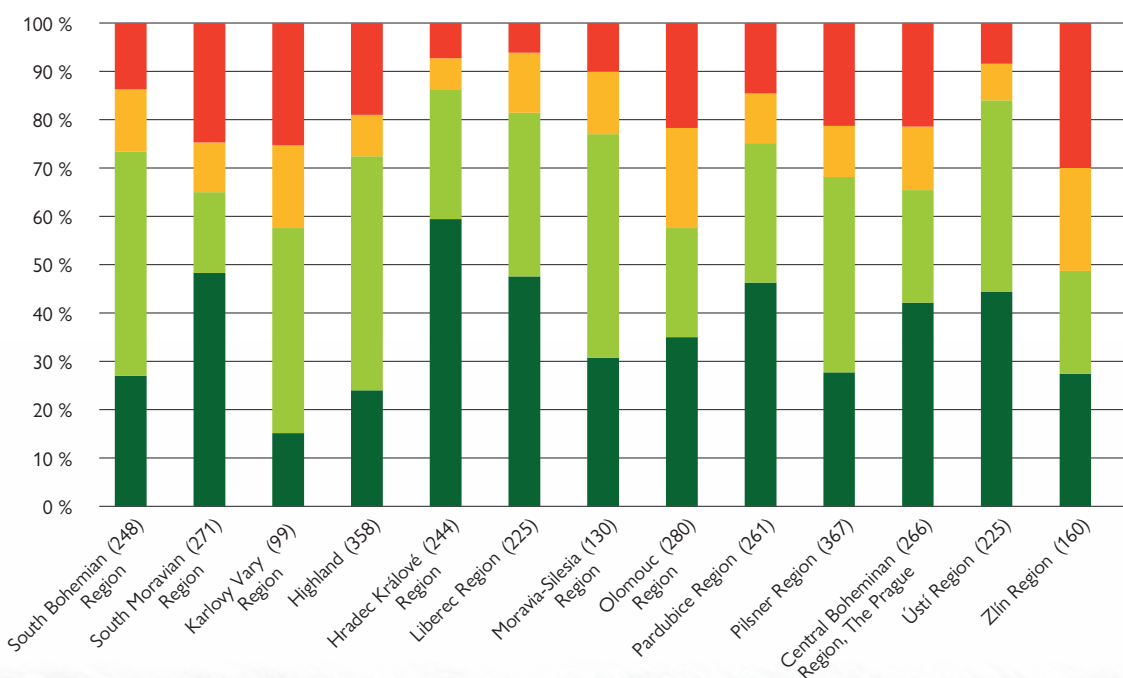
Graph 3.1.4
Treatability categories by raw water source types



Source: CHMI

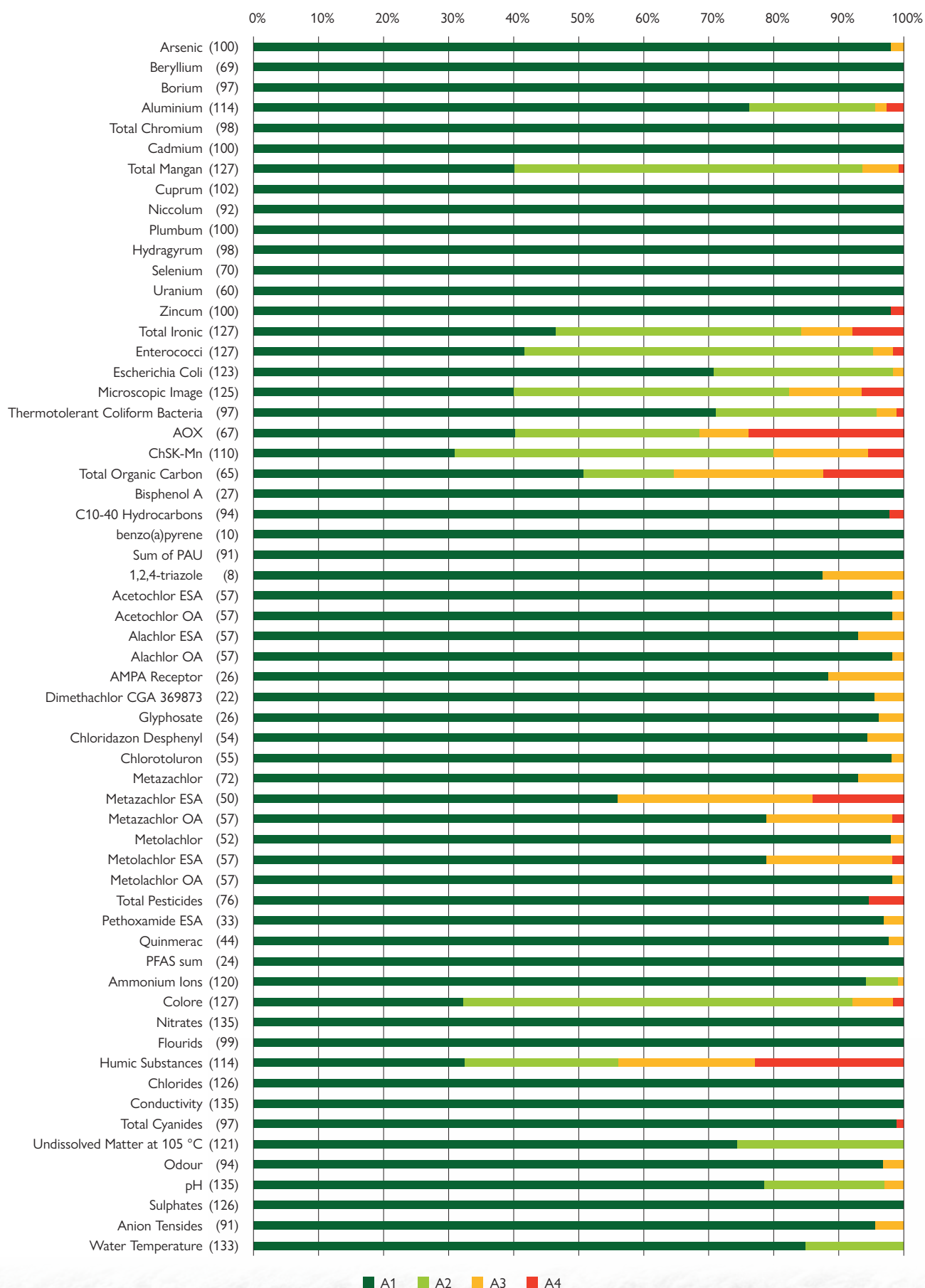
Note: The number of abstraction points is in brackets.

Graph 3.1.5
Treatability categories by regions



Source: CHMI

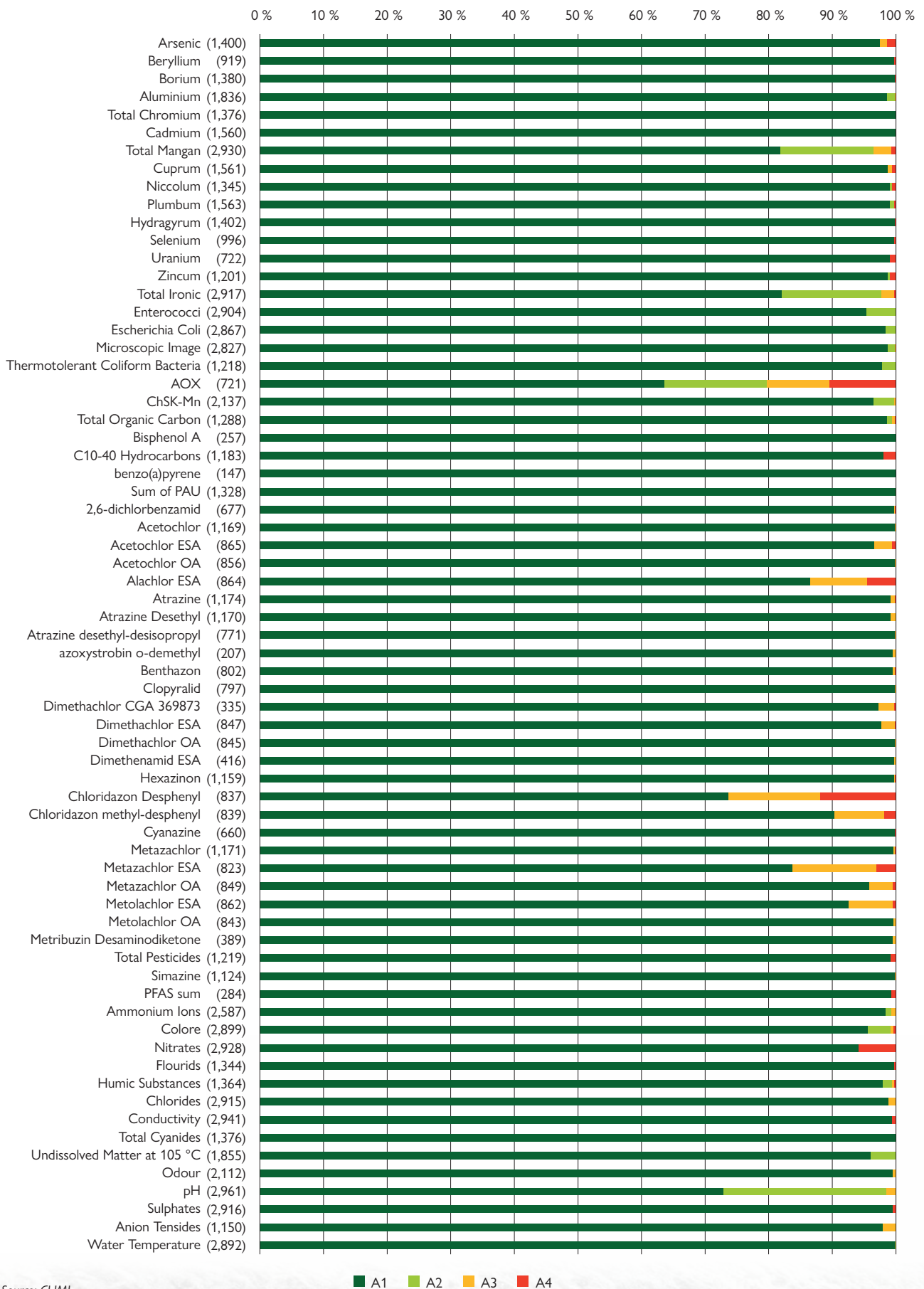
Note: The number of abstraction points is in brackets.

Graph 3.1.6**Categories of surface water treatability for indicators most affecting surface water quality**

Source: CHMI

Note: The number of abstraction points is in brackets.

Graph 3.1.7
Categories of groundwater treatability for indicators most affecting groundwater quality



Source: CHMI

Note: The number of abstraction points is in brackets.

Microcontaminants in surface waters

Organic microcontaminants of surface waters have long been among the substances regularly found in the whole of the Czech Republic. These are mainly residues of pesticides and their metabolites, which originate mainly from agriculture, and pharmaceuticals, radiopharmaceuticals, anti-corrosives and other specific organic substances originating from wastewater discharged into watercourses. For the two most important groups of these substances with different sources (agriculture, municipal sources), an assessment of their occurrence in surface waters in 2024 was carried out.

Pesticides

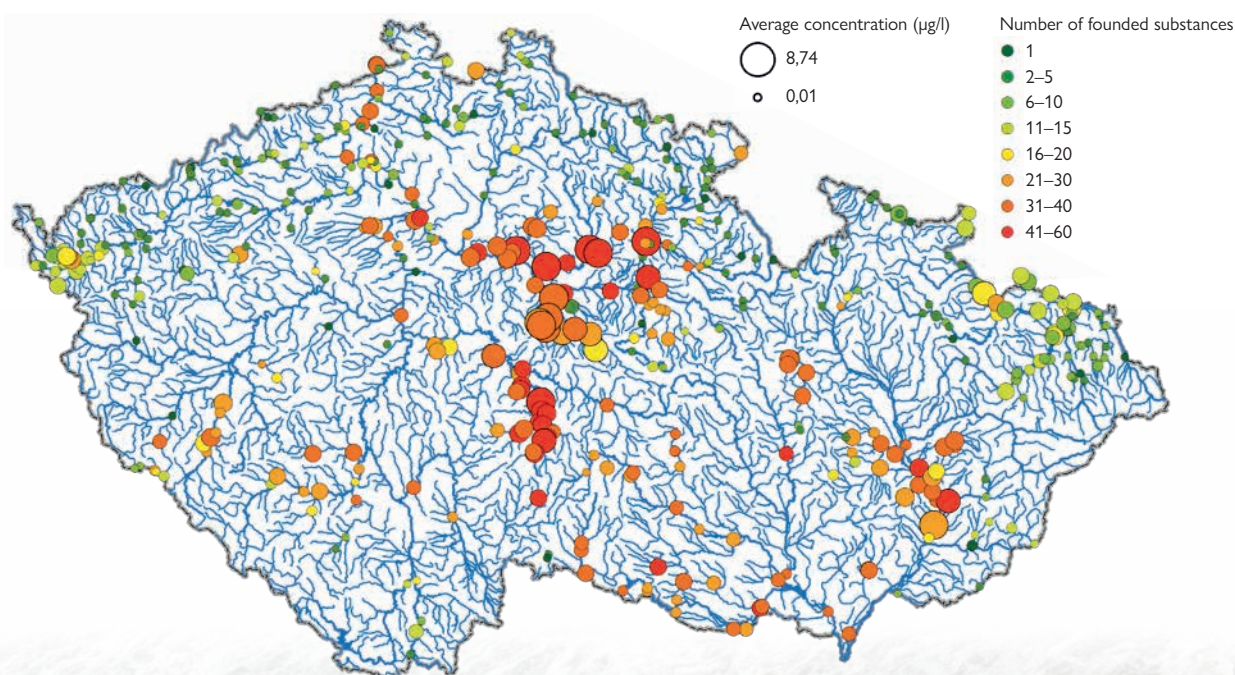
Pesticide substances and their metabolites are the most closely monitored microcontaminants by laboratories of the River Boards, s.e. In 2024, results from a total of 582 profiles (a total of 5,768 samples) for 277 different analytes were processed. Pesticides were found in 536 profiles (92% of the profiles monitored) in a total of 4,540 samples (78.7% of samples). In 2024, a total of 155 pesticides and their metabolites were found in surface waters, of which 49 substances were found in more than 5% of the samples. The results are in line with the monitoring setup for these substances by the River Boards, s.e. Where a wider range of substances are monitored, pesticides are found more frequently. In 2024, the most frequently found substances (in more than 30% of the monitored profiles and in more than 10% of the samples taken from the profiles) were metabolites of herbicides used for the treatment of canola, both those currently used (metazachlor, dimethachlor, pethoxamid, dimethoxamid) and those already banned (alachlor, acetochlor), maize (used: metolachlor, terbuthylazine, pethoxamid, dimethenamid; and banned: atrazine, acetochlor), beet (metabolites of chloridazon banned since 2021), and total herbicide glyphosate and its metabolite AMPA. The most frequently found fungicides

were the allowed substance tebuconazole and a metabolite of azoxystrobin (allowed). Other substances included the herbicides bentazone, a metabolite of flufenacet, clopyralid, quinmerac and the insecticides imidacloprid and fipronil (currently commonly used as an antiparasitic for dogs and cats), which are no longer used in agriculture.

Most substances were found at the following profiles: Sány – Cidlina (60 substances), Luková – Cidlina (55), Želiv – Želivka (55), Kosičky – Bystřice (53), Lysá nad Labem – Elbe (51), Poříčí – Želivka (50), Strojetic Leský Mlýn – Sedlický Stream (49), Senožaty – Martinický Stream (49), Obráštvi – Elbe (47), Samším – Kejtovský Stream (47), Valy – Elbe (46), Nymburk – Mrlina (46), mouth – Býkovka (46), Skaštice – Moštěnka (46), Želiv – Trnava (46), Kojčice – Želivka (46), Němčice Reservoir – Sedlický Stream (45), Miletín – Želivka (45), Pelhřimov – Bělá (45), Jevišovka – Jevišovka (44), Vlášence – Želivka (44), Zábort nad Labem – Doubrava (43), Zbraň – Cidlina (43), Lukovna – Ředický Stream (43), Blažejovice – Blažejovický Stream (43), inflows into the Vrchlice Reservoir – Vrchlice (42), Hradec Králové – Piletický Stream (42), Tečovice – Racková (42), Veletov – Elbe (41), Grešlové Mýto – Jevišovka (41), Zruč nad Sázavou – Sázava (41), Žirovnice – Počátecký Stream (41), Kolín – Elbe (40), Starý Kolín – Klejnárka (40), Nymburk – Elbe (40), Dačice – Vápovka (40), Lišná – Kozrála (40) and Vlášnický dvůr – Cerekvický Stream (40).

The highest total concentrations of pesticides (sums of annual average and annual maximum concentrations of individual substances at a given profile) were found at the following profiles: Babice – Kudlovický Stream (average 8.74 µg/l, maximum 27 µg/l), Bykáň – Opatovický Stream (average 7.25 µg/l, maximum 14.6 µg/l), Hradec Králové – Piletický Stream (average 6.46 µg/l, maximum 24.73 µg/l), Vrchlice Reservoir – Švadlenka (average 6.24 µg/l, maximum 15.76 µg/l), Vrchlice Reservoir dam – Vrchlice (average 5.8 µg/l, maximum 8.34 µg/l),

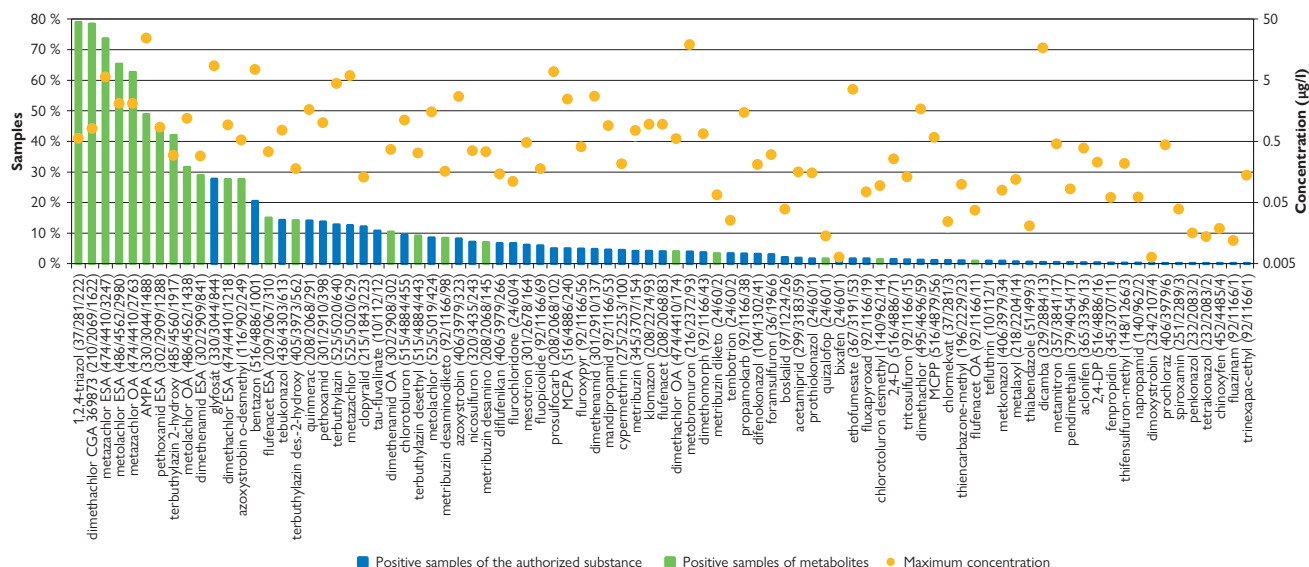
Figure 3.1.5
Pesticides in the Czech Republic by number and concentration in 2024



Source: CHMI

Graph 3.1.8

Frequency of occurrence of permitted pesticides and maximum concentrations in surface waters in the Czech Republic in 2024

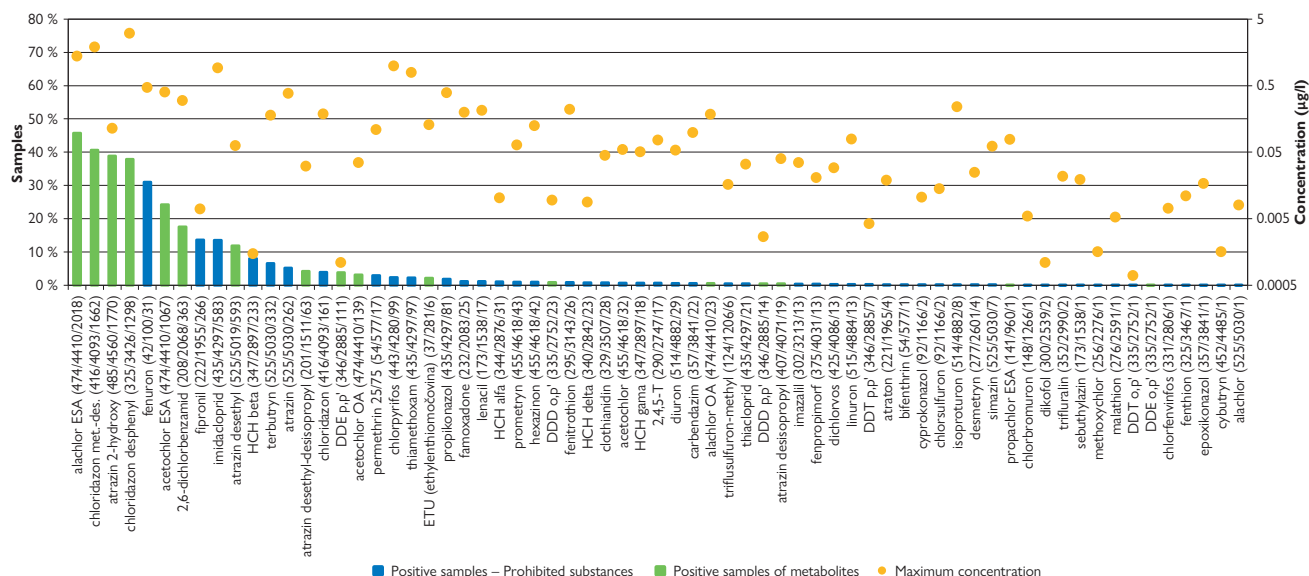


Source: CHMI

Note: Brackets for each substance indicate the number of profiles / number of samples / number of positive samples.

Graph 3.1.9

Frequency of occurrence of banned pesticides and maximum concentrations in surface waters in the Czech Republic in 2024



Source: CHMI

Note: Brackets for each substance indicate the number of profiles / number of samples / number of positive samples.

Starý Kolín – Klejnárka (average 5.65 µg/l, maximum 9.47 µg/l), Vrchlice Reservoir – Vidický Stream (average 5.53 µg/l, maximum 12.02 µg/l), Sány – Cidlina (average 5.48 µg/l, maximum 15.57 µg/l), Kosičky – Bystrice (average 5.46 µg/l, maximum 11.2 µg/l), Nymburk – Mrlina (average 5.43 µg/l, maximum 12.81 µg/l), Vrchlice Reservoir – Vrchlice (average 5.34 µg/l, maximum 10.6 µg/l), Blažejovice – Blažejovický Stream (average 5.17 µg/l, maximum 34.12 µg/l), Luková – Cidlina (average 5.1 µg/l, maximum 16.81 µg/l), Radonice – Blanice (average 4.96 µg/l, maximum 14.35 µg/l), mouth – Heraltický Stream (average 4.92 µg/l, maximum 21.23 µg/l), Chedrbí – Klejnárka

(average 4.86 µg/l, maximum 8.25 µg/l), Zehuby – Hostašovka (average 4.4 µg/l, maximum 7.4 µg/l), Drobovice – Brslenska (average 4.36 µg/l, maximum 7.7 µg/l), Lukovna – Ředický Stream (average 4.35 µg/l, maximum 15.43 µg/l), Tečovice – Racková (average 4.32 µg/l, maximum 9.39 µg/l), Vilémov – Hostašovka (average 4.21 µg/l, maximum 7.36 µg/l) and Želiv – Želivka (average 4.05 µg/l, maximum 13.77 µg/l).

Absolutely highest concentration of pesticides was detected on 26 May 2024 at the profile Blažejovice – Kaňovský Stream, when a total concentration of 32 pesticides found was 30 µg/l.

Pharmaceuticals

Significant amounts of pharmaceuticals and their metabolites get to surface waters, mainly from municipal sources. In 2024, monitoring results from 366 profiles (out of a total of 3,157 samples) for 83 pharmaceuticals were processed by the River Boards, s.e. The results are in line with the monitoring setup for these substances by the River Boards. Where a wider range of substances are monitored, pharmaceuticals are found more frequently. Similarly to 2023, the occurrence of pharmaceuticals was most frequent in smaller watercourses that drain large settlements or healthcare facilities. Pharmaceuticals were found at 340 profiles (92.9% of profiles monitored) in a total of 2,676 samples (84.8% of samples). A total of 66 substances out of 83 monitored were found in surface waters, of which 47 substances were found in more than 5% of samples. The most frequently found substances (in more than 20% of samples) were oxypurinol (gout drug), telmisartan (antihypertensive), gabapentin (antiepileptic, analgesic), tramadol (analgesic) valsartan (antihypertensive), diclofenac (antirheumatic, analgesic), ibuprofen and its metabolites 2-hydroxy and carboxy (analgesic, antipyretic, antiphlogistic), jomeprol (contrast agent), carbamazepine (antiepileptic), paracetamol (analgesic, antipyretic), hydrochlorothiazide (diuretic), metoprolol (antihypertensive), venlafaxine (antidepressant), antibiotics sulphamethoxazole and clarithromycin, metformin (diabetes drug), fexofenadine (antihistamine), rosuvastatin (cholesterol medication), furosemide (diuretic), naproxen (analgesic), sulfapyridine (antibiotic), irbesartan (antihypertensive), bisoprolol (antihypertensive) and iopromide (contrast agent). Oxazepam (antidepressant) and codeine (analgesic) were also found very frequently at a smaller number of profiles (14).

The highest number of drugs was found at the following profiles: Benešov – Benešovský Stream (55 substances), Trhové

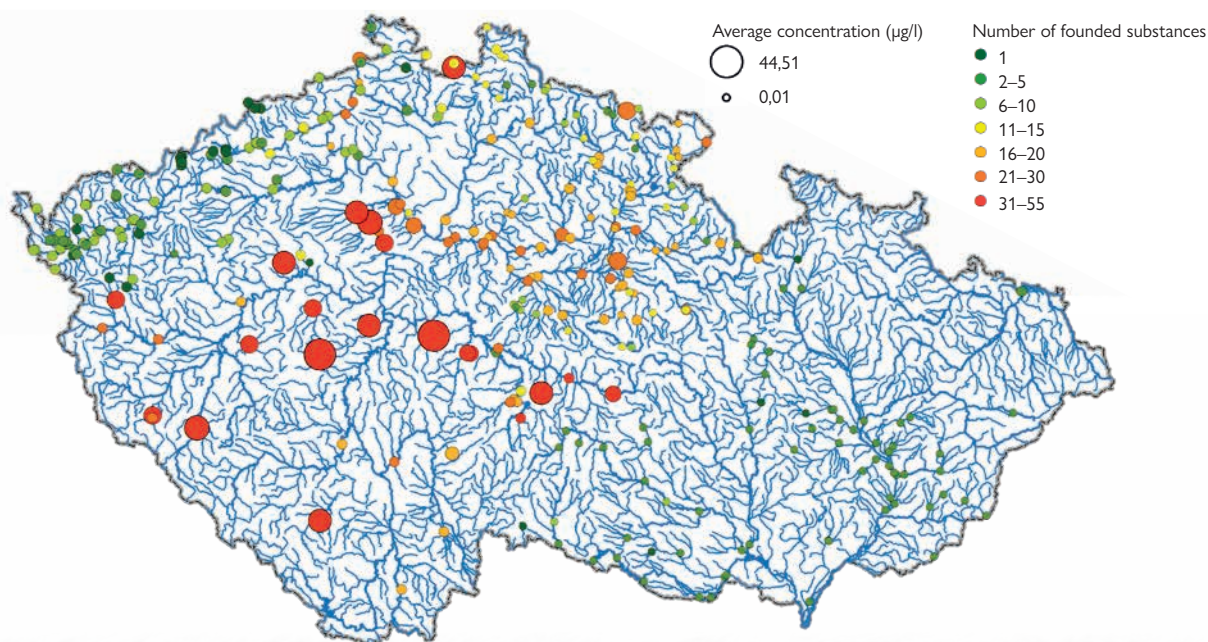
Dušníky – Příbramský Stream (54), Klatovy – Drnový Stream (48), Dolní Chlum – Rakovnický Stream and Humpolec – Pstružný Stream (47), Dolní Kramolín – Kosový Stream (45), Vlašim – Blanice (44), Rokycany – Klabava (43), Kralupy nad Vltavou – Zákolanský Stream (42), Senešnice – Novoveský Stream (41), Velvary – Červený Stream (40), Běleč – Živný Stream (39), Roztoky – Únětický Stream (37), Radonice – Zubřína and Bavoryně – Červený Stream (36), Nové Dvory – Sázava (35), Hrádek nad Nisou – Lusatian Neisse (34), Chlístov – Sázava, Kladruby – Pavlovický Stream and Pelhřimov – Bělá (31).

The highest total pharmaceutical concentrations (sum of annual average and annual maximum concentrations of individual substances at a given profile) were found at the following profiles: Trhové Dušníky – Příbramský Stream (average 44.51 µg/l, maximum 170.65 µg/l), Benešov – Benešovský Stream (average 29.85 µg/l, maximum 59.25 µg/l), Kralupy nad Vltavou – Zákolanský Stream (average 15.81 µg/l, maximum 34.15 µg/l), Klatovy – Drnový Stream (average 15.73 µg/l, maximum 55.43 µg/l), Velvary – Červený stream (average 14.31 µg/l, maximum 36.14 µg/l), Humpolec – Pstružný Stream (average 13.38 µg/l, maximum 27.3 µg/l), Dolní Chlum – Rakovnický Stream (average 12.93 µg/l, maximum 36.52 µg/l), Senešnice – Novoveský Stream (average 10.51 µg/l, maximum 30.37 µg/l), Běleč – Živný Stream (average 10.27 µg/l, maximum 30.46 µg/l), Hrádek nad Nisou – Lusatian Neisse (average 10.26 µg/l, maximum 21.29 µg/l), Bavoryně – Červený Stream (average 8.78 µg/l, maximum 37.35 µg/l) and Dolní Kramolín – Kosový Stream (average 8.64 µg/l, maximum 22.66 µg/l).

Absolutely highest concentration of pharmaceuticals was detected at the Trhové Dušníky – Příbramský Stream profile on 11 December 2024, when a total concentration of 46 pharmaceuticals found reached 144.72 µg/l.

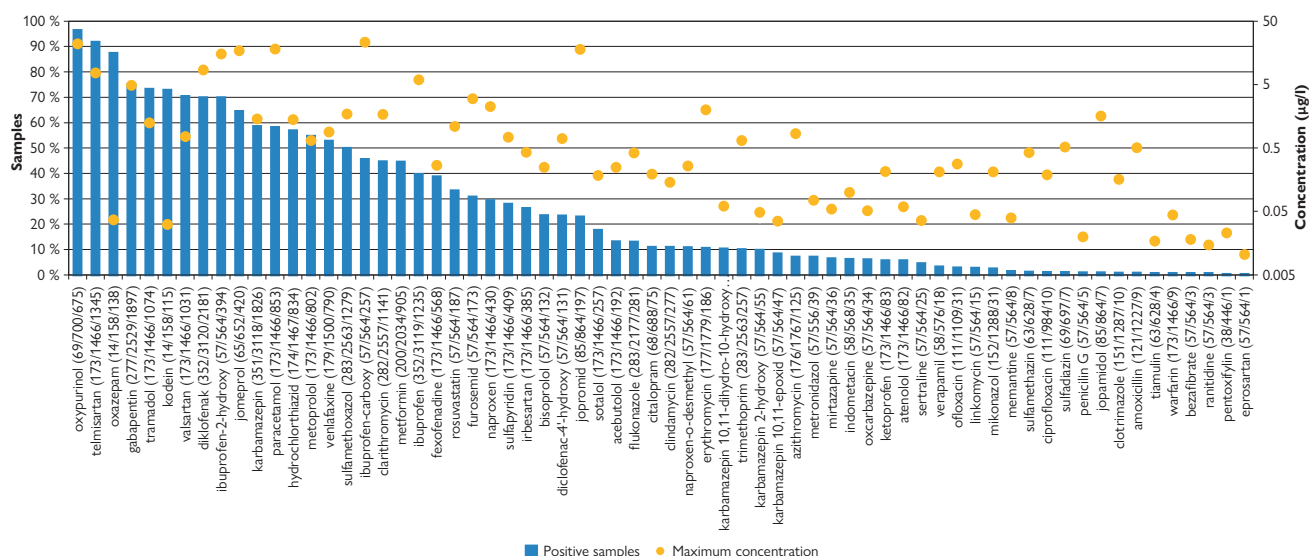
Figure 3.1.6

Pharmaceuticals detected in the Czech Republic by their number and concentration in 2024



Source: CHMI

Note: The monitoring results are affected by the fact that the individual River Boards monitor a different range of pharmaceuticals and a different number of profiles.

Graph 3.1.10**Frequency of occurrence of pharmaceuticals and maximum concentrations in surface waters in the Czech Republic in 2024**

Source: CHMI

Note: Brackets for each substance indicate the number of profiles / number of samples / number of positive samples.

Accumulation biomonitoring of surface waters in 2024

The results of the annual monitoring carried out by the CHMI show a long-term burden with hazardous substances in surface waters in the Czech Republic. These are persistent substances which, due to their high stability and lipophilicity, accumulate in biotic and abiotic components and food chains. These substances are formed as a result of a number of industrial and other anthropogenic activities, either intentionally (pesticides, flame retardants, plasticizers) or as unwanted by-products (PAHs, dioxins). The CHMI regularly monitors the content of almost 90 substances at the profiles of important Bohemian and Moravian rivers. For some substances, Government Regulation No. 401/2015 Coll., as amended, sets the value of the environmental quality standard (EQS) against which the measured values are compared. Samples of adult fish (common chub), fish fry and benthic organisms (mainly larvae of caddisflies, leeches and gammarus) are taken for chemical analysis.

Eight of the analysed substances were selected for more detailed assessment. The substances were polychlorinated biphenyls (sum-PCB), which were used industrially in the past. Also, DDT and its metabolites (sum-DDT) as representatives of banned chlorinated pesticides, polybrominated diphenyl ethers (sum-PBDE) present in a number of materials such as flame retardants, di(2-ethylhexyl) phthalate (DEHP) used mainly as a plastic softener, perfluorinated compounds (PFCs) used for various surface treatments of materials, fluoranthene and benzo(a)pyrene as representatives of polyaromatic hydrocarbons (PAHs) which are formed during incomplete combustion, and mercury, mainly from combustion processes, mining and industry.

Most of these substances are classified as human carcinogens and endocrine disruptors with serious adverse effects on

the reproductive system and embryonic development. The measured values are converted to wet weight (ww) and summarised for fish fry in Graph 3.1.10. Only values above the quantification limit were used for the processing of data for benzo(a)pyrene and DEHP. The other substances assessed were always above the limit of quantification.

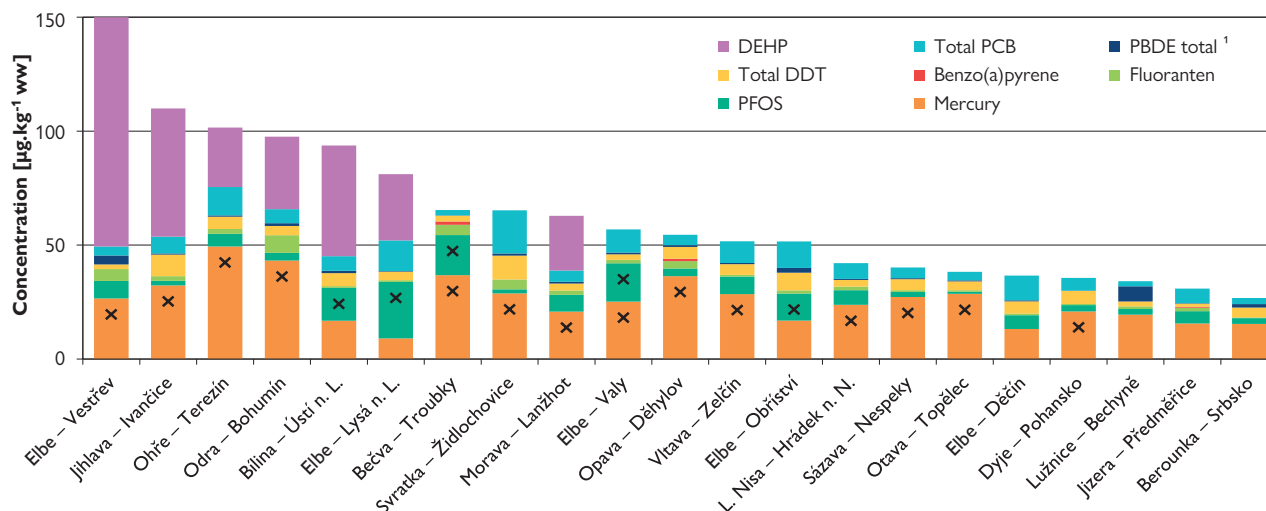
In 2024, the most contaminated profiles were Elbe – Vestřev, Jihlava – Ivančice and Ohře – Terežín. The highest concentration of phthalates ($284 \mu\text{g}\cdot\text{kg}^{-1}$) of all monitored profiles was measured at the Elbe – Vestřev profile, which represents a fourfold increase compared to the maximum value found in the previous year. The Ohře – Terežín profile showed the highest concentration of mercury ($49 \mu\text{g}\cdot\text{kg}^{-1}$). In contrast, the average concentrations of DDT and PCBs in 2024 were lower at the monitored profiles compared to 2023.

For PAHs, the EQS values for fluoranthene ($30 \mu\text{g}\cdot\text{kg}^{-1}$) and benzo(a)pyrene ($5 \mu\text{g}\cdot\text{kg}^{-1}$) were not exceeded at any of the profiles in 2024. For PFOS, there was a decrease in the number of profiles exceeding the EQS values ($9.1 \mu\text{g}\cdot\text{kg}^{-1}$) in the fry matrix from 12 (in 2023) to 5 profiles. The highest PFOS concentration ($24.7 \mu\text{g}\cdot\text{kg}^{-1}$) was measured at the Elbe – Lysá n. L. profile.

The concentration of mercury in fish fry exceeded the EQS values ($20 \mu\text{g}\cdot\text{kg}^{-1}$) at 67% of the monitored profiles, which represents an increase compared to the previous year. In adult fish, the EQS for mercury was exceeded at all monitored profiles, as in previous years.

As in previous years, the EQS value for PBDE ($0.0085 \mu\text{g}\cdot\text{kg}^{-1}$) was exceeded by several orders of magnitude at all profiles. The maximum concentration of PBDE ($6.7 \mu\text{g}\cdot\text{kg}^{-1}$) was detected in the Lužnice – at the Bechyně profile.

Graph 3.1.11
Findings of hazardous organic substances in fish fry in 2024



Source: CHMI

Note: ¹⁾ Exceeds the EQS at all sites.

x Exceeds the EQS.

The first column reaches a value of 334 due to the high concentration of DEHP.

3.2 Groundwater quality

In 2024, 725 objects were monitored in the state groundwater quality monitoring network, including 202 springs, 231 shallow aquifers and 292 deep aquifers. A total of 362 quality indicators were monitored. Indicators from four main groups (basic indicators, metals, polar pesticides and pharmaceuticals) were monitored at most objects at least once a year. Other groups of indicators were analysed at a selected smaller number of objects as part of less extensive operational monitoring designed with respect to the latest extended situational monitoring carried out in spring 2022. With the expansion of the network of monitored groundwater objects, which concerns especially springs and deep aquifers, a slightly higher number of sites with above-limit values of monitored substances was found compared to the previous years 2022 and 2021, when groundwater quality monitoring was last carried out before the enforced break for operational reasons in 2023.

Monitoring of springs observes the natural drainage of groundwaters, particularly in the crystalline area and the local drainage of Cretaceous structures. Shallow aquifers are concentrated mainly in the alluvial deposits of the Elbe,

Orlice, Jizera, Ohře, Thaya, Morava, Bečva, Oder and Opava Rivers – these groundwater bodies are very vulnerable, with higher hydraulic conductivity and rapid pollution progression. Deep aquifers are concentrated mainly in the areas of the Bohemian Cretaceous Basin, the České Budějovice Basin and the Třeboň Basin and the quality of their groundwater with deep circulation is monitored.

The assessment of groundwater quality results for 2024 was carried out by comparing the measured values of groundwater quality indicators with the limit values for groundwater according to Decree No. 5/2011 Coll. and Directive 2006/118/EC of the European Parliament and of the Council – Annex I. The output of the assessment also included a map with indicators of two groups of pollutants monitored in groundwaters, namely nitrogenous substances and pesticides. The assessment included pollutants that occurred in groundwaters in at least two monitored locations in 2024 in concentrations exceeding the above-mentioned criteria.

The groundwater pollution indicators that most frequently exceed the limit values are pesticides (metabolites of herbicides and fungicides used mainly for the treatment of crops such as rapeseed, maize, beet and cereals), inorganic substances (ammonium ions, nitrates and phosphates), organic substances in total (COD_{Mn} and DOC), metals (barium, manganese,

Table 3.2.1
Number of sites exceeding groundwater limits in at least one indicator in 2024, comparison with 2022 and 2021

Objects	Number of objects	Number of objects exceeding groundwater limits	% of objects exceeding groundwater limits		
			2024	2022	2021
Shallow aquifers	231	221	95.7	93.8	96
Deep aquifers and springs	494	382	77.3	73.2	75
All objects	725	603	83.2	79.8	81.9

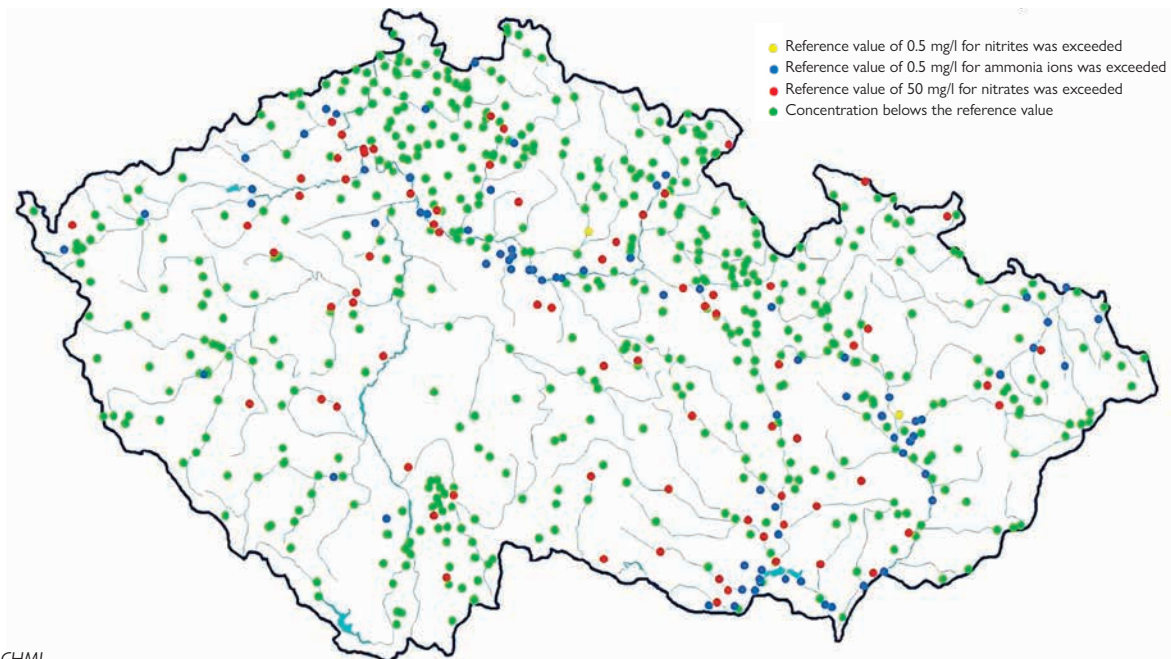
Source: CHMI

arsenic, cobalt and cadmium), VOCs (toluene and 1,2-cis-dichloroethene) and PAHs (phenanthrene and chrysene).

After a one-year break in 2023, the results of the groundwater quality assessment for 2024 are similar to those for 2022, given the representation of the most frequently occurring monitored substances in individual groups. As operational monitoring was carried out in 2024, the values of percentage exceedances of

the limits for substances from some groups may be affected by the fact that these indicators were only monitored at a limited number of selected groundwater objects. However, for most of the samples exceeding the limits, the limit concentrations were also exceeded for substances that were analysed at all monitored sites, and therefore the conclusion implied in Table 3.2.1 that there was an increase in the number of sites exceeding the groundwater limits in 2024 can be considered conclusive.

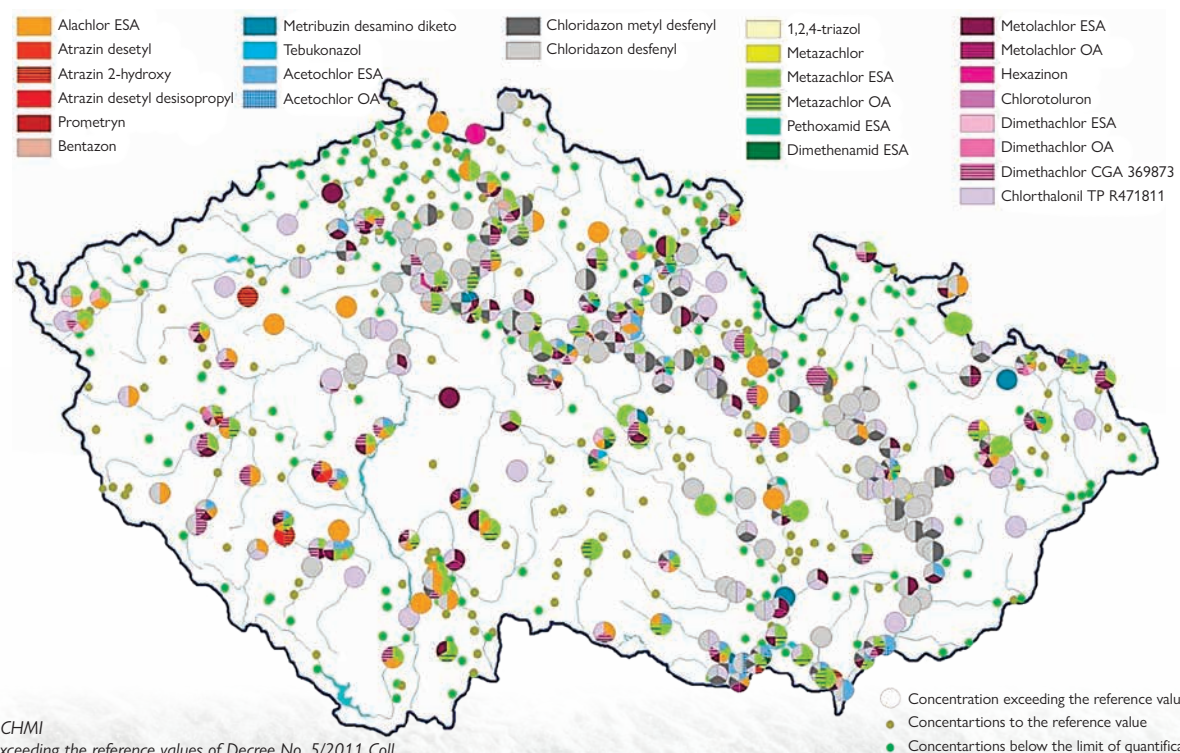
Figure 3.2.1
Concentrations of nitrogenous substances in groundwater in 2024



Source: CHMI

Note: Exceeding the reference values of Decree No. 5/2011 Coll.

Figure 3.2.2
Concentration of pesticides in groundwater in 2024 (substances with more frequent exceedances)



Source: CHMI

Note: Exceeding the reference values of Decree No. 5/2011 Coll.



3rd place, L. Kubík, Formation of a glacier

4. WATER MANAGEMENT

Monitoring of data on groundwater and surface water abstractions and discharges is regulated by Decree No. 431/2001 Coll., on the content of the water balance, the method of its compilation and data for the water balance. In 2024, there was a slight year-on-year increase in groundwater abstraction, while surface water abstraction and discharges decreased.

On the basis of Section 10 of Decree No. 431/2001 Coll., the scope of reported data changed after 2001 – water abstractions, and wastewater and mine water discharges exceeding 6,000 m³ per year or 500 m³ per month are recorded. The basis for the data collection are reports of individual river basin administrators, submitted to the Czech Statistical Office (CSO) by 31 March of the following year. The data for 2024 was broken down according to the CZ-NACE categorisation in accordance with Eurostat methodology. The comparison of the data for 2023 and 2024 was based mainly on the final official CSO data (csu.gov.cz). Table 4.1 provides more detailed information on the classification of individual surface water and groundwater abstractions, and wastewater and mine water discharges to surface waters according to the classification CZ-NACE. This classification is valid for Tables 4.1.1, 4.2.1 and 4.3.1 below.

Table 4.1
Breakdown of users into groups according to CZ-NACE classification

Water supply systems for public use	CZ-NACE 36
Sewerage systems for public use (excluding transfers)	CZ-NACE 37
Agriculture (including irrigation), forestry and fishing	CZ-NACE 01 – 03
Energy (production and distribution of electricity, gas and heat)	CZ-NACE 35
Industry (including mining of mineral raw materials – excluding energy)	CZ-NACE 05 – 33
Other (including construction)	CZ-NACE 38 – 96
Total (excluding ponds and transfers)	CZ-NACE 01 – 96

Source: CSO

4.1 Surface water abstractions

Longer-term monitoring shows that the amount of surface water abstracted has decreased annually since 2016. While 2022 was an exception, in 2024 the trend continued, with the amount of surface water abstracted decreasing from 966.8 million m³ in 2023 to 888.9 million m³.

A decrease in surface water abstractions compared to 2023 mainly concerned the energy sector, where there was a year-on-year drop by 15.9% (71.5 million m³), industry (by 17.7%, 35.6 million m³) and agriculture (by 3.2%, 0.9 million m³). This was caused by a significant decrease in water demand for the Mělník and Opatovice power plants operated by the Elbe River Board, s.e., and for the Hodonín power plant as a result of a change from flow-through cooling to circulation cooling operated by the Morava River Board, s.e. In the industry category, there was a decrease of 6.4% (by 10.7 million m³). In contrast, in the agriculture category, abstractions rose by 12.3% (3.2 million m³), abstractions for public water supply rose slightly by 0.3% (by 1 million m³), and other abstractions, including construction, remained at almost the same level as in 2023.

In 2024, a decrease in registered surface water abstraction was recorded in most of the areas administered by the River Boards, s.e., most significantly in the Elbe River Board (by 20.1%), followed by the Oder River Board (by 7.4%), Ohře River Board (by 4.5%) and Vltava River Board (by 2.2%). By contrast, there was an 8.9% increase in abstractions in the Morava River Board.

After 1990, as a result of the adjustment of price relations for water services and changes in the structure of industrial and agricultural production, there was a significant decline in the degree of water resource exploitation in all areas of water use. This trend can be seen in Figure 4.1.1.

Surface water abstractions in 2024 for public water supply decreased from 744.9 million m³ in 1990 to 310.1 million m³, which was only 41.6% of the 1990 amount. There was also a decrease in abstractions for agriculture from 97.2 million m³ to 30 million m³ (i.e. to 30.8%). A significant decrease was in

Table 4.1.1
Surface water abstractions by customers over 6,000 m³/year or 500 m³/month in million m³ in 2024

River Board	Water supply for public use		Agriculture including irrigation		Energy		Industry, including mining		Other, including construction and public sewerage		Total	
	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number
Elbe	33.338	28	9.476	73	180.887	11	72.758	61	2.278	93	298.737	266
Vltava	142.598	40	1.757	21	48.858	11	14.102	54	9.120	84	216.435	210
Ohře	39.636	18	1.636	41	30.678	8	27.377	41	0.755	27	100.082	135
Oder	59.562	22	0.018	2	5.204	14	31.511	31	0.498	27	96.793	96
Morava	35.002	35	17.151	46	113.977	10	9.392	50	1.301	63	176.823	204
Total	310.136	143	30.038	183	379.604	54	155.140	237	13.952	294	888.870	911

Source: River Boards

the industry sector, from 830.1 million m³ to 155.2 million m³ (i.e. to 18.7% of the 1990 amount). The energy sector also saw a decrease compared to 1990, with consumption falling from 1,060.9 million m³ to 379.6 million m³, i.e. to 35.8%.

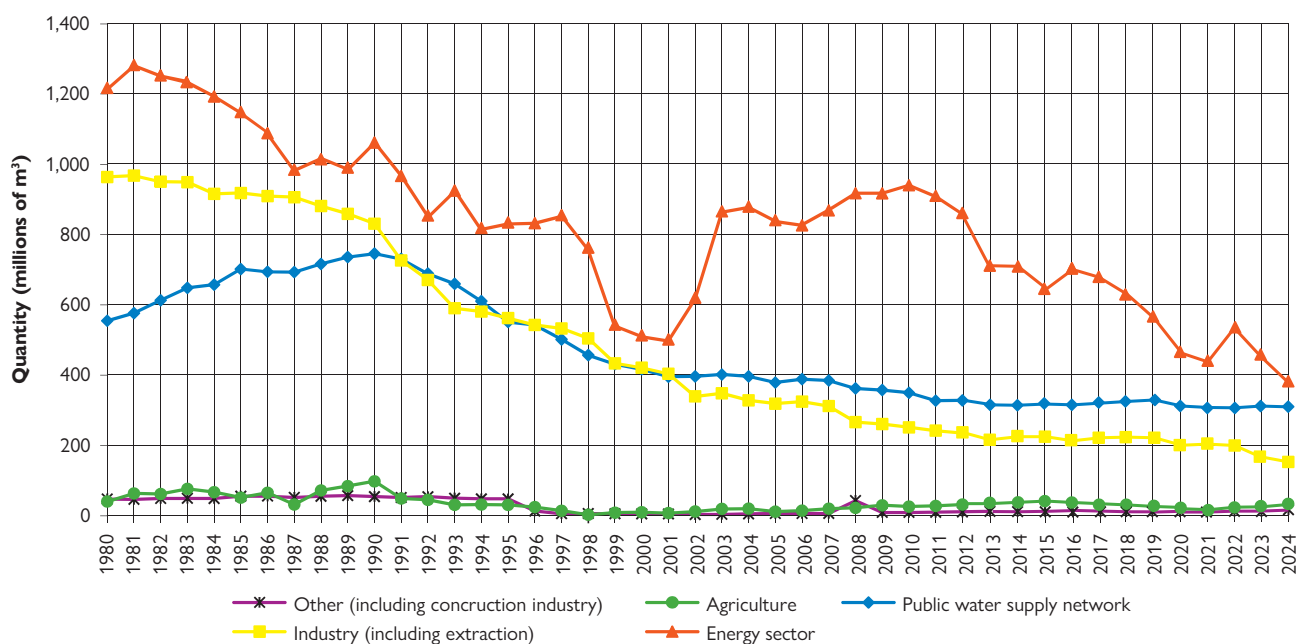
An annual assessment of the impact on water resources is regularly carried out as part of the water balance drawn up in accordance with Decree No 431/2001 Coll. Its principle is a comprehensive assessment of the requirements for maintaining the minimum balance flow with respect to the

flows in the check profiles, which reflect all water management activities.

From a longer-term perspective, there has been a considerable decline in the amount of surface water abstracted after 1990, caused by economic and environmental factors, modernisation of production, which reduces water demand, and a reduction in losses in the water supply network. In 2024, the lowest surface water abstraction in history was recorded, amounting to 888.9 million m³.

Graph 4.1.1

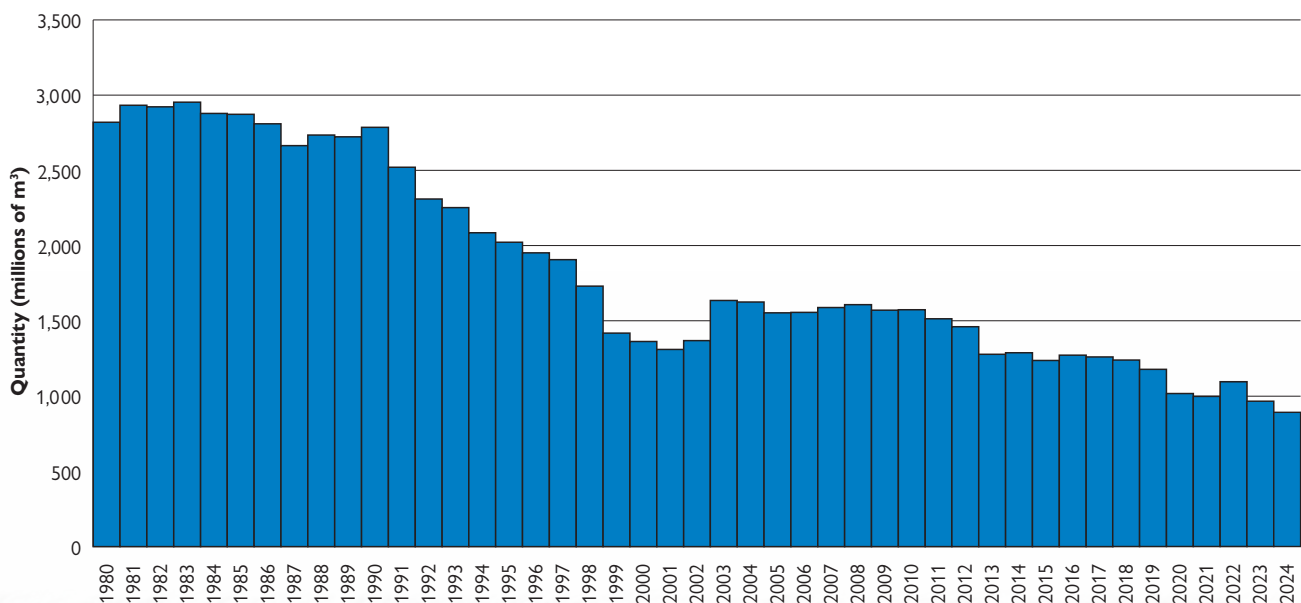
Surface water abstractions in the Czech Republic by sector in 1980–2024



Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards

Graph 4.1.2

Surface water abstractions by users over 6,000 m³/year or 500 m³/month for snowmaking in 2024



Source: MoA using data provided by the T. G. Masaryk Water Research Institute, p.r.i. and River Boards

Table 4.1.2 shows reported surface water abstractions for technical snowmaking where more than 6,000 m³/year or 500 m³/month (in thousand m³) were abstracted, broken down for each River Board.

Table 4.1.2

Surface water abstractions by users over 6,000 m³/year or 500 m³/month for snowmaking in 2024

River Board	Snowmaking ^{*)}	
	Quantity in thousand m ³	Number
Elbe	2,000	75
Vltava	488.5	15
Ohře	497.7	15
Oder	361.7	16
Morava	969.0	37
Total	4,317.4	158

Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards
 Note: ^{*)} Determined according to the internal VHB code "410 – technical snowmaking" used by the River Boards or by the name of the abstraction.

4.2 Groundwater abstractions

Groundwater abstractions increased to 365 million m³ in 2024. In 2023, groundwater abstractions amounted to 357.4 million m³.

A year-on-year increase in groundwater abstractions in 2024 was in most of the monitored categories, i.e.: energy by 2.2%, industry by 4.8%, public water supply by 2%, agriculture by 2.4%; other abstractions including construction, remained at the same level as in 2023.

The highest share of total groundwater abstractions was in the Morava River Basin (33.8%), the lowest in the Oder River Basin (4.4%).



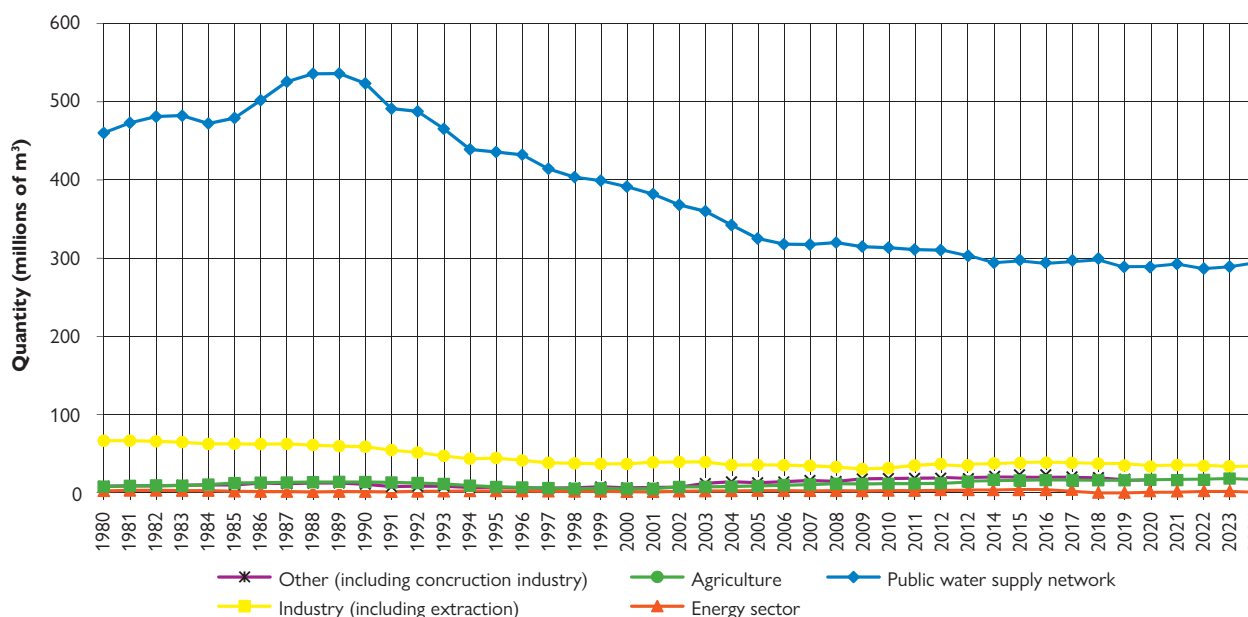
The Labe Stream (author: Hubalová Petra)

Table 4.2.1

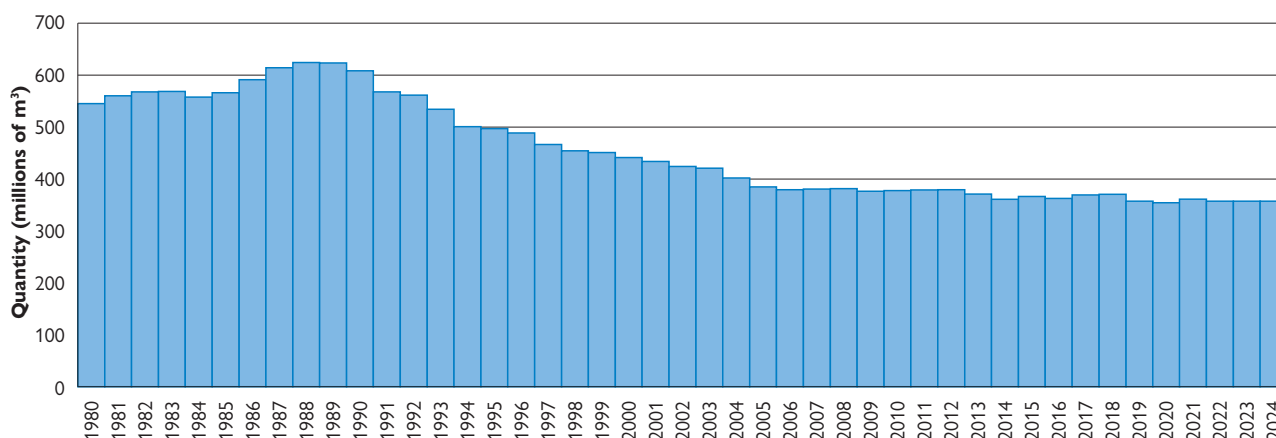
Groundwater abstractions (million m³) by users over 6,000 m³/year or 500 m³/month in 2024

River Board	Water supply for public use		Agriculture, including irrigation		Energy		Industry, including mining		Other, including construction and public sewerage		Total	
	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number
Elbe	95.394	717	3.622	235	0.527	11	7.650	131	2.345	116	109.538	1,210
Vltava	33.466	594	6.381	404	0.285	11	9.647	124	11.112	502	60.891	1,635
Ohře	42.950	315	0.736	30	0.665	6	8.900	112	1.888	37	55.139	500
Oder	14.221	155	0.540	33	0	0	0.987	26	0.266	26	16.014	240
Morava	107.289	703	6.549	364	0.082	8	7.196	161	2.272	100	123.388	1,336
Total	293.320	2,484	17.828	1,066	1.559	36	34.380	554	17.883	781	364.970	4,921

Source: River Boards

Graph 4.2.1**Groundwater abstraction in the Czech Republic by sectors in 1980–2024**

Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards

Graph 4.2.2**Groundwater abstraction in the Czech Republic in 1980–2024**

Source: MoA using data provided by the T. G. Masaryk Water Research Institute, p.r.i. and River Boards

From the perspective of year-on-year change, an increase was recorded in the Elbe River Basin by 3.8%, Vltava River Basin by 3% and Morava River Basin by 1.9%. Other River Basins saw a year-on-year decrease in abstractions, with a 1.8% decrease in the Oder River Basin and a 0.4% decrease in the Ohře River Basin.

A comparison of the data from the long perspective shows that the highest abstractions occurred in 1988 and 1989. Since then, there has been a gradual decline. Since 2006, a relative stagnation in abstractions has been observed. Groundwater abstractions in 2024 were 365 million m³, which represents only a slight year-on-year increase.

Table 4.2.2 shows the reported groundwater abstractions for technical snowmaking where more than 6,000 m³/year or 500 m³/month (in thousand m³) were abstracted for River Boards.

Table 4.2.2**Groundwater abstractions by users over 6,000 m³/year or 500 m³/month for snowmaking in 2024**

River Board	Snowmaking ^{*)}	
	Quantity in thousand m ³	Number
Elbe	10	2
Vltava	6.8	2
Morava	3.3	1
Total	20.4	5

Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards
 Note: ^{*)} Determined according to the internal VHB code "410 – technical snowmaking" used by River Boards or by the name of the abstraction point.

4.3 Wastewater discharge

In 2024, 1,464.4 million m³ of wastewaters and mine waters were discharged into watercourses, which is a year-on-year decrease of about 0.5%.

As in previous years, water discharged from pond systems was not included in the total amount (due to consolidation of the data administered by different River Boards).

An increase in volumes discharged in 2024 occurred in the following categories: other, including construction (by 9.4%), industry (by 5.4%) and public sewerage (by 4.9%). A decrease in the amount of wastewater discharged compared to 2023 was recorded in agriculture (by 20.8%) and energy (by 18.5%).

In terms of the volumes discharged, a year-on-year increase was recorded by the Morava River Board (by 10.4%), Ohře

River Board (by 9.6%) and Vltava River Board (by 3.1%), while a decrease was recorded by the Elbe River Board (by 13.1%) and the Oder River Board (by 1.1%).

The long-term trend in discharges of wastewaters and mine waters shows a slight decrease in the discharges recorded. In recent years, this has been mainly due to a reduction in surface water abstractions for the energy sector, as well as the discharge reporting system, when previously free discharges directly to surface waters without connection to a WWTP prevailed and discharges were mostly estimated from invoiced water consumption. Extending of the sewerage system, construction of new WWTPs with accurate discharge measurements and adoption of the new Water Act in 2001 led to more accurate reporting on discharges.

2024 saw the lowest volume of wastewater and mine water discharged ever, totalling to 1,464.4 million m³.

Table 4.3.1

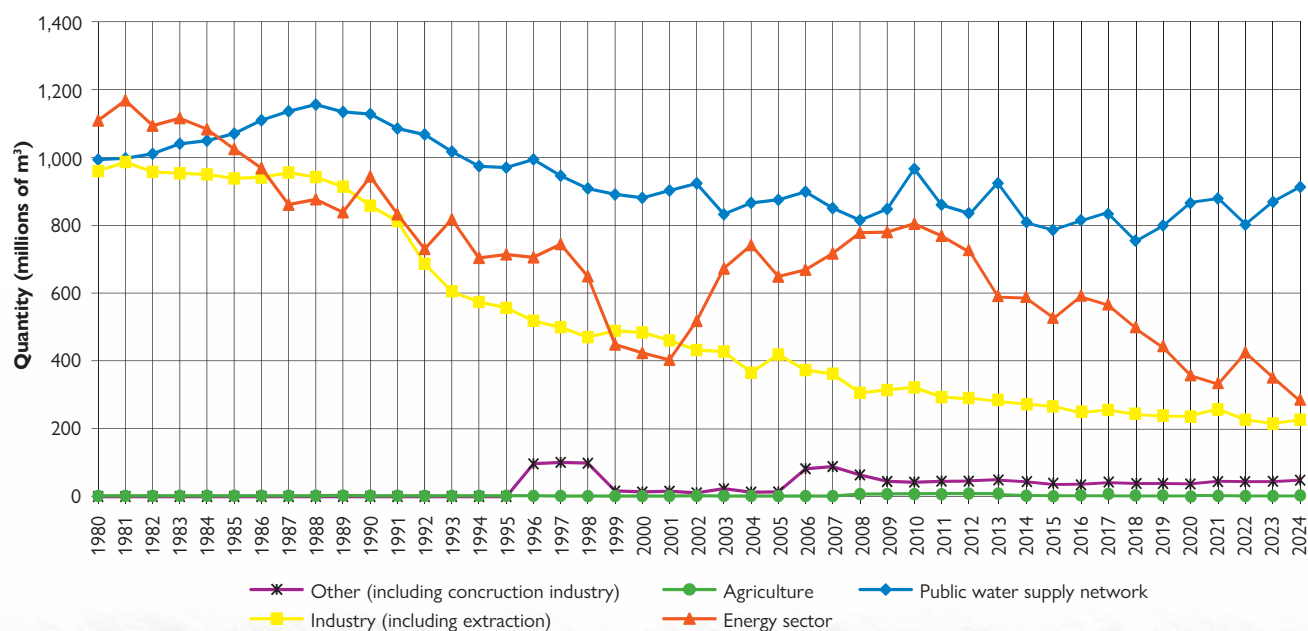
Wastewater and mine water discharges to surface waters (million m³) for sources over 6,000 m³/year or 500 m³/month in 2024

River Board	Sewerage for public use		Agriculture, including irrigation		Energy		Industry, including mining		Other, including construction and public water supply		Total	
	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number	Quantity	Number
Elbe	193.236	806	0.021	2	165.731	21	68.325	161	3.025	63	430.338	1,053
Vltava	293.797	813	0.576	6	16.918	18	20.465	135	32.533	787	364.289	1,759
Ohře	83.860	295	0.844	2	12.881	22	71.923	128	4.372	35	173.880	482
Oder	96.412	314	0.021	2	7.471	16	38.972	82	4.691	64	147.567	478
Morava	242.362	1,199	0.258	6	80.169	17	22.340	141	3.218	97	348.347	1,460
Total	909.667	3,427	1.720	18	283.170	94	222.025	647	47.839	1,046	1,464.421	5,232

Source: River Boards

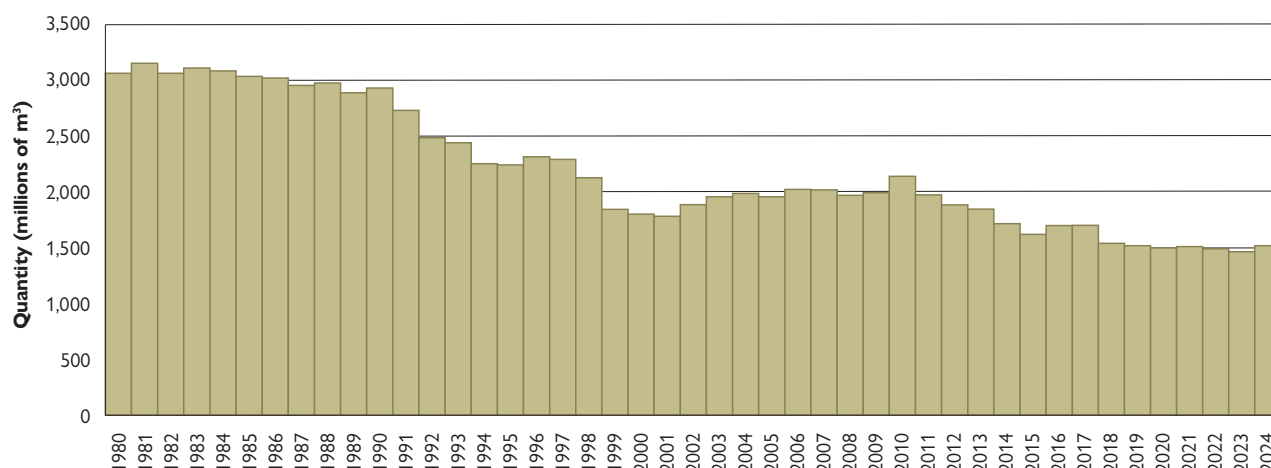
Graph 4.3.1

Wastewater discharges in the Czech Republic in 1980–2024



Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards

Graph 4.3.2
Wastewater discharges in the Czech Republic in 1980–2024



Source: MoA using data provided by the T. G. Masaryk Water Research Institute, p.r.i. and River Boards

4.4 Overall comparison of water management

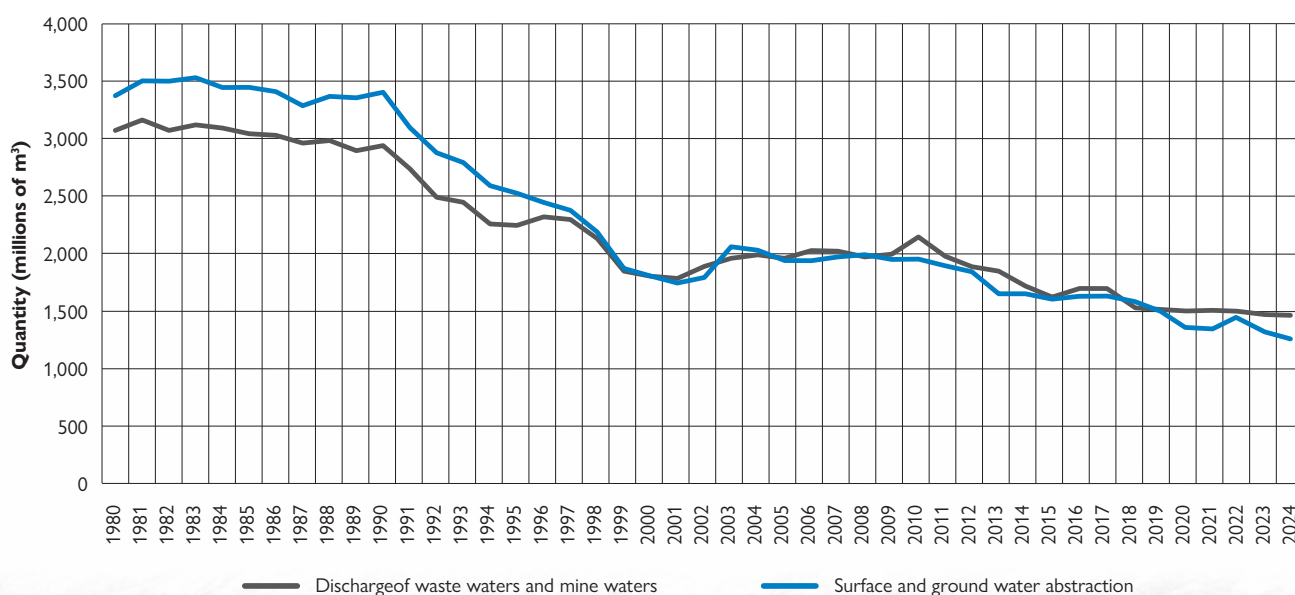
In 1980–2024, there was a very clear decrease in both abstractions and discharges after 1990. After 2001, abstractions and discharges increased slightly, while after 2010 there was a further decrease in abstractions and discharges. The amount of surface water abstracted in 2024 decreased compared to the previous year to a record low of 888.9 million m³. By contrast, groundwater abstractions increased from 357.4 million m³ to 365 million m³. The total volume of water discharged in 2024 decreased by approx. 7.3 million m³ compared to 2023. Nevertheless, the volume of discharged water again exceeded the total volume of water abstracted.

The significant difference between abstracted and discharged volumes before 1995 can be attributed to the different way of reporting discharges, higher leakages from water supply networks and inconsistent sewerage networks in many smaller towns (agglomerations above 2,000 equivalent people [EP] were connected to a sewerage system only after EU accession, i.e. after 2004).

In dry years, the volumes of water abstracted and discharged tend to be similar, but in more watery years, discharge prevails over abstraction, which is given by the fact that part of rainwater enters the sewerage system, beyond the measured consumption from the water supply network.

As 2024 was an above-average year in terms of precipitations, the volume of water discharged was again slightly higher than the volume of water abstracted. Discharges amounted

Graph 4.4.1
Water abstractions and discharges in the Czech Republic in 1980–2024

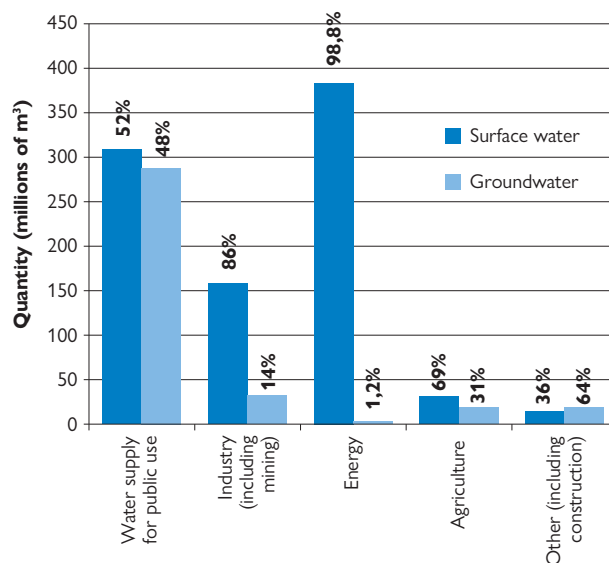


Source: MoA using data provided by the T. G. Masaryk Water Research Institute, p.r.i. and River Boards



The Les Království Reservoir (author: Ondráček Max)

Graph 4.4.2
Comparison of surface and groundwater abstractions by sectors in 2024



Source: MoA using data provided by the T. G. Masaryk Water Research Institute, p.r.i. and River Boards

to 1.46 billion m³, while abstractions of surface waters and groundwaters were 1.25 billion m³.

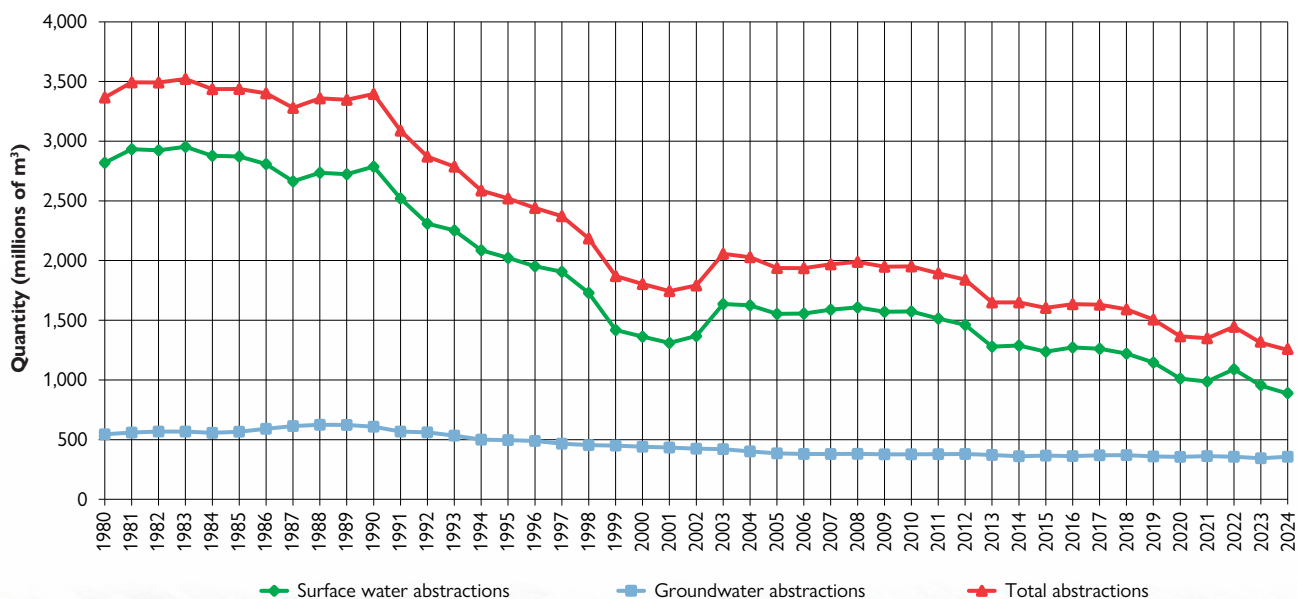
When comparing surface water and groundwater abstractions by sectors, it can be noticed that abstractions for the water supply sector are almost perfectly balanced, while most other sectors use mainly surface water.

In 2024, as in previous years, more water was abstracted from surface sources for public water supply. Energy sector

uses almost exclusively surface water, and a similar situation concerns industries. Agriculture covers almost two thirds of its water needs from surface water. Only one sector (others including construction) uses more groundwater than surface water. This is probably given by the price of groundwater, which is significantly lower than that of surface water.

Graph 4.4.3 shows that the majority of abstractions are from surface waters, with surface water abstractions declining more significantly than groundwater abstractions since 1990.

Graph 4.4.3
Water abstractions in the Czech Republic in 1980–2024 (groundwater, surface water, total)



Source: T. G. Masaryk Water Research Institute, p.r.i. using data provided by the River Boards



1st place, E. Hlaváčová, *The Water*

5. SOURCES OF POLLUTION

5.1 Point sources of pollution

Surface water quality is affected primarily by point sources of pollution such as towns and municipalities, industrial plants, farms with intensive agricultural livestock production, brownfield and other contaminated sites. The degree of water protection against pollution is most often assessed based on the development of produced and discharged pollution.

Produced pollution refers to the amount of pollutants contained in produced (untreated) wastewaters. In line with EU requirements, the Czech Republic has paid increased attention in recent years to data collection and analysis of the situation concerning pollution. As part of the so-called water balance, a larger set of reported data is collected from a larger number of entities in accordance with requirements of Decree No. 431/2001 Coll., on the content of the water balance, the method of its compilation and the data for the water balance.

In 2024, there was an improvement in two indicators of pollution produced compared to the previous year. Specifically, the values of N_{inorg} (inorganic nitrogen) decreased by 0.3% and BOD_5 (biochemical oxygen demand) by 0.1%.

On the other hand, there was an increase in the following indicators: NM (non-dissolved matters dried at 105°C) by 6.3%, DIS (dissolved inorganic salts) by 2.4%, P_{total} (total phosphorus) by 1.9% and COD_{Cr} (chemical oxygen demand) by 0.6%.

In 2024, there was an increase in discharged pollution, i.e. pollution contained in wastewater discharged into surface waters, for all monitored indicators: BOD_5 (by 31.3%), COD_{Cr} (by 12.7%), NM (by 9.2%), P_{total} (by 3.9%), N_{inorg} (by 3.3%), DIS (by 2.1%). The development of discharged and charged pollution for individual indicators since 1990 is shown in Graph 5.1.1.

Between 1990 and 2024, there was a drop in discharged pollution of BOD_5 by 95.9%, the production of NM decreased by 95.1% and COD_{Cr} by 90.4%. At the same time, discharges of hazardous and particularly hazardous pollutants were also reduced. A significant decrease in macronutrients (nitrogen, phosphorus) thanks to the targeted use of biological nitrogen



Wier on the Jizera Stream near Turnov (author: Stádníková Monika)

removal and biological or chemical phosphorus removal in wastewater treatment technologies at new and upgraded WWTPs.

Contaminated sites and brownfields are also significant sources of contamination. These sites are most often sources of pollution from petroleum hydrocarbons, BTEX, PAHs, PCBs and chlorinated ethylenes. They are also a significant source of water contamination from pesticides, cyanides and heavy metals, especially Cr^{6+} . New types of contaminants from the category of per- and poly-fluorinated substances (PFAS/PFOA) have also recently been detected. The exact proportion of pollution from contaminated sites cannot be quantified at this time, as not all sites in the Czech Republic (10,195) are monitored in detail. The most significant sites affecting the condition of surface and groundwater and water resources include CHC contamination near Olšany u Prostějova, PCB contamination from the Bochov packaging plant, and PAH and BTEX contamination in the OKK and Dolní Vítkovice coking plant areas.

Table 5.1.1 shows that monitored DIS values in discharged pollution in the Vltava River Basin and the Oder River Basin are higher than the produced pollution. Such a deviation in the resulting value of discharged pollution may be due to salt dosing used when reducing phosphorous chemically or when adding defoaming salts. Furthermore, the inflow and outflow to/from WWTPs of the indicator is not monitored with the same frequency and/or not in the same type of samples, and/or the data about produced pollution might be incomplete.

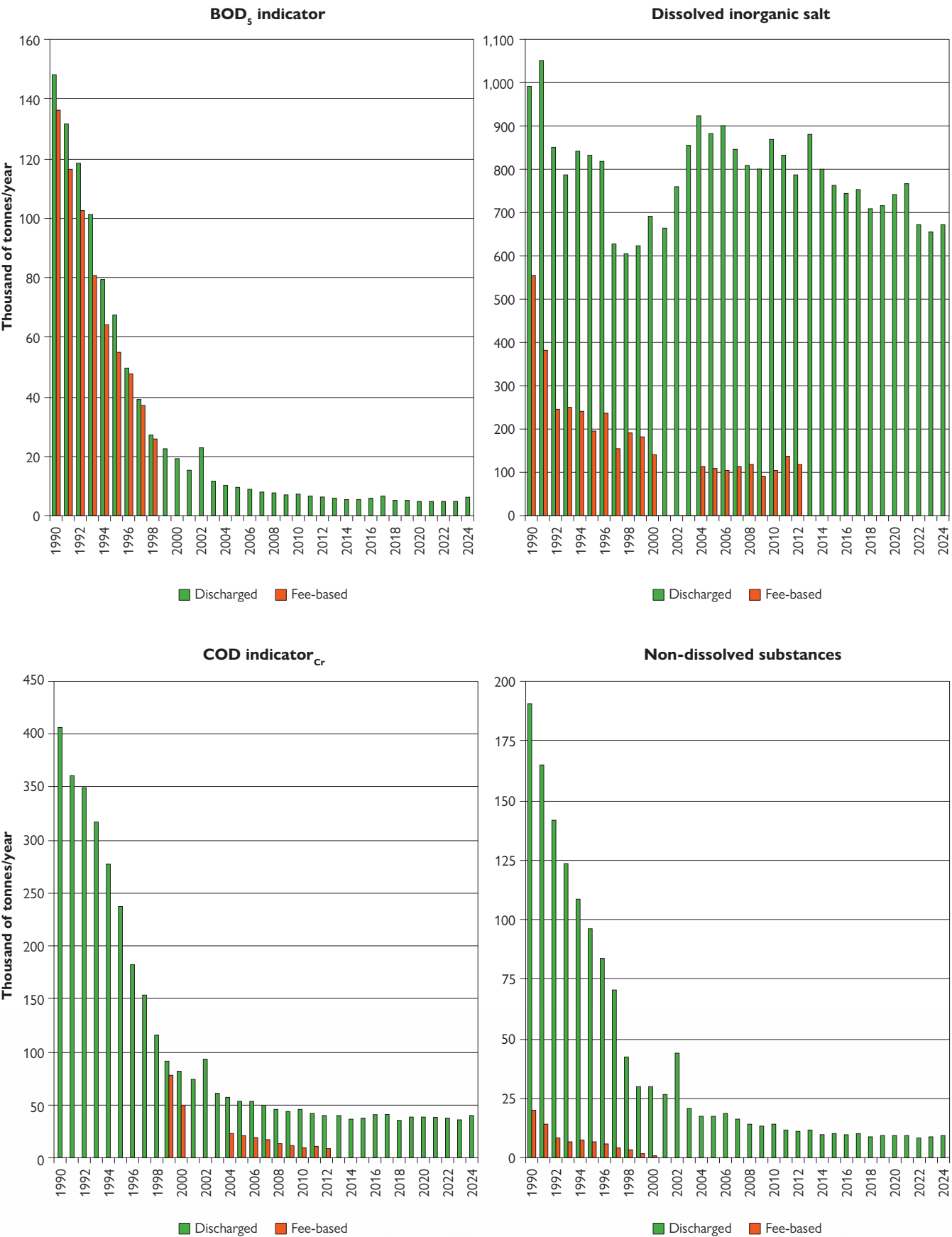
Table 5.1.1
Pollution produced and discharged in 2024

S. p. Povodí	Pollution produced in t/year						Pollution discharged in t/year					
	BOD_5	COD_{Cr}	NM	DIS	N_{inorg}	P_{total}	BOD_5	COD_{Cr}	NM	DIS	N_{inorg}	P_{total}
Elbe River *)	51	121,098	67,321	197,771	7,953	1,319	999	10,208	2,311	193,211	2,131	243
Vltava	90,458	211,448	96,727	116,056	10,061	2,407	1,367	9,969	2,243	120,864	2,793	271
Ohře *)	18,365	36,720	17,533	69,795	2,296	750	348	3,071	1,279	69,199	1,276	250
Oder *)	30,954	67,437	25,488	125,179	3,926	638	2,312	7,940	1,803	139,385	1,276	16
Morava *)	65,237	158,082	76,189	159,083	8,544	1,818	1,116	7,988	1,623	144,957	2,349	228

Source: T. G. Masaryk Water Research Institute, p.r.i., using data provided by the CSO and River Boards

Pozn: *) For the reported amount of pollution produced, values were calculated based on the values from the discharged pollution due to non-completion of the produced pollution by some of the notifiers.

Graph 5.1.1
Pollution discharges and charged pollution in 1990–2024



Source: T. G. Masaryk Water Research Institute, p.r.i., using data provided by the CSO and River Boards



Emergency drill at the Hracholusky reservoir, deploying a cofferdam in flowing water (source: Vltava River Board, s.e.)

5.2 Area sources of pollution

Surface water and groundwater quality is also significantly affected by area sources of pollution, resulting mainly from agricultural farming, atmospheric deposition and erosive runoff from the landscape. As pollution from point sources keeps decreasing, the relative importance of area pollution increases. This type of pollution typically concerns nitrates, pesticides and acidification, in a lesser extent phosphorus.

Key measures to reduce diffuse pollution of water from agricultural sources include Government Regulation No. 262/2012 Coll., on the designation of vulnerable areas and the action programme, as amended, in particular Government Regulation No. 277/2020 Coll.

This legal regulation defines so-called vulnerable areas, for which an action programme is subsequently announced containing a set of measures aimed at reducing the input of nitrates from agricultural activities into the aquatic environment.

Agricultural land erosion and of hydroamelioration aspects

The Czech Republic, like other countries, is increasingly exposed to hydrological extremes due to climate change. It can be assumed that the areas affected by such extremes will expand significantly. One of the key factors that can mitigate the effects of climate change is suitable farming of agricultural land.

The occurrence of water erosion in the Czech Republic is significantly influenced by a number of factors, in particular the largest size of soil blocks of the EU countries, the lack of organic matter in the soil, a very low level of landscape elements with soil (anti-erosion) protection and inadequate

relations of farming entities to cultivated agricultural land. Water erosion results in soil loss and topsoil depletion, siltation of watercourse and reservoir beds. During prolonged droughts, sediments in watercourses may be subject to accelerated mineralization, with water quality deteriorating after re-flooding. Water erosion thus causes deterioration in water quality, contributing to eutrophication and impairment of water use. Together with some large-scale single-function drainage systems, water erosion reduces water retention and accumulation in the landscape.

The Research Institute for Soil and Water Conservation, p.r.i., has monitored agricultural soil erosion since 2012 (<https://me.vumop.cz>), its main objective is to ensure relevant evidence on the extent of the problem of agricultural soil erosion, the causes of erosion, correct targeting of existing policies aimed at eliminating erosion and the effectiveness (or ineffectiveness) of certain anti-erosion measures.

In 2021, Decree No. 240/2021 Coll., on the protection of agricultural land against erosion, which is directly related to the aforementioned system, came into force. As a result, it will be possible to assess the impact of this legislation on water pollution in the years to come.

Damage to water bodies was recorded in 11% of the events monitored in 2024. In 2024, the damage to water bodies caused by erosion events decreased, which may also have been due to the above-average number of erosion events (twice as many as in 2022 and 2023) and thus a relatively lower share of this damage in the total. Whether this is an actual decrease and thus a change in water protection, is to be confirmed in the coming years. The monitoring identified mainly visible damage – sediment accumulation. Erosion sediment runoff carries other substances (pesticides, fertilisers, nutrients, etc.) that can reach water resources through the hydrographic network. The negative impact of erosion events on water quality is therefore multi-layered.

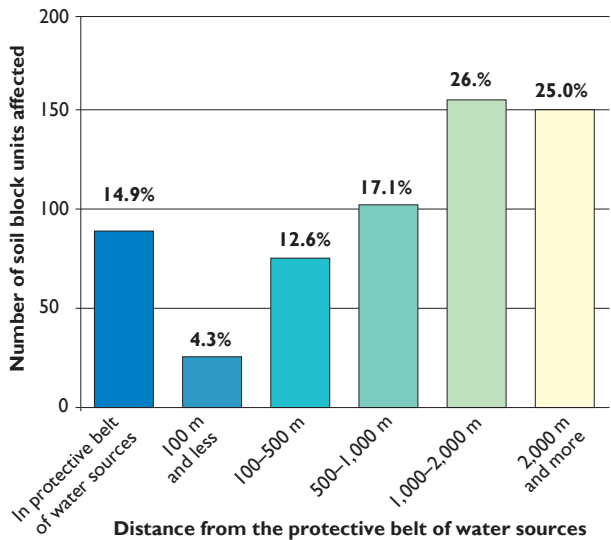
As Graph 5.2.1 shows, in 2024, 31.8% of the soil blocks affected by erosion events were within 500 m from water source protection zones, of which 14.9% of the blocks were located inside the zones. Therefore, there was an increase in the threat to protection zones in 2024. Compared to the previous year, this assessment shows an increase of several percent.

As a result of erosion sediment runoff (according to analyses, about 1,400,000 m³ of sediments from agricultural land) and introduction of other substances (pesticides, nutrients) that enter water resources through the hydrographic network and drainage systems affect adversely the water resource quality. The quality is also negatively affected by the majority of erosion events and by inputs of pollution through drainage systems; the amount of N-NO₃ runoff from arable drained soil in the long-term average is approximately 30 kg/ha¹/year¹.

In order to mitigate the impacts and effects of hydrological extremes in the landscape, it is necessary to adapt farming methods and the use of agricultural landscapes. To design such measures, it is possible to use tools such as those published at <https://geoportal.vumop.cz>, in particular the Moisture Needs Calculator <https://vlaha.vumop.cz>, which can be used to perform moisture balance calculations for specific cropping practices and locations (with a single soil block accuracy), to define enclaves threatened by different degrees of drought, and to determine values of moisture requirements or irrigation quantities.

As part of the Technology Agency of the Czech Republic TK03010098 project, a long-term analysis of the water balance (2011–2020) and water stress intensity of selected crop rotation systems was carried out in the pilot region of the Elbe Lowland near Dašice u Pardubic covering an area of 560 km². For this area with high soil heterogeneity, the analysis demonstrated the possibility of mitigating water stress intensity by excluding maize, sunflowers and sugar beet from the crop rotation and including sorghum. Water

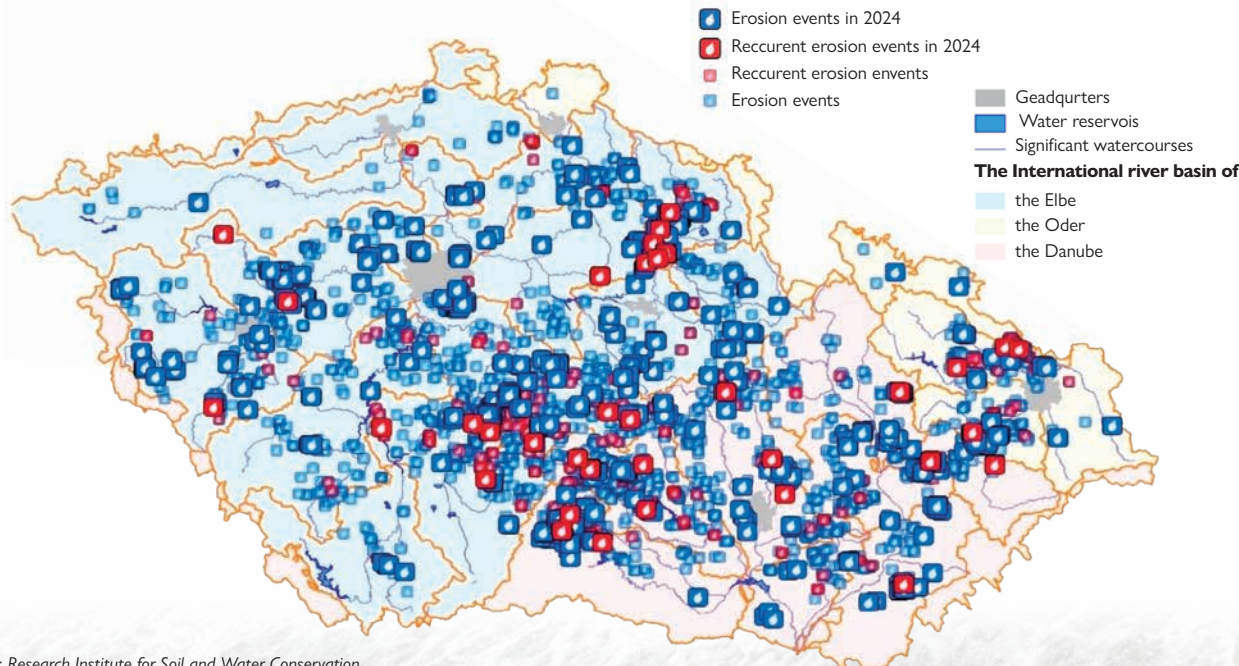
Graph 5.2.1
Recorded erosion events by distance from the water resource protection zone in 2024



Source: Research Institute for Soil and Water Conservation
Note: Number of affected SB = number of soil blocks where erosion was recorded

stress intensity was divided into four categories. Water stress intensity 1–2 (i.e. no negative impact of water stress on crop growth and yield) occurred in 33% of the area under this CRS (mainly on loamy soils). In the crop rotation system, without taking into account crop moisture requirements, water stress intensity 1–2 accounted for only 7–15% of the area, which means that 85–93% of the area was exposed to water stress with a risk of reduced crop yields. These results can help in the implementation of sustainable agricultural systems that include environmental considerations related to water use in agriculture in Central Europe.

Figure 5.2.1
Overview of erosion events in 2024



Source: Research Institute for Soil and Water Conservation

5.3 Accidental pollution

Accidental pollution is another negative factor affecting the quality of surface water and groundwater. In 2024, the Czech Environmental Inspectorate registered 228 cases of releases of hazardous substances, of which 154 releases into surface waters, 2 releases into groundwaters and 2 into both surface and groundwaters in the Czech Republic, and imposed 450 fines in the amount of CZK 24.41 million in the sphere of water management.

In accordance with Act No. 254/2001 Coll., on water, the Czech Environmental Inspectorate (CEI) has maintained a central register of accidents since 2002. In 2024, 228 accidents were recorded in this register that fulfilled the definition of an accident under Section 40 of Act No. 254/2001 Coll. on water.

A new obligation in the event of an accident on water applies as of 1 August 2024. Anyone who causes or discovers an accident concerning water is obliged to report it immediately to the Czech Fire and Rescue Service by calling 150. The Czech Fire and Rescue Service will then contact the Czech Environmental Inspectorate. The reporting obligation also applies to the death of fish and organisms dependent on the aquatic environment if this death was caused by an accident in water.

In 2024, 56 accidents caused by traffic were recorded, accounting for 25% of the total number of cases. Fish mortality was a concomitant phenomenon in 29 cases, accounting for 13% of the total. Both indicators saw a year-on-year drop.

Groundwater pollution occurred in 2 cases, and in 2 other cases both groundwater and surface water were polluted simultaneously. The originator of the accident was known in 145 cases.

In 2024, the CEI was notified of other accidents, which were not included in the central register due to their insignificant extent, with no impact on water quality.

Of the 228 cases recorded, the most numerous group of pollutants was oil substances – 125 cases recorded, accounting for 54.8%, followed by wastewaters – 10.1% and chemicals (excluding heavy metals) – 5.7%. The nature of the pollutants was not detected in 27 accidents (11.8%).

In terms of the classification by the sector of the accident originator (CZ-NACE), the most frequent accidents were in section H – transportation and storage (12.7%), followed by accidents in section A – agriculture, forestry and fishery (11.4%), section C – manufacturing (6.6%) and section E – water supply; waste and remediation activities (5.3%). The field of the activity of the accident originator could not be classified in 51.8% of the cases.

In 2024, the CEI imposed a total of 450 fines for breaches of legal regulations concerning water management, of which 411 fines became effective in 2024. The total amount of fines from decisions that became final in 2024, regardless of the date of the decision, including decisions of appeal bodies, amounted to CZK 24.4 million.



The Trnávka Reservoir (source: Vltava River Borad, s.e.)



3rd place, Š. Kofroň, We're still doing well

6. WATERCOURSE MANAGEMENT

6.1 Professional watercourse management

The inland position at the heart of Central Europe predetermines the Czech Republic's relationship to the European river network. The basic hydrographic network consists of almost 100,000 km of watercourses with natural and modified channels. Watercourses of the Czech Republic are divided into major and minor watercourses according to the Water Act. Their professional management is carried out in accordance with the provisions of Section 47 of the Water Act.

Important watercourses administrators under the MoA are River Boards: the Elbe River Board, s.e., Morava River Board, s.e., Oder River Board, s.e., Vltava River Board, s.e. and Forests of the Czech Republic, s.e. They manage 94.4% of the total length of watercourses in the Czech Republic. The remaining 5.6% of the length of watercourses is managed by other administrators (the Ministry of Defence, national park administrations, municipalities, other natural and legal entities).

Table 6.1.1
Professional management of watercourses

Category	Administrator	Length of watercourses (km)	
		2023	2024
Significant watercourses	Elbe River Board	3,640	3,640
	Vltava River Board	5,550	5,551
	Ohře River Board	2,377	2,377
	Oder River Board	1,111	1,111
	Morava River Board	3,762	3,762
	River Boards in total	16,440	16,441
Minor watercourses	Forests of the Czech Republic	38,449	38,512
	River Boards in total	38,715	38,682
	Other administrators ¹⁾	5,593	5
	Total	82,757	82,766
Watercourses total		99,156	99,197

Source: MoA

Note: Digital lengths of streams from the Central Watercourse Register are given.

¹⁾ Including administrations of national parks, the Ministry of Defence (military area offices), municipalities and other natural and legal persons.

All significant watercourses are listed in Annex No. 1 to Decree No. 178/2012 Coll. that defines a list of significant watercourses and methods for conducting activities linked with watercourse management. It is an overview of 819 watercourses including their identifiers (watercourse ID); the overview also includes minor watercourses that are so-called 'transboundary' watercourses. Significant watercourses with total length of 16,390 km are administered by the respective River Boards under the provision of Section 4 of Act No. 305/2000 Coll., on river basins. The backbone watercourses are the Elbe River (369 km), the Vltava River (424 km) and the Ohře River (254 km) in Bohemia, the Morava River (269 km) and the Thaya River (194 km) in the south of Moravia and the Oder River (135 km) and the Opava River (131 km) in the north of Moravia and Silesia.

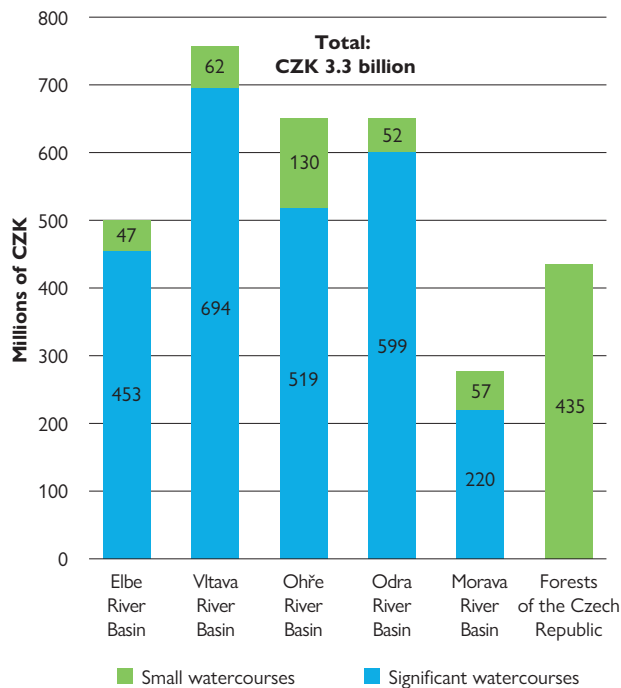
All the other watercourses are classified as minor watercourses pursuant to Section 43 of the Water Act; they are administered based on the respective appointment by the MoA (provision of Section 48(2) of the Water Act). If no administrator of a minor watercourse is appointed, such a watercourse is administered in accordance with the provision of Section 48(4) of the Water Act, by the administrator of the recipient into which such a watercourse flows. It is administered by such an authority until watercourse administrator is appointed in accordance with Section 48(2) of the Water Act. Minor watercourses may be administered by municipalities through which minor watercourses flow, natural persons or legal entities or organizational body that either use such a minor watercourse or is related to their activity. The template and content of an application to appoint the administrator of a minor watercourse is specified in detail in the aforementioned Decree No. 178/2012 Coll. According to the Central Registry of Watercourses (CRW), the total length of minor watercourses is 82,766 km. The drawings of minor watercourses are reviewed, refined and reclassified on an ongoing basis.

The CRW web application, available on the MoA website (www.mze.gov.cz) and on the Water Information Portal (www.voda.gov.cz), serves for informing the public authorities and the general public about the management of each watercourse.

At the end of February 2022, the MoA and the MoE, with strong support of organisations under their management, launched a new joint website of the so-called Information System for Public Administration in Water Management (ISVS WATER) on the existing website www.voda.gov.cz, which replaced the version operated by CENIA, formerly available on the eAGRI website. The main objective of the website is to present information on water management at a single place in a comprehensive and unified way, independently of how competences are divided in water management.

In 2024, the administrators of significant and minor watercourses under the jurisdiction of the Ministry of Agriculture expended funds from their own and other sources amounting to a total of CZK 3.3 billion.

Graph 6.1.1
Funds expended on watercourse management in 2024



Source: MoA
Note: *) The item includes funds for management of watercourses and reservoirs.

The acquisition value of tangible fixed assets related to watercourses in 2024 increased by CZK 0.8 billion compared to the previous year more than CZK 60 billion.

The year-on-year increase mainly reflects additions to tangible fixed assets acquired through the renewal and planned development of the entrusted assets in the form of routine investment construction and ongoing inclusion of assets taken

over and completed hydraulic structures. Even in 2024, none of the watercourse administrators completed, approved or took over a hydraulic structure that would significantly influence the indicators reflecting the acquisition values of tangible fixed assets.

Table 6.1.2
Acquisition value of tangible fixed assets related to watercourses

Watercourse administrators	2023	2024
	billion CZK	
Elbe River Board	10.9	11.1
Vltava River Board	12.45	12.5
Ohře River Board	11.04	11.43
Oder River Board	6.7	6
Morava River Board	9.19	9.21
River Boards in total	5	51.06
Forests of the Czech Republic	9.1	9.2
Total	59.46	60.26

Source: MoA

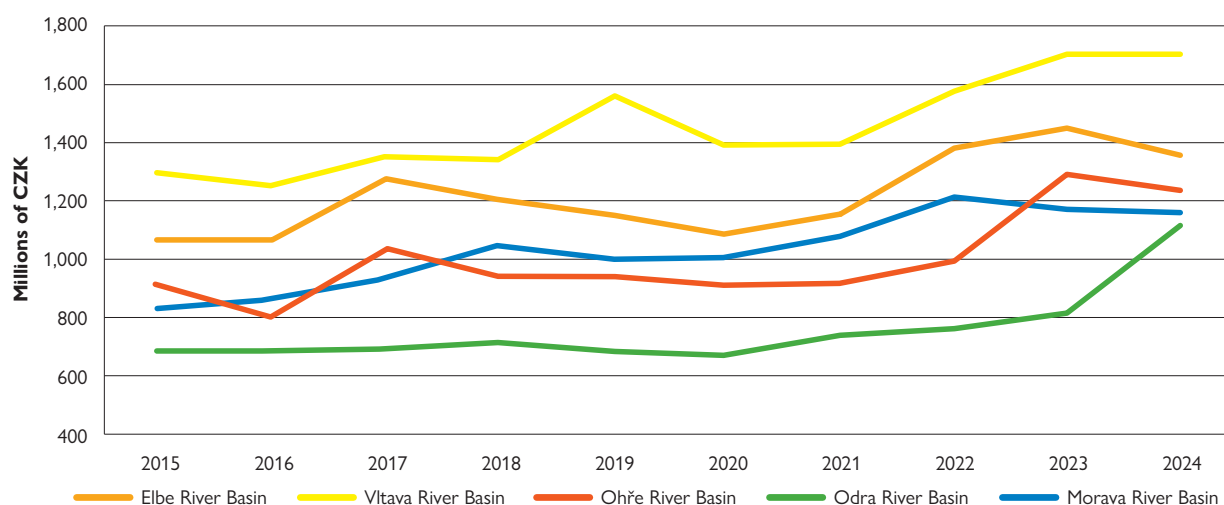
6.2 River Boards, state enterprises

Total revenues generated by the River Boards amounted to CZK 6,564 million in 2024, which means a year-on-year increase of CZK 132 million, i.e., by 2%. The largest increase was in special-purpose non-investment subsidies (up 57%) and revenues from the use of water retention facilities (up almost 16%). By contrast, a significant decline was recorded in revenues from electricity generation (down 19%).



Completed section of the Pudlovská dike in Bohumín (source: Oder River Board, s.e.)

Graph 6.2.1
Revenues of the River Boards in 2015–2024



Source: MoA

Table 6.2.1
Revenue structure of the River Boards in 2024

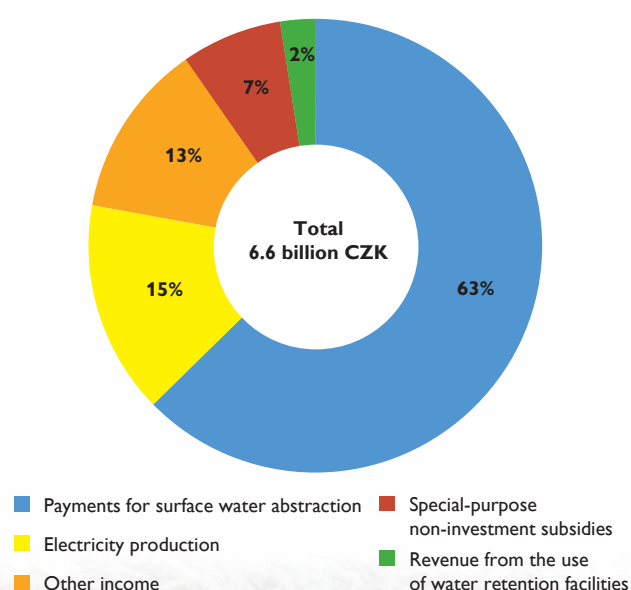
Indicator	River Board					Total
	Elbe	Vltava	Ohře	Oder	Morava	
	thousand CZK					
Payments for surface water abstractions	1,063,797	979,913	667,896	636,256	771,007	4,118,869
Electricity generation	63,795	362,369	390,903	124,086	48,164	989,317
Revenue from the use of lifting facilities	8,435	142,295	5,071	0	4,958	160,759
Other income	163,367	181,095	165,876	198,278	115,840	824,456
Special-purpose non-investment grants ¹⁾	53	38,527	3,072	158,000	216,919	470,256
Total River Boards	1,353,132	1,704,199	1,232,818	1,116,620	1,156,888	6,563,657

Source: River Boards

Note: ¹⁾ The item includes revenues from photovoltaic power plants.

¹⁾ Including all special-purpose non-investment grants for small watercourses, subsidies from the STIF and other non-investment subsidies.

Graph 6.2.2
Revenue structure of the River Boards in 2024



Source: MoA

The total costs of the River Boards, s.e., in 2024 increased by 1.8% compared to the previous year to a total of CZK 6,246 million. The largest increase was in the materials and repairs item, while the financial costs and other costs items saw a significant decrease.

River Boards, s.e., achieved a total profit of CZK 317 million in 2024. The financial results of all River Boards were positive, with the exception of the Oder and Morava River Boards, which recorded losses. However, compared to the previous year, there was a total increase in profit of almost 7%, or CZK 22 million in absolute terms.

In the year under review, the Vltava and Ohře River Boards saw a high increase in profits. Such an increase in profits at the Ohře River Board was mainly due to the hydrological situation, which was favourable for the operation of small hydroelectric power plants, enabling the second highest electricity generation in the last ten years.

The increase in profits of the Vltava River Board in 2024 is mainly due to exceeding planned revenues from electricity generation

due to favourable hydrological conditions and the amount of hourly green bonuses, exceeding planned revenues from the shared use of water structures at the Vltava cascade due to favourable hydrological conditions, exceeding planned financial revenues due to more favourable development of interest rates than expected, exceeding revenues from laboratory services due to the successful contracting of external orders, and also lower costs for accounting provisions.

In 2023, the Elbe River Board enjoyed favourable interest rates for its financial results and there was an excess in surface water abstractions. The planned economic result for 2024 was CZK 17.5 million, and the actual result was more than 2.5 times higher due to the appreciation of free financial resources, an

increase in the sale of unnecessary assets and, last but not least, an increase in rental income and property settlements.

The Oder and Morava River Boards recorded losses in 2024. The Oder River Board reported a loss of CZK 8,683 thousand as a result of the disastrous floods in September 2024, due to high costs for flood damage repairs and the creation of provisions for flood-damaged assets, which will be remedied in the following periods.

The Morava River Board reported a loss in 2024 caused by the floods that affected a large area in the upper reaches of the Morava River in September, increasing repair and personnel costs in particular.

Table 6.2.2
Costs of the River Boards in 2023 and 2024

Type of expense	Year	River Board					Total
		Elbe	Vltava	Ohře	Oder	Morava	
		million CZK					
Write-offs	2023	175.7	329.9	183.6	152.9	174.1	1,016.2
	2024	173.9	343.8	189.7	152.7	175.0	1,035.3
Repairs	2023	242.8	369.2	220.4	155.4	295.7	1,283.5
	2024	199.5	284.9	194.6	331.1	346.9	1,357.0
Material	2023	38.2	31.1	21.7	33.8	47.9	172.6
	2024	37.1	32.0	20.6	33.4	66.0	189.1
Energy and fuel	2023	47.9	52.4	3	8	23.8	170.9
	2024	49.3	53.9	25.4	9.6	21.8	160.0
Personnel costs	2023	693.5	639.1	518.8	325.8	513.0	2,690.2
	2024	721.3	672.5	531.1	341.0	553.5	2,819.3
Services	2023	62.5	89.3	75.8	38	35.6	301.7
	2024	73.3	92.5	65.2	40.3	38.7	309.9
Financial costs	2023	0	0.4	0.2	0	0.2	2.1
	2024	0.4	0.3	0.4	0.051	0.2	1
Other costs	2023	103.2	152.3	142.9	32	70.1	501.3
	2024	52.3	92.9	43.7	217.2	-31.7	374.3
Total costs	2023	1,364.2	1,663.7	1,199.5	748	1,160.3	6,135.7
	2024	1,307.0	1,572.8	1,070.7	1,125.3	1,170.4	6,246.2

Source: River Boards

Note: *) The negative value is due to allocation of an accounting provision for repairs to assets.

Table 6.2.3
Financial results of the River Boards (profit, loss) in 2016–2024

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
	thousand CZK								
Elbe	22,026	60,276	22,880	15,631	9,534	10,563	183,809	84,913	46,089
Vltava	13,711	73,880	49,221	67,123	74,489	24,379	96,751	43,629	131,432
Ohře	27,422	169,652	73,346	41,380	25,387	18,262	104	92,719	162,131
Oder	20,845	22,291	53,053	9,503	14,826	17,224	20,973	64,508	-8,683
Morava	112,916	11,721	17,875	12,300	8,619	4,098	4,498	9,493	-13,539
Total	196,920	337,820	216,375	145,937	132,855	74,526	306,135	295,262	317,430

Source: River Boards

Table 6.2.4
Distribution of profit of River Boards in 2024

River Board	Profit	Distribution of profit or coverage of loss						
		Reserve Fund	CSNF – basic allocation	CSNF – further allocation	Social Fund *)	Remuneration Fund *)	Own capital	Unsettled loss of previous years
	thousand CZK							
Elbe	46,089	0	5,174	5,915	0	5,174	35,000	0
Vltava	131,432	13,143	4,759	4,751	1,000	0	107,779	0
Ohře	162	0	3,538	0	0	0	158,593	0
Oder	-8,683	-8,683	0	0	0	0	0	0
Morava	9,493	-13,539	0	0	0	0	0	0

Source: River Boards

Note: ^{*)} Created in accordance with Section 19(5) of Act No. 77/1997 Coll., on State Enterprise, as amended.

Table 6.2.5
Surface water supplies in the territorial jurisdiction of the River Boards for a fee in 2016–2024

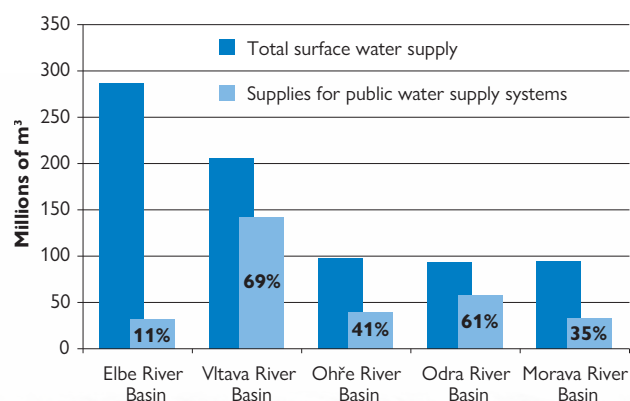
River Board		2016	2017	2018	2019	2020	2021	2022	2023	2024
		thousand m ³								
Elbe	a	614,377	583,838	526,598	460,970	372,872	357,935	448,241	359,852	286,085
	b	37,707	38,873	39,017	38,861	35,806	34,705	32,458	33,031	32,733
Vltava	a	204,885	219,138	224,819	224,871	216,160	217,840	220,701	210,807	205,446
	b	134,333	139,485	142,813	140,292	135,106	135,765	138,775	139,543	141,444
Ohře	a	119,384	122,837	124,054	122,628	109,849	103,809	107,993	101,623	98,365
	b	40,305	40,953	40,919	42,243	42,955	40,504	40,561	40,269	39,934
Oder	a	127,995	124,144	125,379	115,696	108,655	112,874	109,450	100,887	93,567
	b	62,306	60,592	60,901	60,204	57,150	57,529	56,739	56,481	57,432
Morava	a	151,857	156,666	168,582	176,873	162,369	155,580	155,429	123,860	94,644
	b	32,816	35,763	37,715	39,478	37,144	33,321	36,146	34,226	33,968
Total River Boards	a	1,218,498	1,206,623	1,169,432	1,101,038	969,905	948,038	104,181	897,029	778,107
	b	307,467	315,666	321,365	321,078	308,161	301,824	304,679	303,550	305,511

Source: River Boards

Note: a) for a fee in total,

b) of which for water supply for public use.

Graph 6.2.3
Water supplies in the territorial jurisdiction of the River Boards for a fee by purpose in 2024



Source: River Boards

The average price for other surface water abstractions per m³ in 2024 was CZK 6.67, a year-on-year increase of 13.8%. The price of surface water abstracted from watercourses and other surface waters is a cost-based price, which can only reflect economically justified costs, a reasonable profit and tax according to the relevant tax regulations.

In addition to flow-through cooling and other abstractions, abstraction levels and surface water prices for the purposes of chargeable agricultural irrigation and the flooding of artificial depressions have been collected since 2003. In 2024, abstractions for agricultural irrigation were made within the territorial scope of all the River Boards with the exception of the Oder and Morava River Boards. The abstractions totalled 316 thousand m³, an increase compared to the previous year. Surface water abstractions for flooding of artificial depressions in the landscape were again not recorded by any of the River Boards in 2024.

Table 6.2.6**Price of surface water abstraction for flow-through cooling in 2016–2024**

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
	CZK/m ³								
Elbe	0.72	0.74	0.77	0.79	0.82	0.96	1.10	1.41 *)	1.57
Vltava	1.27	1.32	1.32	1.34	1.37	1.41	1.45	1.52	1.68
Morava	1.21	1.22	1.23	1.25	1.28	1.38	1.44	1.51	1.63

Source: River Boards

Note: The price per m³ excludes VAT.**Table 6.2.7****Price of other surface water abstraction in 2016–2024**

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
	CZK/m ³								
Elbe	4.49	4.58	4.72	4.82	4.99	5.38	5.57	6.18 **)	6.79
Vltava	3.69	3.84	3.84	3.9	3.98	4.1	4.22	4.42	4.88
Ohře	4.69	4.92	4.97	5.07	5.17	5.61	5.89	5.99	6.79
Oder	4.33	4.46	4.62	4.78	4.97	5.47	5.74	6.2	6
Morava	6.65	6.68	6.69	6.79	6.93	6.99	7.19	7.55	8.15
Average price of the River Boards *)	4.64	4.77	4.88	4.97	5.1	5.50	5.60	5.84	6.67

Source: River Boards

Note: The price per m³ excludes VAT.

*) Calculated using weighted average.

**) CZK 6.18 is a weighted average of two prices – in 2023, prices were increased during the year as customers did not abstract the contracted amount of water. The price from 01/01 to 31/07 2023 was CZK 6.10 and from 01/08 to 31/12 2023 it was CZK 6.29.

The current surface water abstraction prices do not reflect the value of surface water in today's terms, but reflect the costs incurred by the individual river basin districts for the management of watercourses and river basin management. These prices are subject to regulation in the form of price regulation pursuant to Act No 526/1990 Coll., on prices, as amended, and to the rules laid down by decisions of the Ministry of Finance issuing a list of goods with regulated prices, published in the Price Bulletin of the Ministry of Finance.

Revenues from surface water abstraction is the most significant source of revenue. In 2024, they increased by 3.3% compared to 2023, i.e., by CZK 132 million. The total revenue was CZK 4,119 million.



Mlýnec Dry Retention Basin (source: Elbe River Board, s.e.)

Table 6.2.8**Payments for surface water abstractions in 2016–2024**

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
	million CZK								
Elbe	996	1,001	1,027	993	882	976	1,103	1,064	1,064
Vltava	745	832	852	861	838	872	908	912	980
Ohře	560	604	617	622	568	582	636	609	668
Oder	554	554	579	553	540	617	628	626	636
Morava	672	715	804	827	786	759	808	775	771
Total River Boards	3,527	3,706	3,879	3,856	3,614	3,806	4,083	3,986	4,119

Source: River Boards

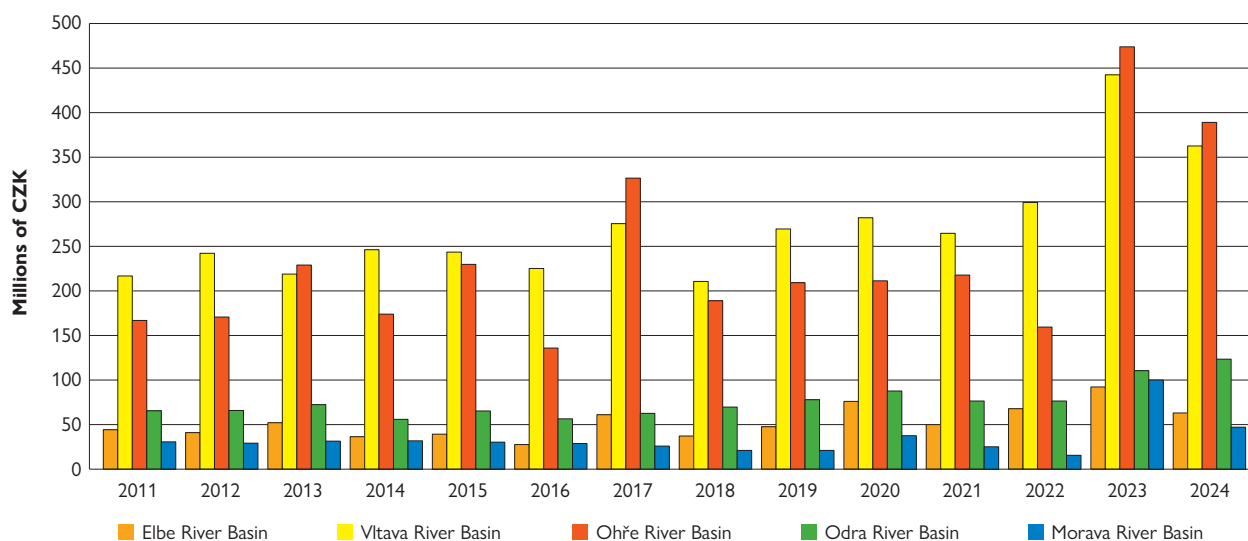
Another significant source of income for the River Boards is electricity generation, accounting for more than 15% of their total income. The number of small hydroelectric power plant in operation did not increase in 2024, the total number remains to be 106. Total revenues in this item decreased by more than 19% compared to the previous year and amounted to more than CZK 987 million.

The highest revenues from power generation are repeatedly reported by the Vltava and Ohře River Boards. The record revenues of the Vltava River Board were due to the price of electricity on the wholesale market. Lower revenues were recorded by the Elbe and Morava River Boards. Details on the small hydropower plants of individual state-owned water management companies are provided in Table 6.2.9 and Chart 6.2.4.

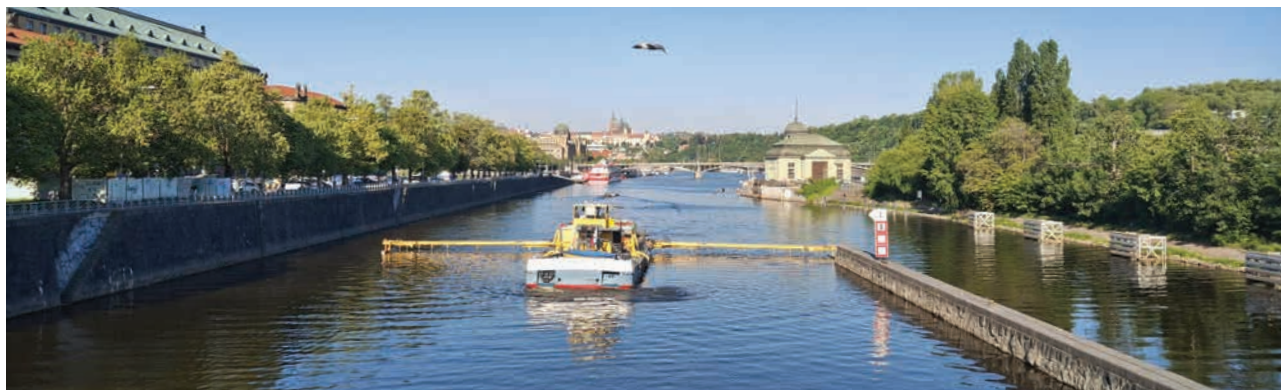
Table 6.2.9
Small hydropower plants of the River Boards in 2016–2024

River Board	Indicator	2016	2017	2018	2019	2020	2021	2022	2023	2024
Elbe	Number of SHPPs	20	20	20	20	20	20	20	20	20
	Installed power (kW)	6,795	6,819	6,819	6,989	7,001	7,001	7,001	7,048	7,048
	Electricity generation (MWh)	12,288	22,440	13,835	16,327	24,796	23,343	20,632	23,884	24,232
	Revenues (thousand CZK)	27,754	61,268	38,012	48,758	76,808	50,914	67,568	92,970	63,795
Vltava	Number of SHPPs	19	19	20	20	21	21	22	22	22
	Installed power (kW)	22,128	22,128	22,328	22,328	21,950	21,950	22,040	22,040	22,040
	Electricity generation (MWh)	99,497	77,475	77,922	91,123	91,693	102,569	106,526	96,678	99,876
	Revenues (thousand CZK)	225,704	276,114	211,048	271,244	283,769	265,892	299,867	443,803	362,324
Ohře	Number of SHPPs	21	22	22	22	22	22	23	23	23
	Installed power (kW)	16,966	17,091	17,091	17,091	17,091	17,091	17,113	17,113	17,113
	Electricity generation (MWh)	84,910	84,244	72,908	76,484	67,024	92,537	73,279	77,617	92,347
	Revenues (thousand CZK)	136,223	327,221	189,511	211,005	212,222	218,543	160,079	474,340	388,798
Oder	Number of SHPPs	23	23	26	25	26	26	26	26	26
	Installed power (kW)	6,236	6,236	6,352	6,262	6,524	6,524	6,714	6,714	6,738
	Electricity generation (MWh)	21,569	23,181	25,073	27,612	29,943	26,673	24,793	30,891	36,920
	Revenues (thousand CZK)	56,669	62,813	69,487	79,630	89,112	77,183	75,162	111,458	124,086
Morava	Number of SHPPs	15	15	15	15	15	15	15	15	15
	Installed power (kW)	3,497	3,497	3,497	3,551	3,635	3,588	3,567	3,567	3,567
	Electricity generation (MWh)	11,008	9,609	8,239	7,566	14,614	15,576	10,747	14,991	15,989
	Revenues (thousand CZK)	28,812	26,039	22,279	22,215	38,744	26,748	15,237	101,356	48,164
Total	Number of SHPPs	98	99	103	102	104	104	106	106	106
	Installed power (kW)	55,622	55,771	56,087	56,221	56,201	56,154	56,435	56,482	56,506
	Electricity generation (MWh)	229,272	216,949	197,977	219,112	228,070	260,698	235,977	244,061	269,364
	Revenues (thousand CZK)	475,162	753,455	530,337	632,852	700,655	639,280	617,913	1,223,927	987,167

Source: River Boards

Graph 6.2.4**Revenues of small hydropower plants of the River Boards in 2011–2024**

Source: River Boards



Valentine boat on the Vltava Stream (author: Hubalová Petra)

Other revenues of the River Boards in 2024 increased by more than CZK 141 million compared to the previous year. Their total amount was almost CZK 825 million.

Other revenues is an item that represents an aggregate of less significant items such as leases of land, non-residential premises and water bodies and other business activities. The

most significant items are income from machinery and vehicle transport, laboratory work and from design and engineering activities. Other revenues are often significantly affected by a number of unplanned items (insurance claims, increased interest received and carryovers of certain defined revenues which, although relating to previous periods, were only realised in the given review) which cannot always be predicted and can therefore fluctuate significantly from year to year.

Table 6.2.10**Other revenues of the River Boards in 2016–2024**

River Boards	2016	2017	2018	2019	2020	2021	2022	2023	2024
	thousand CZK								
Elbe	73,388	149,163	91,122	86,446	69,515	70,926	162,782	107,652	163,367
Vltava	71,409	78,738	120,231	108,072	96,952	112,483	214,169	196,193	181,095
Ohře	75,702	85,264	108,496	96,623	111,563	89,726	176,029	188,626	165,876
Oder	41,191	49,013	61,595	45,375	34,989	40,101	58,640	71,330	198,278
Morava	56,462	48,295	130,084	61,124	52,585	84,013	30,286	136,167	115,840
Total	318,152	410,473	511,528	397,640	365,604	397,249	641,906	699,968	824,456

Source: River Boards

A number of special-purpose non-investment and investment subsidies are regularly used to support the core activities of the River Boards, s.e. The total volume of subsidies provided in 2024 increased year-on-year by almost CZK 521 million to a total of CZK 1.7 billion.

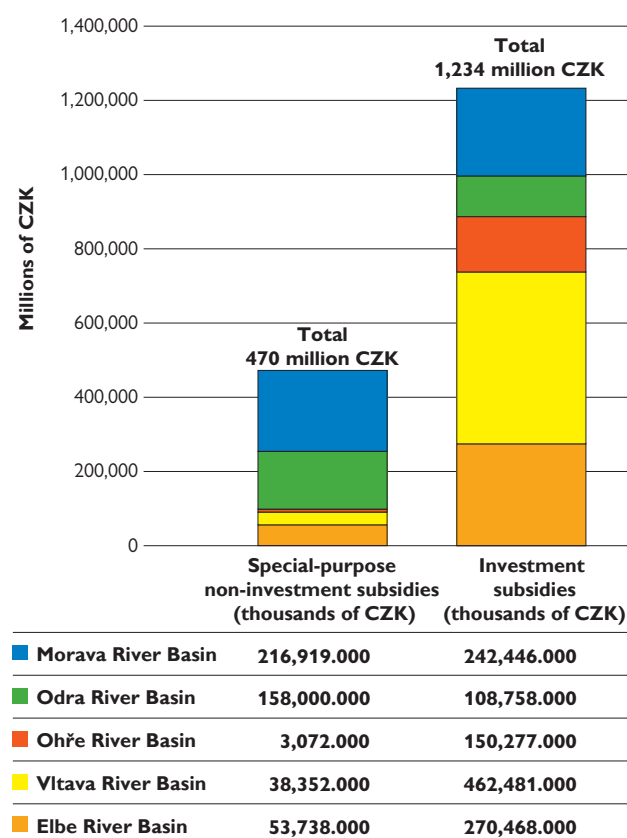
State subsidies are necessary for systematic activities ensuring implementation of state priorities, such as implementation of flood control measures, delineation of floodplains, preparation of conceptual studies, removing flood consequences, etc. In 2024, investment subsidies increased significantly, by almost 40% year-on-year (i.e. an increase of CZK 355 million), as well as special-purpose non-investment subsidies (an increase of almost CZK 166 million).

Grants were allocated for both prevention and flood damage recovery programmes from previous years. In the year under review, subsidies were provided from the MoA budget, funds from the Operational Programme Environment (OPE), funds from the Cohesion Fund, the European Regional Development Fund (ERDF), and some regional authorities and cities also contributed to flood control measures.



The Harcov Reservoir, renovation (author: Hubalová Petra)

Graph 6.2.5
Subsidies drawn by the River Boards in 2024



Source: MoA, River Boards

Investments of the River Boards, s.e., saw a decrease of almost 5.5% in 2024. Almost CZK 2.6 billion was spent on these investments, with 51% coming from external sources and 49% from own resources.

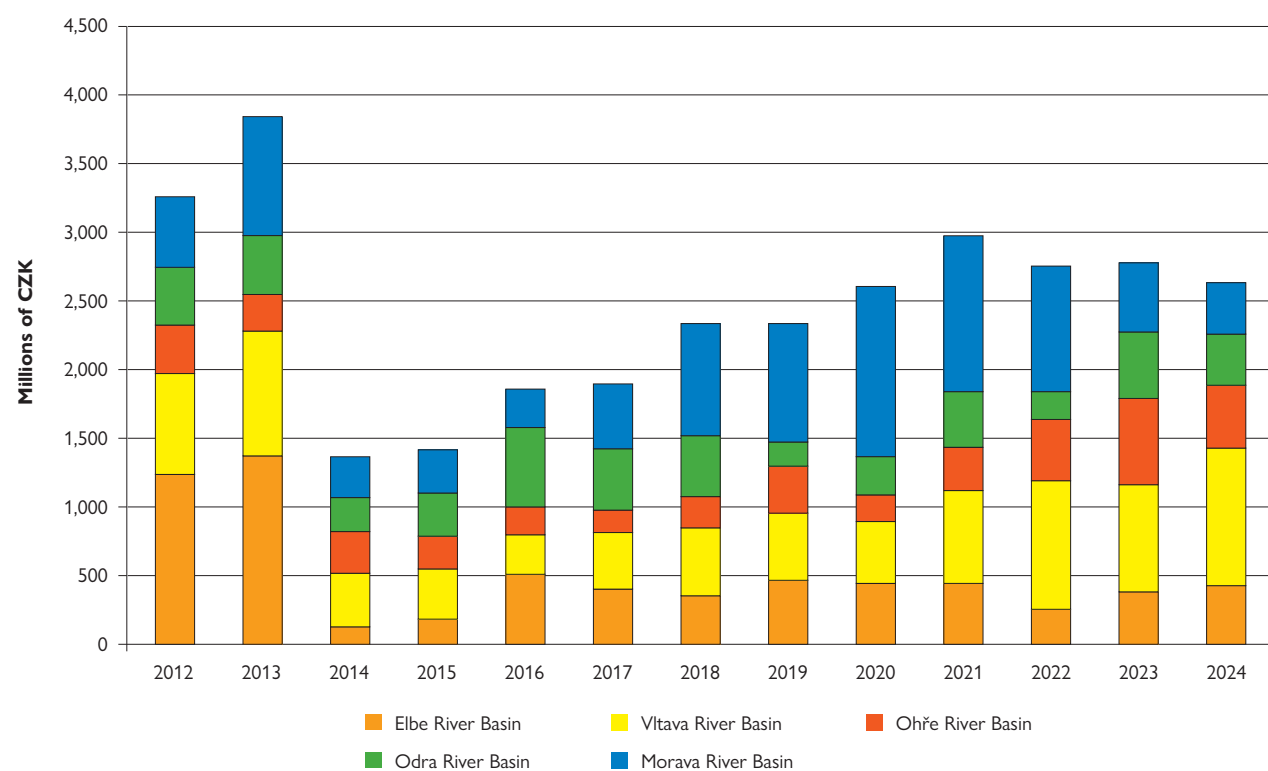
Compared to 2023, there was a decrease in total investments by the River Boards of CZK 152 million. Third party sources to cover investment construction amounted to almost CZK 1.339 billion, of which 91% were funds from the state budget and 9% other sources. Other sources included funds from the OPE, regions, municipalities and gratuitous transfers. Own resources earmarked for investments amounted to more than CZK 1.294 billion.

Table 6.2.11
Investments of the River Boards in 2016–2024

River Board, s.e.	2016	2017	2018	2019	2020	2021	2022	2023	2024
	million CZK								
Elbe	514.6	401.2	360.0	461.6	447.9	448.1	261.5	379.8	438.8
Vltava	286.0	410.9	493.0	495.3	452.8	670.4	930.4	782.7	989.9
Ohře	210.7	161.6	221.2	346.1	188.8	323.4	451.8	622.5	453.8
Oder	568.2	453.4	445.5	176.2	284.2	411.7	205.8	481.4	389.7
Morava	283.7	468.0	823.7	851.7	1,243.0	1,118.8	919.3	519.0	360.7
Total	1,863.2	1,895.1	2,343.4	2,330.9	2,616.7	2,972.4	2,768.8	2,785.4	2,632.9

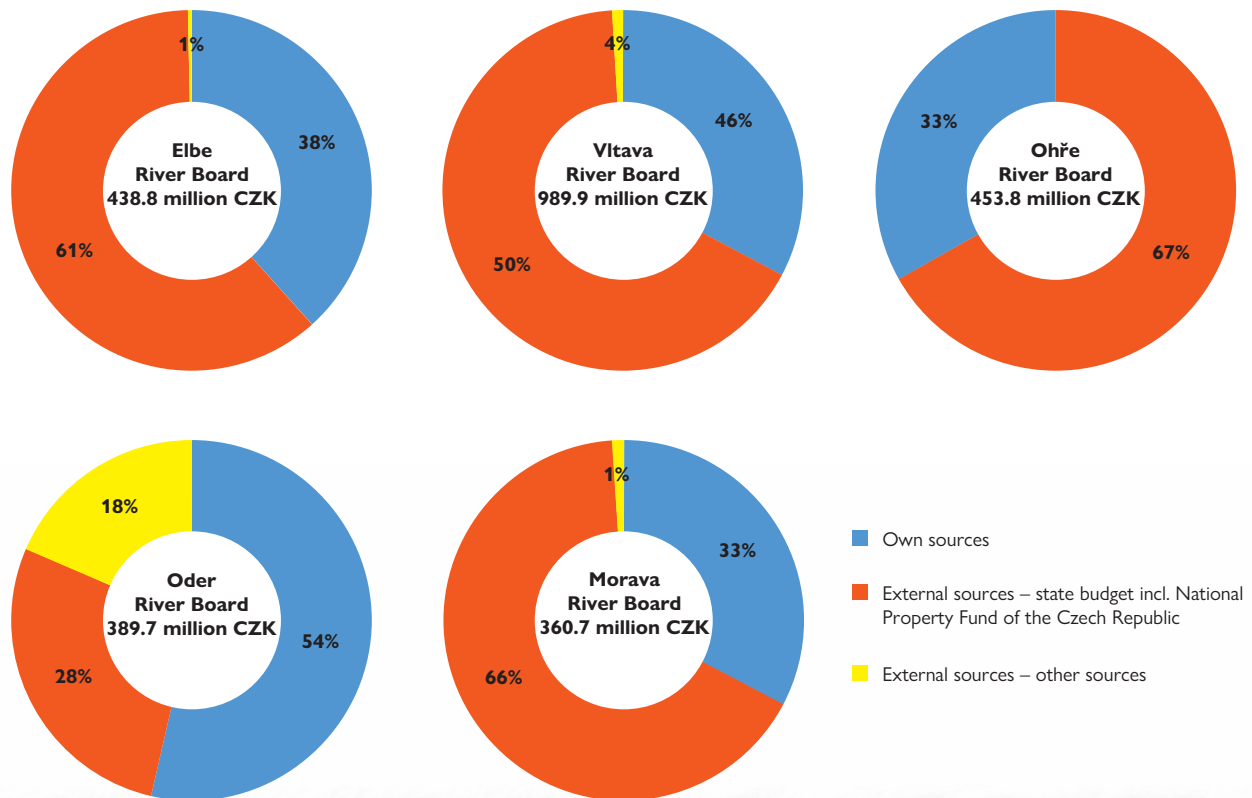
Source: River Boards

Graph 6.2.6
Investment construction of the River Boards in 2012–2024



Source: MoA, River Boards

Graph 6.2.7
Structure of investment funds by sources in the River Boards in 2024



Source: MoA, River Boards

Similarly to the previous year, the number of employees was reduced by 45 in 2024 compared to

the previous year, with a total of 3,410 employees working for the River Boards, s.e.

Table 6.2.12
Number of employees of the River Boards in 2016–2024

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
Elbe	904	894	884	878	874	865	863	858	828
Vltava	855	861	867	873	865	863	866	864	857
Ohře	614	605	617	614	611	611	598	599	597
Oder	465	463	464	458	452	446	442	436	433
Morava	737	742	739	746	744	742	725	698	695
Total	3,575	3,565	3,571	3,569	3,546	3,527	3,494	3,455	3,410

Source: River Boards

Note: Average headcount, rounded to whole numbers.

In 2024, the average monthly salary in the River Boards increased by almost 6%, the average salary was CZK 48,707.

The year-on-year increase in the average monthly salary in the River Boards amounted to CZK 2,682, while in the Morava

River Board it increased by more than CZK 4.3 thousand and in the Vltava River Board by almost CZK 2.6 thousand, other River Boards saw also an increase, although not that high. Salary in the Elbe River Board was the highest, whereas it was the lowest in the Oder River Board.

Table 6.2.13
Average salary in the River Boards in 2016–2024

River Board	2016	2017	2018	2019	2020	2021	2022	2023	2024
	million CZK								
Elbe	32,538	33,653	35,050	37,472	39,074	40,686	43,342	47,310	50,623
Vltava	31,087	31,550	32,740	35,017	37,131	39,044	41,292	45,574	48,176
Ohře	33,505	34,541	37,079	38,365	39,683	40,490	43,929	47,927	48,543
Oder	31,787	32,629	34,409	36,695	38,232	40,040	42,782	44,671	46,642
Morava	28,392	29,782	32,464	34,981	36,674	37,320	39,661	44,217	48,505
Average salary *)	31,497	32,357	34,221	36,383	38,094	39,460	42,099	46,025	48,707

Source: River Boards

Note: *) Calculated using weighted average.



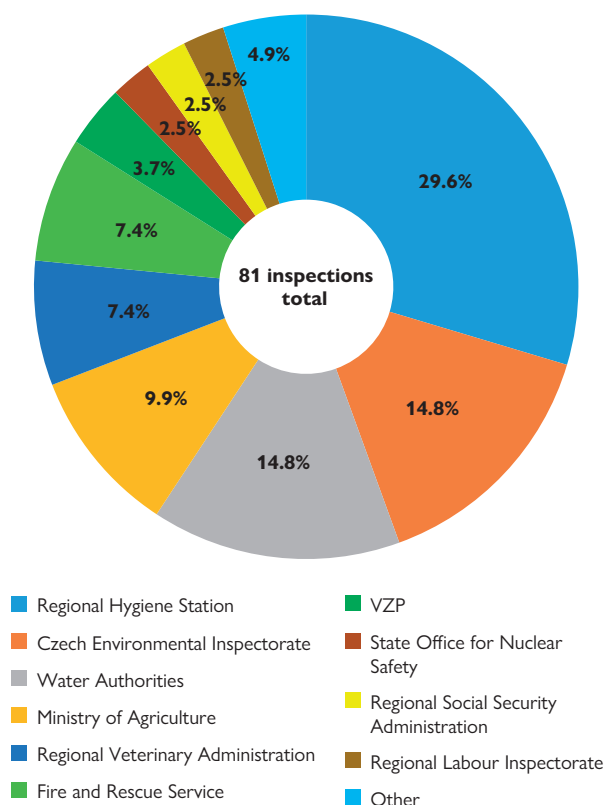
The Jezeří Reservoir, renovation (source: Ohře River Board, s.e.)

Inspections of the activities of the River Boards are carried out regularly by competent external inspecting authorities. In 2024, 81 inspections were carried out.

An overview of the inspections is shown in Graph 6.2.8. The other inspection authorities include those that carried out one inspection in 2024, i.e., the State Veterinary Administration, the Czech Accreditation Institute, the Regional Authority of the Ústí Region and the Ministry of Finance.

Minor deficiencies identified were eliminated during a regular monitoring inspection.

Graph 6.2.8
Inspections in the River Boards by authorities in 2024



Source: River Boards

6.3 Forests of the Czech Republic, s.e.

Forests of the Czech Republic, s.e., administer designated minor watercourses and streams as one of non-productive functions of the forest. In 2024, they managed 38.5 thousand km of watercourses and 1,086 small reservoirs.

Watercourse management within the scope of the Forests of the Czech Republic consists in administration of watercourse-related assets with an acquisition value of CZK 9.2 billion; mainly watercourse modifications, damming structures on streams and ravines, flood control measures and reservoirs. Watercourse management was carried out by seven organisational units – watercourse administrators with territorial jurisdiction by the river basins.

In 2024, activities of the Forests of the Czech Republic in the sphere of water management focused mainly on:

- implementation of investment and non-investment actions aimed at flood damage recovery, in particular, security work following the September floods, flood protection, channel stabilisation and anti-erosion measures,
- construction, restoration and repair of reservoirs, dams and wetlands with the view of slowing surface runoff and retaining water in the landscape, and preparation of other projects to mitigate negative effects of drought and water scarcity in the Czech Republic,
- implementation of actions aimed at repairing and maintaining the assets,
- care of riparian vegetation, revitalization of previously inappropriately modified watercourses, non-productive functions of the forest, support for endangered animal species, elimination of invasive non-native plant species, etc,
- maintenance of the Central Register of Watercourses and Water Reservoirs and register of other hydraulic structures owned by third parties, subject to technical safety supervision in the Public Administration Information System.

Watercourse management, the measures implemented and their preparation were funded both from the company's own resources and from subsidies. The subsidies include measures carried out in the public interest pursuant to Section 35 of the Forestry Act and funding from the state budget for programmes of the MoA pursuant to Section 102 of the Water Act. Namely, these are the programmes "Support for Flood Prevention" and "Support for Measures on Small Watercourses and Small Water Reservoirs". In addition, sources from EU funds and landscape programmes of the MoE were used. Activities carried out in connection with watercourse management are of a non-commercial nature and bring practically no profit with the view of the total funds spent.

In connection with management of watercourses and reservoirs, the Forests of the Czech Republic expended a total of CZK 929.3 million in 2024, of which investment expenditures amounted to CZK 387.0 million. The amount includes not only investments in constructions, but also land purchases to ensure maintenance of watercourses. Own resources amounted to CZK 214.4 million. CZK 542.3 million was spent on management of designated small watercourses, repair and maintenance of assets related to the management, of which CZK 506.9 million was from own resources. A total of CZK 210.4 million was spent on flood damage recovery. The amounts include all costs related to management of watercourses and reservoirs. The funding structure is shown in Table 6.3.1.

Revenue from surface water abstractions paid for watercourse management in 2024 amounted to CZK 35 million. Table 6.3.2 shows revenues from surface water abstractions and unit prices.

Graphs 6.3.1 and 6.3.2 show a longer timeline of total annual investment expenditures on water management and funds spent on repair and maintenance of water assets.

In 2024, the Czech Republic was affected by several floods, the largest of which occurred between 13 and 16 September. The floods occurred in most of the Czech Republic, with the

exception of Western and Northwest Bohemia, and damaged more than 500 watercourses and 26 water reservoirs managed by the Forests of the Czech Republic. The total length of the affected watercourses was approximately 640 km. Watercourse administrator staff drew up 615 damage reports, in which they preliminarily estimated the damage to the River Boards' assets at CZK 2.9 billion. Security work was started immediately: making the affected areas accessible, ensuring the flow of water, stabilising damaged water structures, etc. By the end of 2024, CZK 113 million was spent on emergency securing work and flood damage and accident recovery. Of this, CZK 109.7 million was used for 619 measures related to the September floods.

In the context of the ongoing climate change, the "Returning Water to the Forest" programme continued to contribute to water retention in the landscape. The programme aims to implement measures to mitigate negative effects of drought and water scarcity. This includes measures aimed at slowing down surface water runoff (revitalisation of forestry drainage and watercourses), creating and restoring water features in the landscape, such as pools, wetlands and small reservoirs. In total, CZK 320 million was expended, and 120 structures and 90 small landscape measures were completed in 2024, representing 340 pools with a total area of more than 8 ha. More than 45 more constructions were started and preparation of other constructions is underway.

Table 6.3.1
Forests of the Czech Republic, s.e. – Funding structure – water management in 2024 (full costs)

Event	Total	Total own resources	Total subsidies	Of which flood damage	
				Subsidies	Own resources
	million CZK				
Investment	387.0	214.4	172.6	2.6	12.2
Non-investment	542.3	506.9	35.4	3.2	192.4
Total	929.3	721.3	208.0	5.8	204.6

Source: Forests of the Czech Republic, s.e.

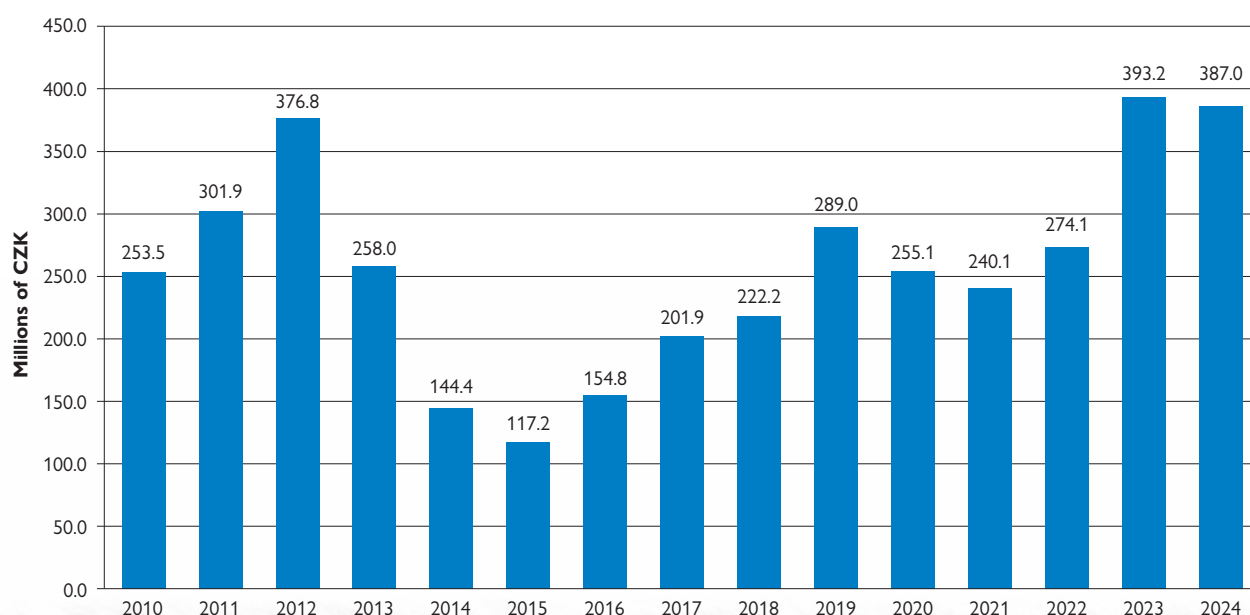
Table 6.3.2
Forests of the Czech Republic, s.e. – Revenues from surface water in 2012–2024

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
thousand CZK													
Revenue	13,679	12,211	11,544	10,682	13,192	15,106	15,481	15,610	14,946	18,035	23,000	27,615	34,970
Price per m ³ *)	1.96	2.00	2.05	2.06	2.26	2.52	2.65	3.06	3.47	4.00	4.57	5.30	6.90

Source: Forests of the Czech Republic, s.e.

Note: *) The unit price per m³ in CZK excludes VAT.

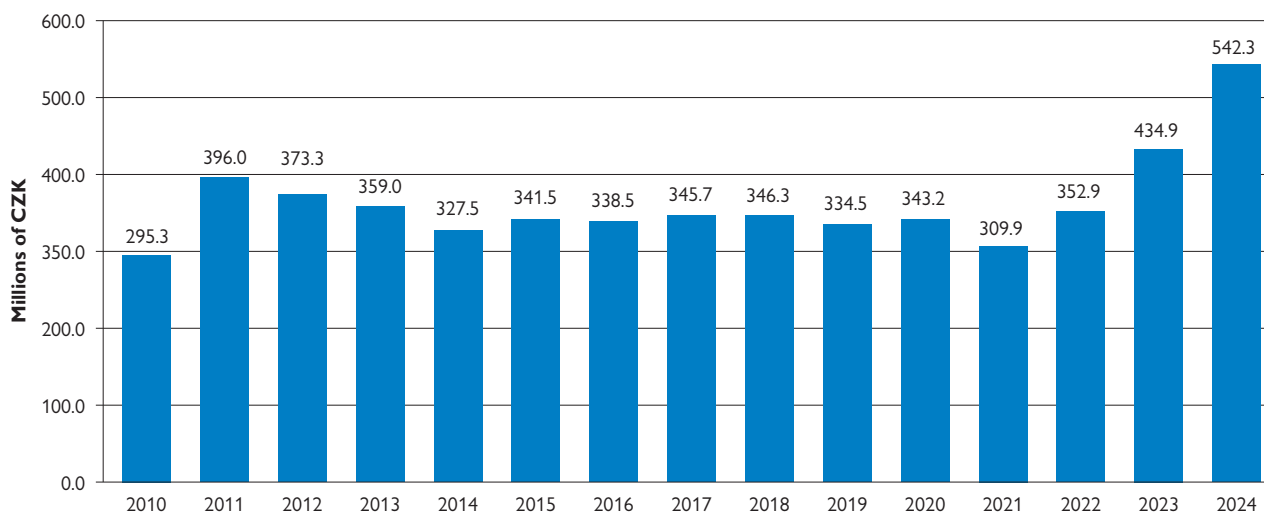
Graph 6.3.1
Forests of the Czech Republic, s.e. – Investment expenditures 2010–2024 – water management



Source: Forests of the Czech Republic, s.e.

Graph 6.3.2

Forests of the Czech Republic, s.e. – Expenditures in 2010–2024 – repair and maintenance of watercourses and reservoirs (full costs)



Source: Forests of the Czech Republic, s.e.

Major measures implemented in the river basins administered:

Watercourse administration of the Oder River Basin, based in Frýdek-Místek, dealt with two significant flood events. The first flood hit the Beskids part of the Oder River Basin in June, with the most damage in the Jablunkov District, namely in Horní Lomná, and in the Třinec District. The second extreme flood event occurred in mid-September and affected both the Beskids area and, in particular, the Jeseník District. Devastating effects were mainly in the catchment areas of the Bělá, Vidnávká, Osoblaha and Opava, including their tributaries. Immediately after the water receded, security work began in the most affected areas, such as around the Krasovka in the municipalities of Brantice and Krasov, the Kobylí Stream in the municipality of Hošťálkovy, the Ramzovský Stream and Stařík in the municipality of Lipová-lázně, the Opavice River in Holčovice and Heřmanovice, and the Middle Opava River in Vrbno pod Pradědem. In the Beskids area, the most damage was recorded in the Frenštát District around the Lomná and Bystrý Streams, in the municipality of Malenovice on the Satina Stream, in the municipality of Ostravice on the Sepetný, Mazák and Bučací Streams, and in the municipality of Čeladná on the Čeladenka Stream.

In addition, another stage of flood control measures was completed on the Mušlov Stream in Pitárné, Bruntál district. The project was financed from the national Flood Prevention Programme V. The most significant projects of water reservoir restoration and reconstruction included the three-hectare Rýžovník Water Reservoir outside the municipality of Roudno and the Benešovský Pond in Horní Benešov in the Bruntál District, as well as the small Stávek Water Reservoir in Šilhářovice in the Opava District. In addition, two watercourses were revitalised () in the municipality of Brantice in the Krnov District and in the town of Vítkov in the Opava District, and a number of pools were built throughout the Oder River Basin.

Watercourse administration of the Thaya River Basin focused mainly on the construction and reconstruction of small

water reservoirs and the maintenance, repair and reconstruction of existing fortifications. In the public interest, pursuant to Section 35 of the Forest Act, the Amerika Reservoir near Moravské Budějovice and the Javůrek gully erosion control near Veverská Bítýška were completed. Under the Ministry of Agriculture subsidy programmes, the Studený Reservoir near Landštejn was reconstructed, a system of reservoirs U Barborky and near Letovice was built, a retention dam was built on the Kladorubka and the Kladorubka was modified in Kladoruby. The OPE subsidy programme completed the U Elstra pond system near Dačice and Na Alejích near Brtnice.

Here, too, safety measures were implemented in response to the flood flows in September 2024.

In order to mitigate the effects of climate change resulting to deterioration of floodplain forests, a project continues in Soutok – Podluží, a special area of conservation in the Břeclav District consisting in constructing of a flap weir on the Thaya River and related revitalisation measures in the area such as restoration of pools, wetlands and revitalisation channels. Implementation of the measures will effectively simulate past flood flows and improve the hydrological conditions of that valuable area.

Watercourse administration of the Elbe completed in 2024 the reconstruction of five reservoirs in the Janovická game park near the municipality of Vápenný Podol in the Pardubice Region. The project involved complete reconstruction of the technical elements of the reservoirs and the desludging of the retention area of the Pekliny and Dolanský Pond on the Bylanka Stream and the Upper, Middle and Lower retention systems on the Cítkovský Stream.

In the cadastral area of Mikuleč in the Svitavy District, revitalisation of the Mikulečský Stream in a length over 1,480 m was completed. The original, very deep channel was filled in and replaced with a new revitalised channel and a wetland biotope in the form of a system of pools was created around it.

In September, floods occurred mainly in the Chrudim, Broumov and Frýdlant Districts. The most common problem was silting up of the riverbeds of the Sloupský (Hejnice), Dolanský (Skuteč), Desná (Poříčí), Bystřička (Včelákov), and Ruprechtický and Vižňovský (Meziměstí) Streams. Also, existing reinforcements were damaged.

Watercourse administration of the Vltava River Basin drew a large part of its funds from subsidies from the Ministry of Agriculture and used it to complete the construction work on the Farský Stream project and the restoration of the dam and repair of the Třebanice Reservoir in the Prachatice District, the Sůvák Reservoir near Kaplice, the reconstruction of the Chmelenský Stream in the Český Krumlov District, Pěněnský Stream near Jindřichův Hradec, reconstruction of the U Vrbů I – III and U Kolny water reservoir system in the České Budějovice Region, and the Drhovelka near Strakonice. In accordance with Section 35 of the Forest Act, construction work on the reconstruction of the Podmoky Reservoir was completed in the public interest and the Zálíbená Reservoir was restored using own funds, both near Kutná Hora. Preparation for other similar projects was completed.

The most significant projects financed from the EU subsidy programme include Jodlův Stream and the tributary of the Luční Stream in the Prachatice District, the revitalisation of the Višňová forest area near Příbram, the revitalisation of the water regime of forest soils – Křížovna near Pelhřimov, the Stříbrná Huť pool in the Tábor District, the Hrádecká pool in the Prachatice District and other revitalisation projects and pools. Subsidies from the Ministry of the Environment were used to partially finance the creation of other pools and wetlands throughout the Vltava River Basin. Project preparation for other revitalisation measures, which are planned to be financed from an EU subsidy programme, was completed using own resources.

In September 2024, extreme torrential rains passed through South and Central Bohemia and the Vysočina Region, causing flood damage to riverbeds.

Watercourse administration of the Berounka River Basin began reconstruction of the Krásná Dolina, a system of five water reservoirs in the forest complex in the Křivoklátsko Protected Landscape Area. Nearby, the Merkovka pools were also restored at the site of former forest baths and Malý Rožmberk in the Prameny Klíčavy nature reserve in Zone I of the Křivoklátsko Protected Landscape Area. In addition, the reconstruction of the V Pekle Reservoir near Jivjany in the Domažlice District, the Lipí – Upper Pond Reservoir near Manětín in the Pilsen Region, and the Písařův Pond Reservoir near the municipality of Tři Sekery in the Karlovy Vary Region has been completed. In the municipal district of Pilsen in Radčice, a stone barrier on the Radčický Stream was repaired and its retention area restored. Near the municipality of Trískolupy on the Čankovský Stream and its right-hand tributary, two revitalisation projects were completed on watercourses and adjacent floodplains with a total length of over 2 km. As part of the revitalisation, technically modified (straightened) riverbeds were removed and a new, nature-friendly riverbed with flow-through and non-flow-through pools was created. Maintenance work was also carried out on watercourses in the built-up areas of the municipalities of Hromnice and Radnice, consisting in the removal of sediment and self-seeded trees and the repair of longitudinal reinforcement.

Watercourse administration of the Ohře River Basin repaired and desilted the Stradonický Pond Reservoir near the town of Peruc, in the lowlands of the Louny District. The newly repaired structure will contribute to the restoration of the rich historical character of the area and significantly increase the biodiversity of the landscape. As part of efforts to support the water regime of the landscape and water retention in the source areas of the Ore Mountains in the Chomutov District, the Volárenský Pond Reservoir was repaired, which increased safety of its operation. In the spring area of the Hamerský Stream, a small reservoir named Měděnec was restored as a pilot project for the restoration of the Měděnec reservoir system.

At the border of the Ore Mountains and the Kadaň District brown coal basin, revitalisation of a tributary to the Lužnička Stream near the municipality of Místo was completed. The Lužnička tributary was historically regulated by concrete channel blocks and partially piped, but now the riverbed was loosened and a large pool was created at the source, complemented by a system of smaller pools along the watercourse.

The nature of the Šluknovský výběžek (Šluknov Hook) near the municipality of Lobendava was enriched by a restored water biotope. Two smaller historic water reservoirs at the foot of Ječný Hill were restored and supplemented by a system of pools, which will diversify the local deep forests and enhance water retention in the landscape.

Watercourse administration of the Morava River Basin carried out construction projects of investment and non-investment nature, mainly using subsidies. For example, subsidies from the Ministry of Agriculture were used to complete the reconstruction of riverbed fortification in the Vsetín District on the Pluskovec Stream in Malé Karlovice and the Dinotice in Halenkov, as well as the removal of sediments and repair of fortifications and transverse steps on the Salaška in Salaš and on the Zlechovský Stream in the Uherské Hradiště District. On the Hložecký Stream in the Zlín District, in addition to the reconstruction of transverse structures, a stone weir was repaired. Sediment was also removed, for example, from the Střelenka (Střelná near Vsetín), from the Černý and Kaňovický Streams (Hřivínův Újezd in the Zlín District), from the Olšava (Pitín and Bojkovice, Uherské Hradiště District) and from some other watercourses.

As part of the EU National Recovery Plan subsidy programme, stabilisation of the riverbed and reconstruction of the stone weir on the Hodorfský Stream in Zubří were completed. In Staré Město below Králícký Sněžník, the Hajmrlůvský Stream was revitalised – a new side arm was created and wetland pools were built. In the Olomouc Region, stabilisation of the Nové Losiny Pond dam and stabilisation of the bottom of the Oskava tributary were completed as part of public interest projects. Dozens of pools were built under the Returning Water to the Forest programme.

In September 2024, the Morava River Basin was hit by extreme flooding, resulting to extensive material damage. On 14 September, a daily precipitation of 386 mm was recorded at the Loučná nad Desnou, Švýčárna station in the Jeseníky Mountains. The flood severely affected rivers on the southern slopes of the Jeseníky Mountains, especially the Upper Morava and Desná Rivers. Security work began during the floods, when barriers were first removed, debris was cleared, overflowing dams were cleaned and fissures were secured.



3rd place, J. Prošková, Bears on an Ice Floe

7. LAND CONSOLIDATION AND LAND AMELIORATION STRUCTURES

Land consolidation

In 2024, the priority within the framework of land consolidation was again long-term water retention in the landscape and erosion and flood protection, i.e. building ponds, small reservoirs, wetlands and elements providing erosion protection. As at 31 December 2024, land consolidation carried out since 1991 resulted in the construction of water management measures on an area of more than 890 ha, erosion protection measures on an area of approximately 976 ha, and ecological measures covering an area of 2,054 ha. In 2024, land consolidation measures included water management measures covering an area of 30.81 ha at a cost of CZK 158 million, erosion measures covering an area of 35.4 ha at a cost of CZK 58 million, and ecological measures covering an area of 69.18 ha at a cost of approx. CZK 98 million.

Land accessibility measures and ecological measures, i.e. transport and green infrastructure, were also built. All of these measures (called 'common facilities') are usually designed as multifunctional, e.g. field paths are supplemented with drainage and catchment ditches, newly designed plots are divided by borders, swales or anti-erosion dykes supplemented with planting of shrubs and trees, and planting of greenery is also added around the reservoirs under construction and along roads. In addition to their transport and ecological function, the measures also serve to protect the soil and improve water management in the landscape. In total, more than CZK 979 million was spent on implementation of common facilities in 2024.

In order to implement these measures in the landscape, it is necessary to secure suitable land for their implementation. The most effective tool for a new arrangement of land is land consolidation, which is used in the public interest to arrange land ownership and create conditions for sensible land management by landowners. At the same time, they provide conditions for improving the environment, protecting

and improving the soil fund, forestry and water management, especially in the sphere of reducing adverse effects of floods and drought, addressing runoff conditions and increasing ecological stability of the landscape.

The competent authority for implementing land consolidation pursuant to Act No. 139/2002 Coll., on land consolidation and land authorities, and amending Act No. 229/1991 Coll., on the regulation of ownership of land and other agricultural property, as amended, and implementing Decree No. 13/2014 Coll., is the State Land Office (SLO).

Land consolidation is carried out either as comprehensive or simple. Currently, comprehensive and simple consolidation has been completed for 42.3% of the agricultural land, while land consolidation is underway on another 11.5% of agricultural land. More than CZK 518 million was spent on their design, including other non-investment activities in 2024.

One of the main results of the comprehensive land consolidation, in addition to the new digital cadastral map, is the above-mentioned common facilities plan, which is closely linked to the spatial plan of municipalities. It is approved by the municipal council and the land where common facilities are intended is usually transferred to the ownership of the relevant municipality.

Land consolidation and the related clarified ownership relations allow the SLO to implement the proposed measures. The SLO ensures design of land consolidation and implementation of common facilities through the ongoing use of funds from the SLO budget, relevant EU funds (RDP, from 2021 also the National Recovery Plan – NRP) and other funds (Road and Motorway Directorate, municipal and city budgets, private entities). Currently, projects are being prepared for drawing funds from the Strategic Plan for the Common Agricultural Policy for the 2023–2027 period. Priority will be given to projects aimed at reducing the negative impact of climate change. Grant support for land consolidation projects from the National Recovery Plan is provided under activity/investment 2.6.4 Implementation of land consolidation with a positive impact on erosion prevention and precipitation capture.

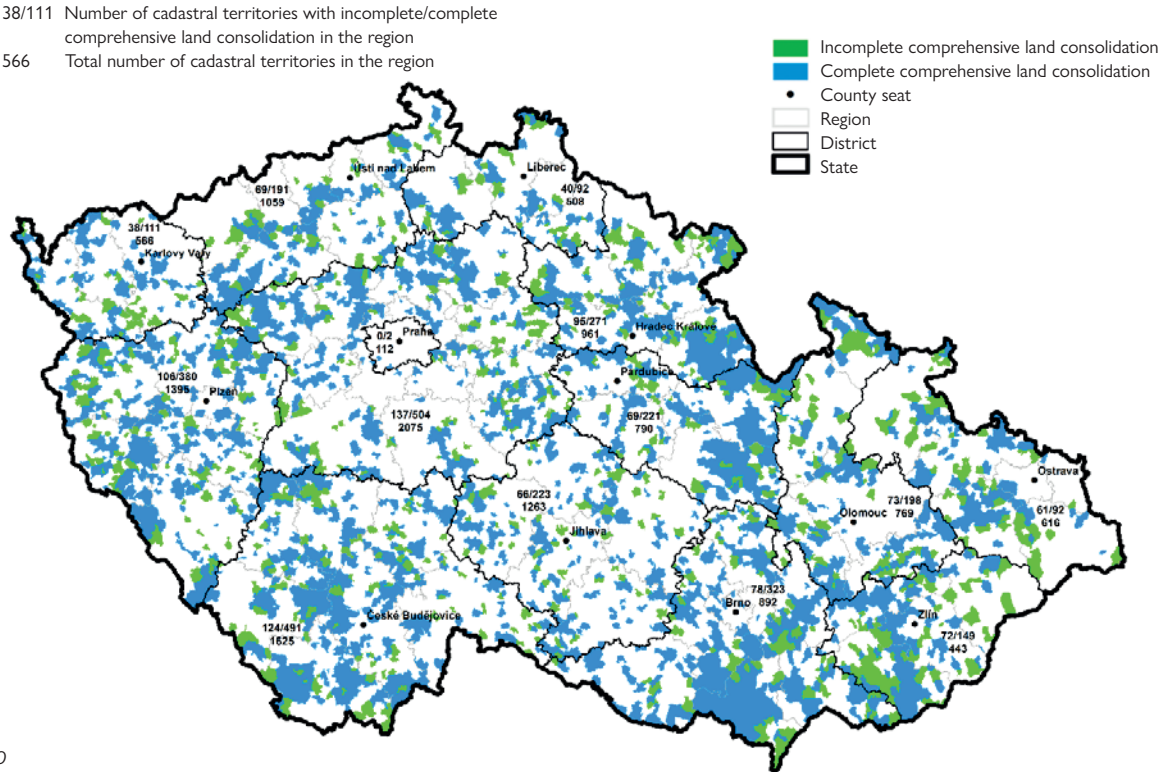
Table 7.1
State Land Office – Utilisation of funds for land consolidation in 2024

Non-investment activity		Implementation						Total non-investment activities and implementation
Total	of which land development proposals	Total	of which					
			roads	anti-erosion measures	water management measures	environmental measures	other ^{*)}	
thousand CZK								
518,164	466,304	978,974	630,964	57,725	158,218	97,870	34,197	1,497,138

Source: SLO

Note: ^{*)} Operational and technical activities.

Figure 7.1
Comprehensive land consolidation in the regions as at 31 December 2024



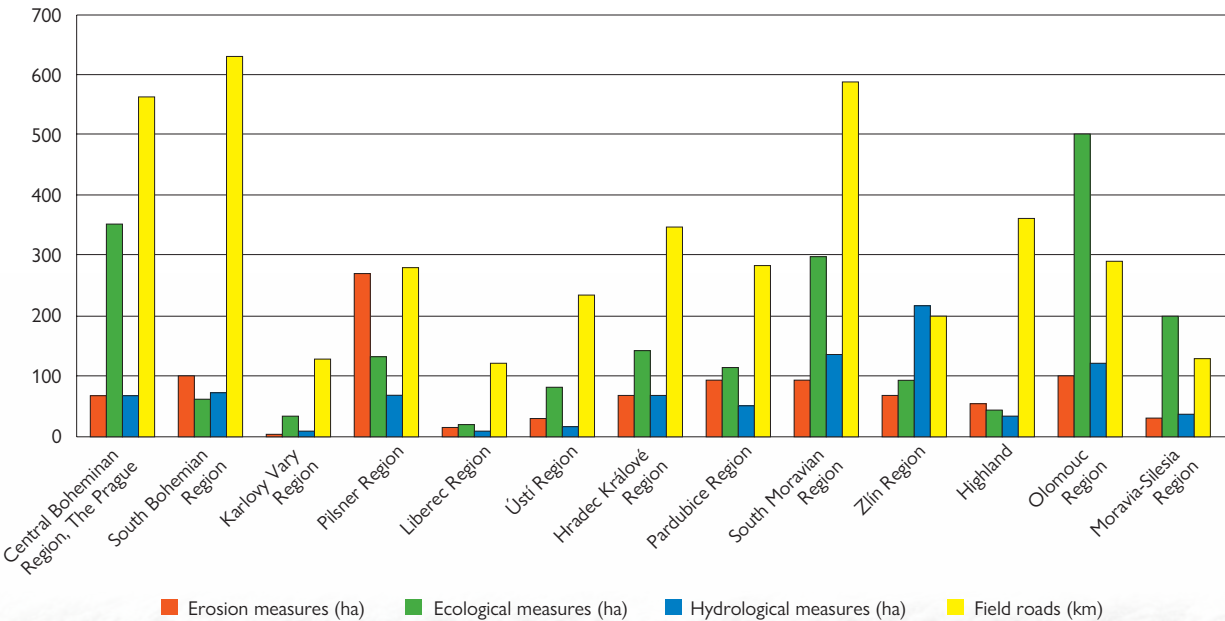
Source: SLO

Table 7.2
State Land Office – Total implemented common facilities – as of 31 December 2024

Type of measure	Anti-erosion measures	Ecological measures	Water management measures	Pathways
	ha			km
Total	975.93	2,053.81	890.22	4,123.12

Source: SLO

Graph 7.1
Implemented common facilities in land consolidation by region as of 31 December 2024



Source: SLO

Amelioration structures

In 2024, funds from the state budget from the chapter of the Ministry of Agriculture in the total amount of CZK 60.6 million were spent on administration, maintenance and operation of water amelioration structures on land owned by the state and managed by the State Land Office. Routine maintenance and repairs were carried out at total cost of CZK 13.2 million, the costs of operation and repairs of pumping stations (drainage and irrigation), including electricity consumption, amounted to a total of CZK 47.4 million.

The SLO is responsible for management of structures used for water management land amelioration and related hydraulic structures within the meaning of Section 56(6) of Act No. 254/2001, on water and amendments to some acts (the Water Act), as amended, and Section 4(2) of Act No. 503/2012 Coll., on the State Land Office and on amendments to some related acts, as amended.

It thus ensures the management, maintenance, repair and operation of the main drainage facilities, main irrigation facilities and erosion control measures owned by the state.

As at 31 December 2024, this property had a total acquisition value of CZK 2.569 billion. The assets comprised 18,943 items of tangible fixed assets, including 8,853.345 km of canals (5,106.158 km open and 3,747.187 km covered), 19 water reservoirs and 129 pumping stations.

Agendas related to administration of hydraulic structures used for land amelioration are ensured by the Department of Water Management Structures of the State Land Office. Besides routine operation, consisting typically in ensuring the necessary maintenance and operation of the entrusted property, communication and consultation activities, property rights administration and information system management,

the Department's activities focused on preparing documents for property records in a digital technical map environment, preparing for digitisation of the Department's agenda and the ongoing digitisation of archived project documentation.

The State Land Office is responsible for managing five major irrigation systems located in the Břeclav and Znojmo Districts. The SLO utilises funds for the modernisation of these systems from the MoA programme 129 310 "Support for Competitiveness of Agri-food Complex – Irrigation – Stage I", sub-programme 129 313 "Support for Optimisation of Irrigation Systems Administered by the State Land Office", from which subsidies for preparation of two projects were drawn in 2024 totalling to CZK 798,600. In order to maintain the proper operation of irrigation systems and their continuity in future, regardless of the entity currently operating irrigation services on the basis of public procurement, the Department of Water Management continued with the gradual preparation of operating rules for these water structures in 2024.

In 2024, the Department of Water Management also focused on the preparation and implementation of landscaping measures related to water retention in the landscape, consisting mainly of revitalisation measures (opening of piped river beds, loosening of the original straightened routes, removal of the original fortifications, creation of pools, etc.). The main drainage facilities suitable for implementation of measures through land consolidation (especially in terms of water content, gradient conditions and land ownership) were identified. These measures can be applied while maintaining the functionality of the detailed drainage system. At the same time, the SLO wants to enable the implementation of such measures by other entities in the form of a free or paid transfer of main drainage facilities.

The extraordinary September 2024 floods also affected water management structures on land managed by the SLO. Immediately after access to the land was granted, the Department employees began mapping flood damage. The total estimated damage to drainage and irrigation systems owned by the SLO amounted to approx. CZK 28 million.



The Dvorecký Stream, Revitalization (source: Ohře River Board, s.e.)



2nd place, E. Jiříčková, Last Glacier

8. WATERWAYS

According to Act No. 114/1995 Coll., on inland navigation, as amended, the Ministry of Transport is responsible for development and modernisation of important waterways. The activities concern, in particular, development of the Elbe-Vltava Waterway, which is the most important transport-significant waterway in the Czech Republic and is the only navigation link between the Czech Republic and the Western European waterway network.

The main European waterway E 20 Elbe and its branch line E 20-06 Vltava is an internationally important transport waterway according to the "European Agreement on Main Inland Waterways of International Importance". Within the meaning of Regulation (EU) No. 2024/1679 of 13 June 2024, of the European Parliament and of the Council of 11 December 2013 on Union's main guidelines for development of the trans-European transport network (TEN-T), the entire Elbe Waterway from the Czech Republic/Germany state border to Pardubice and the Vltava Waterway from Mělník to Třebeň are part of the TEN-T network.

From this perspective, investment projects on the Elbe Waterway are of highest importance.

From the Ústí nad Labem - Střekov Reservoir to Přelouč on the Elbe River and to Třebeň on the Vltava River, navigability is ensured by a system of structures that form a fully functioning transport system independent of external natural conditions. However, in the section from Střekov to the state border of the Czech Republic/Germany, navigation is dependent on water conditions and on the actual flows and on the overall water management situation of the entire Elbe and Vltava River Basins. In order to ensure navigation of the Elbe-Vltava Waterway it is crucial to improve the conditions in the 40-km-long section between Ústí nad Labem and the state border.

The Ministry of Transport currently prepares a strategic document entitled "Water Transport Concept for 2026–2035".

The development and modernisation of waterways are the responsibility of the Waterway Directorate of the Czech Republic, the Elbe, Morava and Vltava River Boards. The operation and maintenance of waterways is ensured by the Vltava, Elbe and Morava River Boards. More detailed information, including financial performance of the River Boards, is provided in Chapter 11.1.



The Smíchov Lock (source: Vltava River Board, s.e.)



2nd place, A. Voržáčková, Cooling coat

9. WATER SUPPLY AND SEWERAGE FOR PUBLIC USE

9.1 Drinking water supply

In 2024, 10.353 million inhabitants in the Czech Republic, i.e., 95.1% of the total population, were supplied from water supply systems.

A total of 613.2 million m³ of drinking water was produced in the Czech Republic for the purposes of supplying drinking water to water mains, of which 593.5 million m³ of drinking water was intended to meet drinking water supply requirements. A total of 488.3 million m³ of drinking water was supplied for payment (invoiced), of which 334.4 million m³ was for households. Drinking water losses amounted to 89.6 million m³, i.e., 15.1% of the water intended for supply.

From 2025 (i.e. starting with the data reported for 2024), the data source are the Selected Property Records (SPR) and Selected Operating Records (SOR) from the Water Supply and Sewerage Information System administered by the Ministry of Agriculture. According to Section 5(3) of the Water Act, all owners of water supply and sewerage systems for public use are required to submit selected data to these registers on an



Manhole Cover, Český Krumlov (author: Hubalová Petra)

annual basis. The CSO performed mathematical corrections on the data taken from SPR and SOR and recalculated the totals for the regions and the Czech Republic. Until 2024, the information source was data provided by the CSO, obtained from a set of professional water supply and sewerage operators and a selected sample of municipalities.

Table 9.1.1
Water supply from waterworks in 1989 and 2018–2024

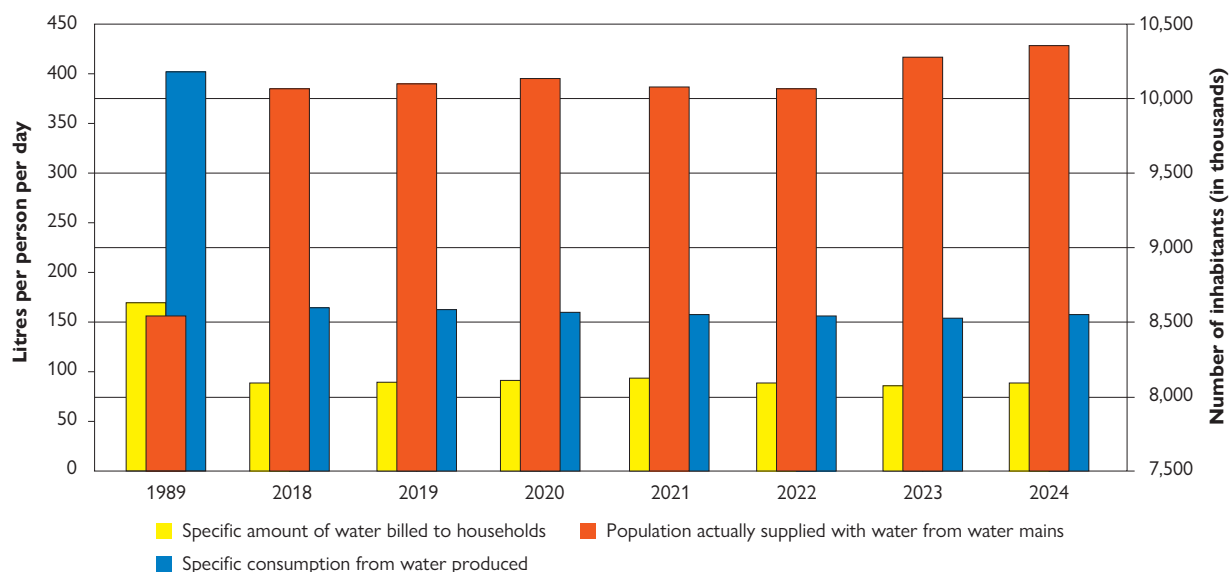
Indicator	Unit	1989	2018	2019	2020	2021	2022	2023	2024
Population (medium)	thousand inhabitants	10,362	10,626	10,669	10,700	10,501	10,530	10,878	10,887
Residents actually supplied with tap water	thousand inhabitants	8,537.0	10,064.1	10,090.1	10,126.3	10,075.9	10,069.0	10,279	10,353
	%	82.4	94.7	94.6	94.6	96.0	95.6	94.5	95.1
Water produced from taps	million m ³ /year	1,251.0	609.7	602.4	589.4	587.2	584.3	583.0	593.5
	% k 1989	100.0	48.7	48.2	47.2	46.3	46.0	46.6	47.4
Total water invoiced	million m ³ /year	929.4	490.4	492.6	479.0	478.7	478.1	476.9	488.3
	% k 1989	100.0	52.8	53.0	51.5	51.5	51.4	51.31	52.5
Specific need from water produced	l/person/day	401.0	165.9	163.5	159.5	157.5	156.7	155.39	156.6
	% k 1989	100.0	41.4	40.8	39.8	39.3	39.1	38.75	39.1
Specific amount of water invoiced total	l/person/day	298.0	133.5	133.8	129.2	130.2	130.1	127.1	128.9
	% k 1989	100.0	44.7	44.9	43.4	43.7	43.7	42.65	43.3
Specific amount of water invoiced for household	l/person/day	171.0	89.2	90.6	91.1	93.2	89.4	86.7	88.3
	% of 1989	100.0	52.2	52.3	52.6	54.5	52.3	50.70	51.6
Water losses per 1 km of lines	l/km day	16,842.0 ^{*)}	3,303.5	2,993.5	3,042.3	2,955.1	2,855.6	2,862.3	2,917.9
Water losses per 1 inhabitant	l/person/day	90.0 ^{*)}	25.8	23.4	23.8	23.5	23.0	22.7	23.6

Source: CSO, MoA since 2024

Note: ^{*)} Data for the water supply systems of the main operators.

Graph 9.1.1

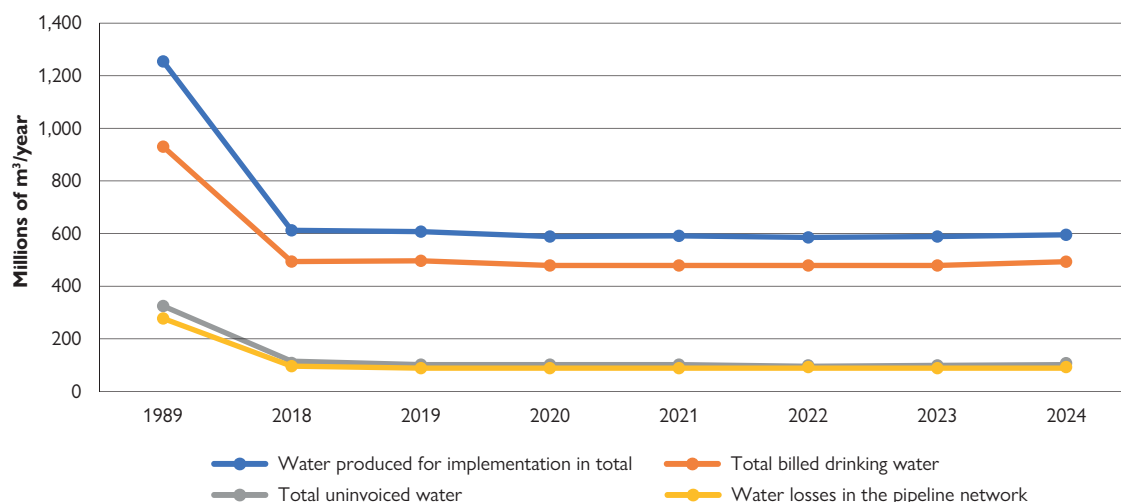
Inhabitants supplied with water, specific needs for water produced and specific amount of water invoiced to households in 1989 and 2018–2024



Source: CSO

Graph 9.1.2

Water produced and intended for supply and total invoiced water in 1989 and 2018–2024



Source: CSO

The published outputs for the regions and the Czech Republic were a result of mathematical calculations. Due to the methodological differences in data collection and processing described above, the data up to 2023 are not comparable with the data from 2024 onwards.

The specific quantity of total invoiced water is the proportion of total water invoiced (to households, industry and other customers) per one connected inhabitant per day, and represents how many litres of total water consumption (invoiced water) is per one connected inhabitant. In 2024, also in connection with a change in methodology compared to the previous year, the consumption of the specific quantity of water invoiced increased slightly to 129 l/person/day and consumption of water invoiced to households to 88.3 l/person/day.

The highest share of the population supplied with drinking water from water supply systems in 2024 was in the capital city of Prague (100%), in the Karlovy Vary Region and the Moravian-Silesian Region (99.8%) and in the Ústí Region (97.7%), while the lowest share of the population supplied with drinking water was in the Pilsen Region (86.5%) and the Central Bohemian Region (89.7%).

The length of the water supply network was extended to 83,867 km. Considering the number of inhabitants supplied, this means that there was an average of 8.1 m of water mains per person supplied.

In 2024, there were 2,338,872 water connections in the Czech Republic. There are more than four inhabitants per water connection.

Table 9.1.2**Population supplied with water, production and supply from water supply systems in 2024**

Kraj	Residents		Water produced for supply	Water invoiced	
	water supply from waterworks	proportion of the population supplied with water out of the total population		total	water supply from waterworks
	number	%	thous. m ³		number
City of Prague	1,387,354	100.0	97,178	80,451	54,356
Central Bohemian Region	1,308,974	89.0	68,668	57,919	41,243
South Bohemian Region	591,078	90.5	32,785	27,233	17,231
Pilsen Region	529,048	86.5	30,428	25,414	16,448
Karlovy Vary Region	292,598	99.8	16,519	14,028	8,747
Ústí Region	790,400	97.7	47,744	36,814	26,609
Liberec Region	425,480	94.7	24,216	18,512	13,164
Hradec Králové Region	521,588	93.9	31,888	23,872	15,736
Pardubice Region	514,907	97.2	31,741	23,139	15,079
Vysočina Region	484,837	93.8	24,679	21,335	14,141
South Moravian Region	1,163,347	94.9	64,120	56,166	39,200
Olomouc Region	605,260	95.0	32,593	26,396	18,229
Zlín Region	556,636	96.1	29,474	23,146	16,104
Moravian-Silesian Region	1,181,839	99.0	61,450	53,858	38,137
Czech Republic	10,353,346	95.1	593,483	488,282	334,423

Source: CSO using data provided by the MoA

9.2 Discharge and treatment of municipal wastewaters

In 2024, 9.832 million inhabitants of the Czech Republic were connected to the sewerage system, which is 90.3% of the total population. A total of 505 million m³ of wastewater was discharged

into the sewerage system (excluding invoiced rainwater). Wastewater treatment plants treated 493.8 million m³ of wastewater (excluding rainwater).

The highest share of population connected to the sewerage system in 2024 was in the capital city of Prague (100%), in the South Bohemian Region and in the Zlín Region (over 98%), the lowest share was in the Liberec Region (approx. 74%).

Table 9.2.1**Wastewater disposal and treatment from sewerage in 1989 and 2017–2024**

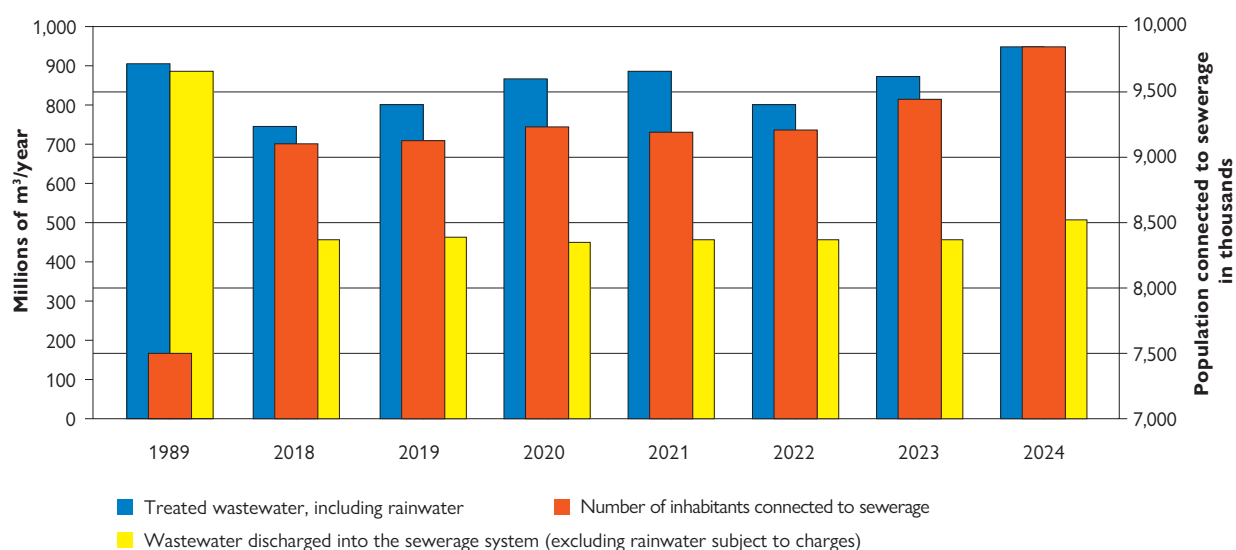
Indicator	Unit	1989	2017	2018	2019	2020	2021	2022	2023	2024
Population (medium)	thousand inhabitants	10,364	10,590	10,626	10,669	10,700	10,501	10,530	10,878	10,887
Inhabitants connected to the sewerage system	thousand of inhabitants	7,501	9,052	9,090	9,120	9,211	9,174	9,191	9,428	9,832
	%	72.4	85.5	85.5	85.5	86.1	87.4	87.3	86.7	90.3
Total wastewater discharged to the sewerage system (excl. chargeable rainwater)	million m ³	877.8	453.3	457.3	461.1	450.5	451.8	453.0	454.5	505.7
	% k 1989	100	51.6	52.1	52.5	51	51.5	51.6	51.72	57.6
Treated wastewater including rainwater ¹⁾	million m ³	897.4 ^{*)}	826.2	743.6	792.6	863.0	877.6	799.7	869.3	943.8
Total treated wastewater excl. rainwater	million m ³	627.6	442.2	446.3	450.3	439.3	440.7	442.4	444.3	493.8 ^{**)}
	% of 1989	100	70	71	71.7	69	70.2	70.5	70.79	78.7

Source: CSO, MoA from 2024

Note: ¹⁾ In 1989, the figures are for the main operators' sewerage.^{**) CSO using data provided by the MoA.}

Graph 9.2.1

Inhabitants connected to the sewerage system and the volume of wastewater discharged and treated in 1989 and 2018–2024



Source: CSO

Table 9.2.2

Inhabitants connected to the sewerage system and the volume of wastewater discharged and treated in the regions in 2024

Region	Residents permanently living in houses connected to the sewerage system		Wastewater discharged to sewerage (excl. charged rainwater)	Treated wastewater excl. rainwater	
	Total	Share	Total	Total	Share
	number	%	thous. m³	number	%
City of Prague	1,387,582	100.0	80,826	80,826	100.0
Central Bohemia	1,276,135	87.4	55,889	55,867	100.0
South Bohemia	554,556	84.9	27,466	26,633	97.0
Pilsen	542,647	88.7	27,748	26,219	94.5
Karlovy Vary	269,556	91.9	13,374	13,371	100.0
Ústí	722,578	89.3	60,672	60,227	99.3
Liberec	333,618	74.2	14,860	14,655	98.6
Hradec Králové	453,773	81.7	21,916	20,958	95.6
Pardubice	442,293	83.5	23,760	21,649	91.1
Vysočina	440,806	85.3	19,579	17,780	90.8
South Moravia	1,202,327	98.1	54,133	53,458	98.8
Olomouc	598,620	94.8	30,745	30,228	98.3
Zlín	572,921	98.9	26,709	25,532	95.6
Moravia-Silesia	1,034,570	87.3	47,996	46,354	96.6
Czech Republic	1,387,582	100.0	80,826	80,826	100.0

Source: CSO using data provided by the MoA

Note: *) CSO using data provided by the MoA.

The total length of the sewerage network in the Czech Republic in 2024 was 55,419 km and there were a total of

3,416 wastewater treatment plants and 1,975,385 sewerage connections.

9.3 Development of water and sewerage charges

According to data from the Ministry of Agriculture, the average water charge excluding VAT was CZK 57.79/m³ and the average sewerage was CZK 52.10/m³ in 2024.

Before the amendment to Act No. 274/2001 Coll., on water supply and sewerage systems for public use and on amendments to certain related acts, as amended (the "Act on Water Supply and Sewerage"), which was implemented by Act No. 76/2006 Coll. came into force, i.e. before 2006, information on the average water and sewerage charges were determined on the basis of data sent by selected water supply and sewerage operators at the request of the Ministry of Health.

The aforementioned Act imposed an obligation on owners or operators, if authorised by the owner in accordance with Section 36(5) of the Act on Water Supply and Sewerage, to submit to the Ministry of Agriculture, by 30 April of the following calendar year at the latest, complete information on the comparison of all items in the calculation of the price according to the price regulations for water and sewerage charges and the actual figures for the previous calendar year (hereinafter referred to as the "comparison"). The following outputs are based on the above comparisons received by the Ministry of Agriculture by 12 June 2025.

According to comparisons sent to the Ministry of Agriculture by individual owners or operators of water supply and

sewerage systems by 12 June 2025, the highest average water charge was in the Ústí Region, where it reached 68.58 CZK/m³. Compared to the national average, it was almost 19% higher. The highest average sewerage charge was in the capital city of Prague, where it was 64.74 CZK/m³, more than 24% higher than the national average. By contrast, the lowest average water charge (49.3 CZK/m³) was in the Olomouc Region. The lowest average sewerage charge (39.78 CZK/m³) was in the South Bohemian Region.

Table 9.3.1
Water and sewerage charges in 2024

Indicator	Unit	2024
Total water charges	million CZK	28,018
Total water invoiced	million m ³ /year	484
Average water charges	CZK/m ³ excl. VAT	57
Total sewerage	million CZK	27,634
Wastewater discharged into the sewerage system *)	million m ³ /year	53
Average sewerage charge	CZK/m ³ excl. VAT	52

Source: CSO

Table 9.3.2
Water consumption, average of water and sewerage charges excl. VAT in 2023

Region	Specific quantity of water invoiced in total	Specific quantity of water invoiced to households	Average water charge	Average sewerage charge
	l/person/day		CZK/m ³ excl. VAT	
City of Prague	158.6	107.1	65.10	64.74
Central Bohemia	121.3	86.4	64.83	55.11
South Bohemia	126.4	80	49.40	39.78
Pilsen	132.1	85.5	55.04	40.95
Karlovy Vary	130.5	81.4	55.55	55.90
Ústí	127.6	92.2	68.58	54.22
Liberec	119.2	84.8	56.25	62.00
Hradec Králové	125.5	82.8	51.90	49.88
Pardubice	123.1	80.3	53.76	52.48
Vysočina	119.6	79.3	52.55	42.77
South Moravia	132.3	92.3	51.18	52.52
Olomouc	120.0	82.9	49.34	51.14
Zlín	114.0	79.3	55.15	41.08
Moravia-Silesia	122.4	86.7	53.91	51.21
Czech Republic	128.9	88.3	57.79	52.10

Source: MoA

9.4 Regulation of the water supply and sewerage sector

In 2024, the Ministry of Agriculture conducted a total of 33 inspections of operators of water supply and sewerage systems for public use.

The Ministry of Agriculture sees the main objectives of the regulation of water supply and sewerage for public use as being mainly in the following four key areas: supervision of the long-term sustainability of water supply and sewerage for public use, especially in relation to the financing plan for renewal and its implementation, increasing the transparency of water and sewerage charges regulation, continuously improving protection of customers and obtaining a basis for proposals for amending legislation in the field of water supply and sewerage for public use, and increasing protection of customers. The supervisory activities of the Ministry of Agriculture, carried out by the Water Supply and Sewerage Regulation Department, continued to focus in 2024 on monitoring the fulfilment of the obligations of owners and operators of water supply and sewerage systems arising from Act No. 274/2001 Coll., on water supply and sewerage systems for public use and on amendments to certain related acts, as amended (hereinafter referred to as the “Water Supply and Sewerage Act”), and also from Decree No. 428/2001 Coll., implementing the Water Supply and Sewerage Act. In total, the Ministry of Agriculture carried out 33 inspections of owners and operators of public water supply and sewerage systems in 2024.

The inspections focused primarily on compliance with essential legal obligations of owners and operators of water management infrastructure. They involved checking the water and sewerage assets actually operated with issued operating permits and the compliance of selected operating records (“SOR”) and selected property records (“SPR”), operating contracts concluded between the owners and operators of WSS, written agreements between the owners of related WSSs, the obligatory contractual relationship between the operator and its professional representative, obligatory elements of customer contracts, and compliance of accounting documents issued for water and sewerage charges with the published price, including control of compliance with the procedures for determining the quantity of water supplied and wastewater discharged. Processing of sewerage rules, including their approval by the water authority and processing of complaints procedures were also inspected. Special attention was paid to the mandatory preparation of funding plans for renovation of WSS and creation of financial provisions for such renovation, including documents confirming their use for this purpose.

When any deficiencies were identified, the MoA requested that corrective action be taken. Recurring deficiencies included, for example, complete absence or incorrect preparation of funding plans for renovation, failure to include mandatory elements in customer contracts, non-compliance of the SPR and SOR with the issued permits for operation of WSSs for public use, absence of decisions on permits to operate a WSS, absence of agreements between owners of related water supply and/or sewerage systems, etc.

The Ministry of Agriculture finds significant differences between inspected entities. It is continuously confirmed that

some municipalities, being owners of water supply systems for public use, underestimate the complex issues in the field, regardless of whether they lease the infrastructure or operate it on their own behalf and under their own responsibility. In some cases, this is reflected, for example, in determining water and sewerage charges in relation to plans for funding renovation of water and sewerage systems. The Ministry of Agriculture also provides methodological assistance to the inspected entities as part of their audits, if they are interested. On the basis of the aforementioned experience, the Ministry of Agriculture collects and evaluates the basis for any proposals for refining the current legislation. Further audits of compliance with pricing regulations were carried out by a specialised financial authority at 129 entities.

Table 9.4.1
Number of inspections conducted at owners and operators of water supply and sewerage systems in 2024

Entities inspected	Number of inspections
Owners of water supply and sewerage systems	10
– of which cities and municipalities	10
Owners and operators of water supply and sewerage systems	16
– of which cities and municipalities in the model of independent operation	14
Operators of water supply and sewerage systems	7
– of which operators in the owner-operator model	5
Total inspections conducted	3

Source: MoA

In addition to its inspection activities, the Water Supply and Sewerage Regulation Department collects data from the sector and subsequently carries out analytical work. The main task of these activities is to evaluate the data and provide relevant information on the state of the water supply and sewerage sector necessary for the design and adoption of appropriate regulatory measures. Since 2016, two separate analytical projects have been carried out at regular annual intervals – Benchmarking of Owners and Benchmarking of Operators, the most important output of which is the Benchmarking Report for the relevant year (hereinafter referred to as the “Report”). These projects involve linking data from SPR, SOR and the Comparison of all items in the calculation of water and sewerage charges for a calendar year and the actual figures for the same year (hereinafter referred to as the “Comparison”).

When processing the benchmarking for 2023, changes in legislation, namely Decree No. 428/2001 Coll. in Annexes 19, 19a and 20, led to adjustments to the benchmarking methodology. The changes mainly concern the indicators for calculating the creation of funds for renewal and economic indicators using calculated profit/loss. Detailed information on

Table 9.4.2
Missing funds for renovation in 2016–2023

Missing funds	2016	2017	2018	2019	2020	2021	2022	2023	Total
	million CZK/year								
Drinking water	456.46	460.21	532.36	507.84	817.07	862.38	929.59	1,097.34	5,663.25
Drainage	758.85	808.21	1,045.56	1,033.58	1,534.21	1,681.71	1,836.36	1,728.28	10,416.76
Total per year	1,215.31	1,268.42	1,577.92	1,541.42	2,351.28	2,544.09	2,765.95	2,825.62	16,080.01

Source: MoA

the changes to the methodology is provided in the Report. Furthermore, the data reported in the Comparison and in the Balancing Calculations were harmonised in accordance with the pricing regulations. In view of this fact, the Balancing Calculations were submitted as Comparisons via the Water Supply and Sewerage Information System directly to the Ministry of Agriculture, which resulted in an increase in the number of Comparisons received.

Data for 2023, covering 98% of the drinking and wastewater market, was successfully included in both projects. This share is determined based on the volume of water invoiced as reported in the Comparison.

The Benchmarking of Owners project emphasizes, in particular, monitoring of achieving the highest possible level of self-funding of the water infrastructure. From this point of view, insufficient generation of funds for renovation of WSS from water and sewerage charges appears to be the most significant problem. From 2016 to 2023, according to the current methodology, the theoretical shortfall in generation of funds for renewal of water and sewerage infrastructure assets was calculated at a total of CZK 16.1 billion, see the table below. The MoA does not have sufficient information on the extent to which this deficit is compensated by subsidies from public and/or private sources.

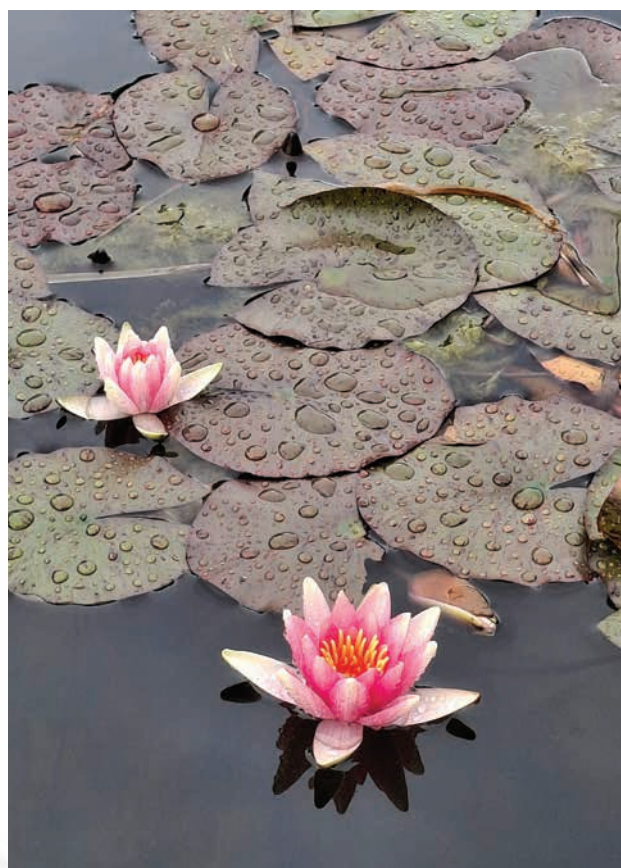
The Benchmarking of Operators analyses focus on the quality of services provided, pricing and environmental impacts. The emphasis is mainly on the quality of drinking water supplied, monitoring of drinking water losses, and development of the share of non-compliant samples of drinking water and wastewater.

The average value of water losses from water intended for use has been on a slight downward trend since 2019, with the exception of 2023, when this value rose from 12.36% to 13.58%. Despite this slight increase, it can be said that these values indicate a stable level of care for water supply assets and work with the loss indicator when improving operational performance. The quality of drinking water supplied has been consistently high in individual years. In 2023, the share of non-compliant samples was higher than 20% in only 0.71% of the analysed market for microbiological and biological samples and 1.33% of the analysed market for physical and chemical samples.

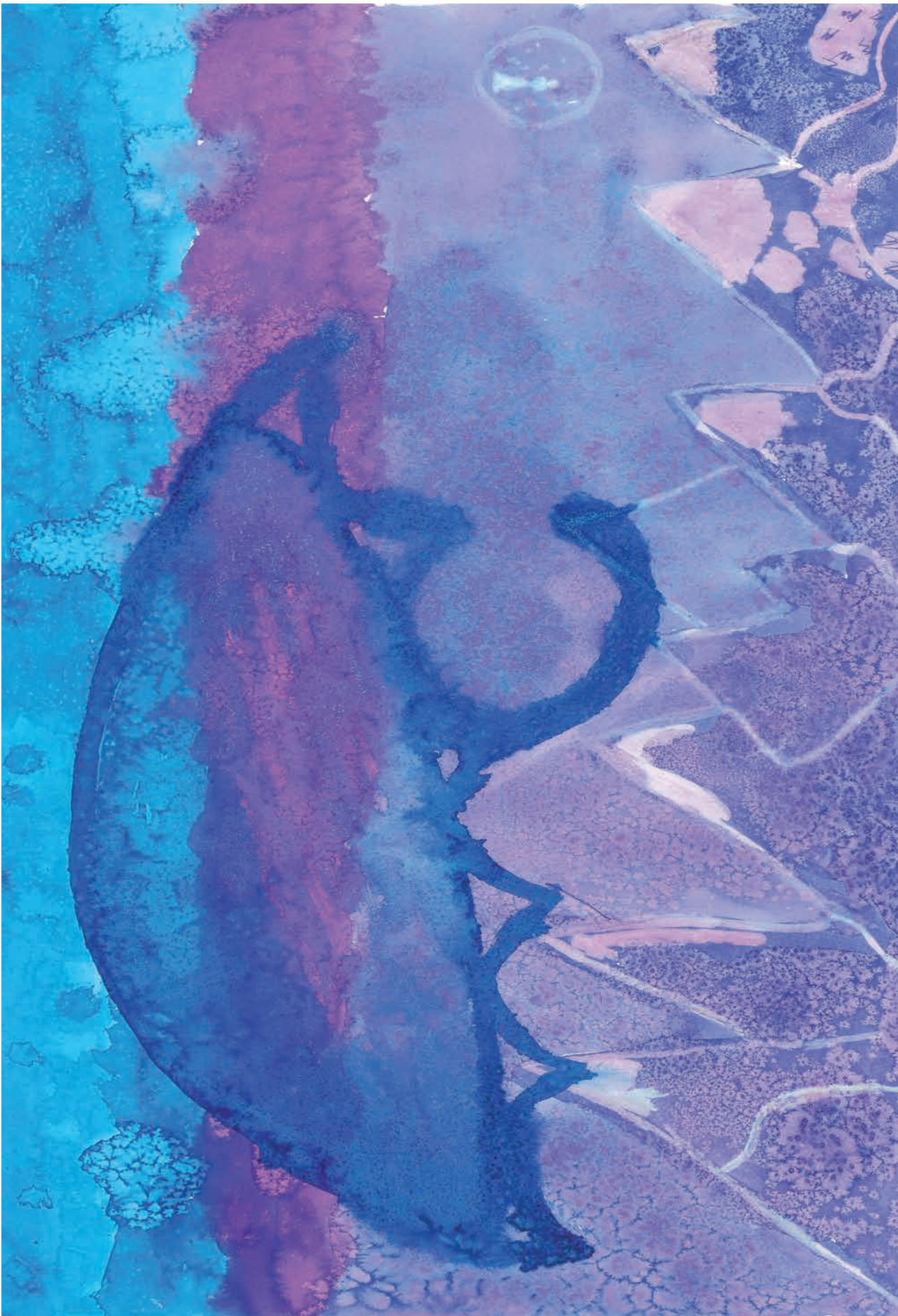
Most of the shortcomings identified in both projects have long been found in groups where WSS operators invoice less than 0.4 million m³ of water per year. These groups

are also dominated by municipal owners and operators. The main shortcomings are insufficient funds for renovation of WSS services, failure to cover all related economically justified costs from water or sewerage charges, and failure to monitor drinking water losses in the pipe network. The most significant factor preventing elimination of these shortcomings is the large number of WSS owners and operators, which has a negative impact, in particular, on the ability to ensure financial independence linked with the ownership and operation of WSS systems, to use modern but more expensive technologies, and to ensure a higher level of expertise in operation.

Transparency of information in the WSS is ensured through the Report and presentation of analysed data, which are available on the MoA website in the Water – Water Supply and Sewerage – WSS Benchmarking section. More detailed information on the activities of the MoA in the field of WSS regulation can be found on the MoA's website in the section dedicated to the WSS.



Water Lilies in Letná (author: Hubalová Petra)



1st place, A. Řehková, Giant Umbrella Traps Greenhouse Gases

10. FISHING AND FISH FARMING

There are currently approximately 24,000 ponds and reservoirs in the Czech Republic with a total area of around 52,000 ha. In 2023, 18,700 tonnes of marketable fish were caught in the Czech Republic.

Fishing in the Czech Republic is divided into production and recreational fishing, and is governed by Act No. 99/2004 Coll., on fish farming, execution of fishing right, fishing guard, protection of marine fishing resources and the amendment of certain acts (the Fishery Act), as amended, and its implementing Decree No. 197/2004 Coll. Production fishing is a traditional part of agricultural production.

The actual fish farming takes place on almost 41,000 hectares of ponds and reservoirs. There are more than 180 major fish producers in the Czech Republic (i.e. with a production of over 5 tonnes of fish per year) and several hundred small-scale breeders. The decisive fish and poultry producers, fish processors, fishery research and education institutions and fishermen's associations are brought together by the Czech Fish Farmers Association, based in České Budějovice.

There are more than 2,000 fishing grounds with an area of approximately 42,000 ha in the Czech Republic, with approximately 350,000 recreational fishermen registered. Fishing grounds are divided into non-trout and trout areas, and their largest users are the Czech Fishermen's Association, i.o., and the Moravian Fishermen's Association, i.o. Every year, recreational fishermen catch approx. 3–4 thousand tonnes of fish in fishing grounds, the common carp being the main species caught.

The Czech fishing industry has long faced many negative factors. One of the most significant problems is ongoing climate change, which affects the water regime, temperature conditions and frequency of extreme weather events, which has an adverse impact on both fish production and fish populations in fishing grounds.

Another important factor is the impact of fish-eating predators, particularly the specially protected Eurasian otter and species that are not specially protected, such as the great cormorant and the grey heron. Damage caused by selected specially protected animals can be compensated in accordance with Act No. 115/2000 Coll., on the provision of compensation for damage caused by selected specially protected animals.

In 2023, compensation exceeding CZK 100 million was paid from the state budget to entities damaged by otters and



Regatta on Machovo Lake (author: Hubalová Petra)

cormorants. The presence of invasive alien species such as the American mink, which will be newly included in the list of invasive alien species with significant impact on the EU according to Regulation (EU) No. 1143/2014 of the European Parliament and of the Council, may also be problematic.

In fish farming in particular, it is essential to find balance between the economic use of ponds and nature conservation requirements. The aim is to curb negative impacts of fish farming on water quality, ecological functions of ponds and biodiversity, while maintaining competitive and long-term stable fish production, which should be able to adapt to climate change while preserving its historical, landscape and ecological values.

Of the total production in 2024, 18,700 tonnes of fish were caught in ponds, 840,000 tonnes from special facilities (mostly salmonid flow-through or recirculating aquaculture systems) and 12 tonnes were caught in reservoirs.

Table 10.1
Market production of farmed fish in the Czech Republic in 2013–2024

Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	tonnes											
Carp	16,809	17,833	17,860	18,354	18,460	18,430	17,945	17,370	17,616	16,437	15,903	16,046
Total	19,358	20,135	20,200	20,952	21,685	21,751	20,986	20,401	20,991	19,259	18,613	18,685

Source: MoA and Czech Fish Farmers Association

6,252 tonnes of live fish were delivered to the Czech market, representing a year-on-year decrease of 64 tonnes. Exports of live fish amounted to 7,849 tonnes, a decrease of 575 tonnes. In 2024, 2,400 tonnes of live weight fish were processed, which is 12.6% of the total amount of marketable fish caught.

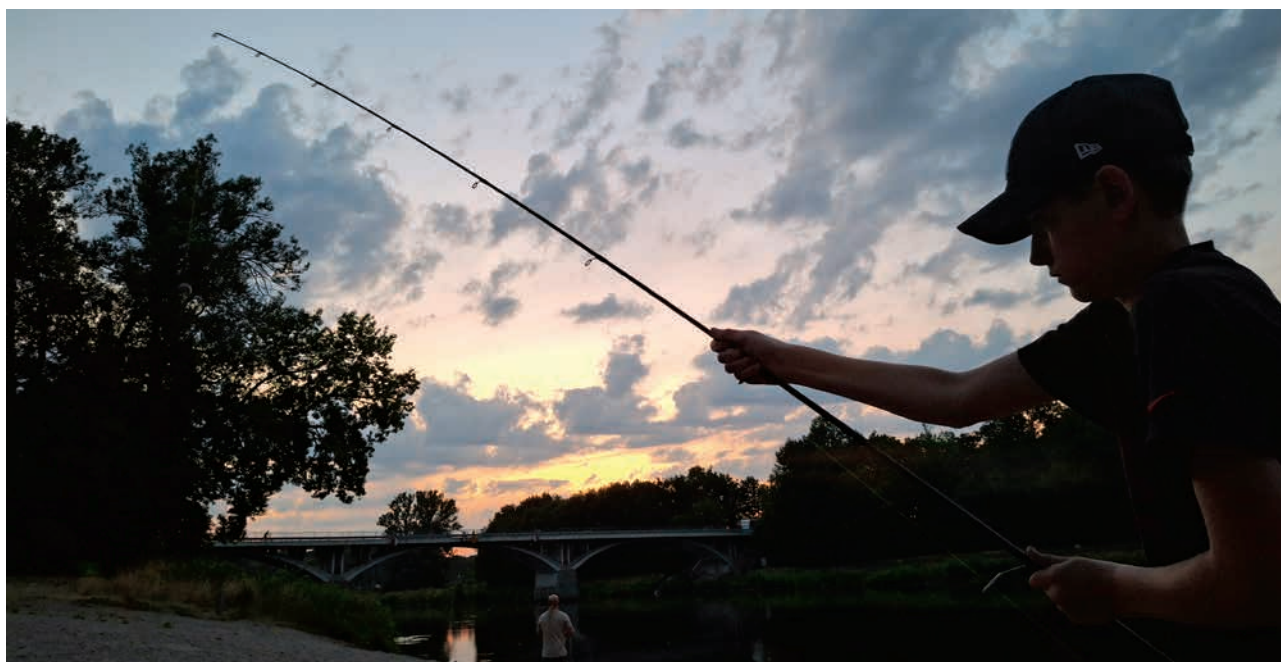
The species distribution of marketable fish is relatively stable and did not change significantly compared to the previous years. Carp accounted for 76.4% of the total catch, salmonids accounted for 3.4%, herbivorous fish for 4.2%, tench 0.8% and predatory fish 1.3% of the total catch.

The domestic market continued to favour live fish supplies, which accounted for 33–34% of production from farming over the last three years. Exports of live fish accounted for 42–49% of the total catch in the past three years, confirming a stable demand for fish produced mainly by members of the professional association. Fish processing plants processed 12.6% of the freshwater marketable fish into products.

Consumption of farmed freshwater fish in the Czech Republic was 0.8 kg/person/year. The total consumption of freshwater fish per capita in 2024 was calculated for a population of 10,909,500 as of 31 December 2023.



The Stolpich Falls (author: Hubalová Petra)



Fishermen on the Elbe Stream (author: Hubalová Petra)

Table 10.2
Consumption of marketable fish produced by farming in the Czech Republic in 2013–2024

Year	Total production	Of which ^{*)}		
		sales of live fish in the Czech Republic	processed fish (live weight)	export of live fish
		thousand tonnes		
2013	19.4	9.0	2.4	8.4
2014	20.1	8.5	2.1	8.4
2015	20.2	9.2	1.9	9.9
2016	21.0	8.3	2.5	11.0
2017	21.7	8.2	2.4	11.1
2018	21.8	8.4	2.2	10.3
2019	21.0	8.5	2.4	10.3
2020	20.4	7.6	2.4	9.2
2021	21.0	7.6	2.4	9.7
2022	19.3	6.4	2.4	9.4
2023	18.6	6.3	2.2	8.4
2024	18.7	6.3	2.4	7.8

Source: MoA and Czech Fish Farmers Association

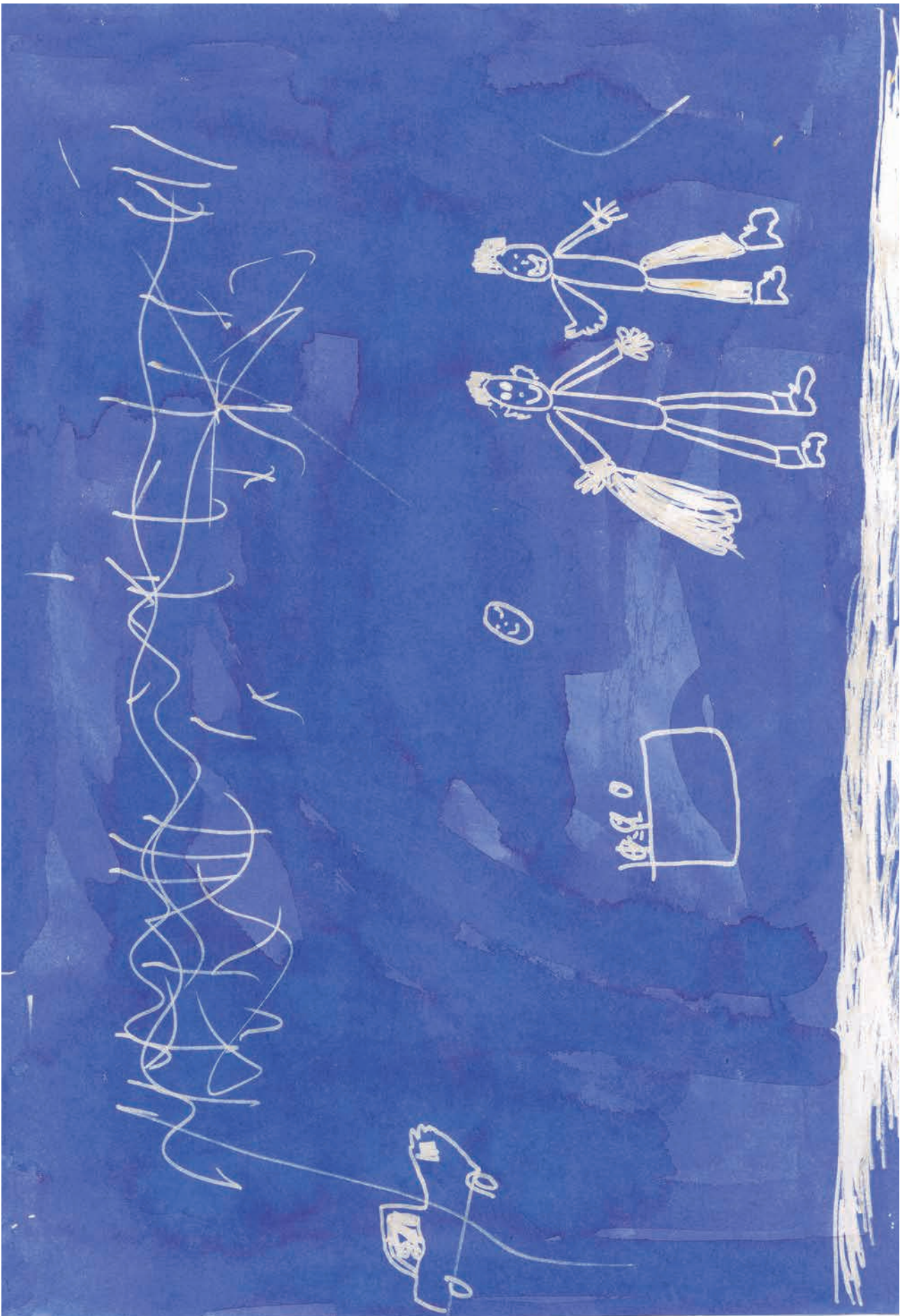
Note: ^{*)} Includes beginning and end of year stocks, losses and imports of live freshwater fish.

Table 10.3
Fish consumption in the Czech Republic in 2013–2024

Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	kg/person/year											
Total fish	5.3	5.4	5.5	5.1	5.4	5.6	6.0	5.7	5.6	5.1	5.6	^{x)}
of which freshwater produced and caught in the Czech Republic	1.4	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.1	1.3	1.1

Source: CSO and Czech Fish Farmers Association

Note: ^{x)} Figures not known at the moment of this publication.



A. Fenych, Let's go save the glaciers

11. FINANCIAL SUPPORT FOR WATER MANAGEMENT

11.1 Financial support from national and transnational programmes

Financial support for water management includes selected national and transnational subsidy programmes related to water management. In 2024 this support represented funding of CZK 11,776 million. The Ministry of Agriculture contributed 22.4% of the total amount (CZK 2,641 million), the Ministry of the Environment for 72.2% (CZK 8,500 million) and the Ministry of Transport 5.4% (CZK 635 million).

Table 11.1.1

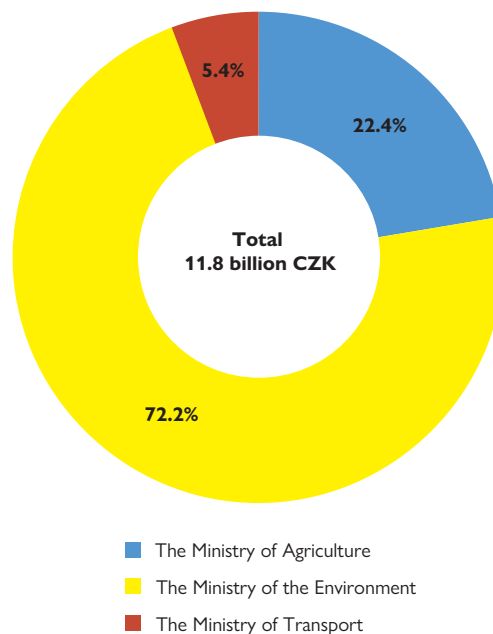
Key state financial support in water management in 2024

Department	Total funds spent in million CZK
Ministry of Agriculture	2,641
Ministry of the Environment	8,500
Ministry of Transport	635
Total	11,776

Source: MoA using sources of the MoE and the Ministry of Transport

Graph 11.1.1

Financial support for water management by ministries in 2024



Source: MoA using sources of the MoE and the Ministry of Transport



The Smíchov Lock (source: Vltava River Board, s.e.)

11.1.1 Funding provided by the Ministry of Agriculture

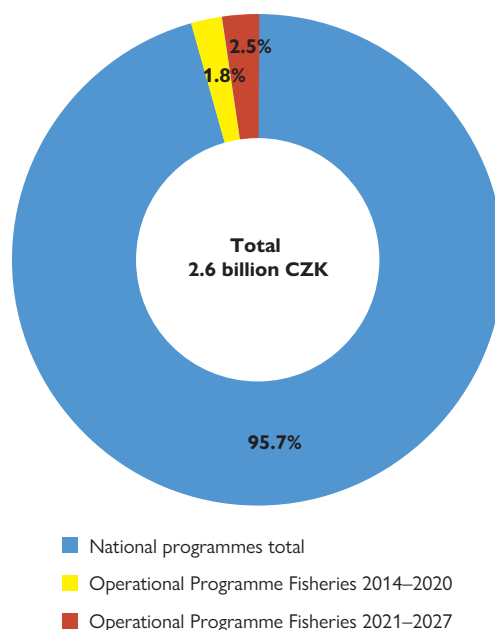
In 2024, the Ministry of Agriculture administered 16 grant programmes related to water management, of which 13 national and three funded from national or supranational sources. In total, funds amounting to CZK 2,641 million were disbursed.



The Jizera Stream, signs of European beaver presence (source: Elbe River Baord, s.e.)

Graph 11.1.1.1

Utilisation of funds of the Ministry of Agriculture in 2024



Source: MoA

Table 11.1.1.1

Funds allocated to water management by the Ministry of Agriculture in 2024

Programme No.	Name	Funds in million CZK
129 400	Support for measures to mitigate negative impacts of drought and water scarcity	589.12
129 410	Support for construction and technical upgrading of water supply and sewerage infrastructure III	707.22
129 420	Support for purchase and integration of water supply and sewerage infrastructure	45.35
129 280	Support for water retention in the landscape – ponds and reservoirs	35.26
129 310	Supporting competitiveness of the agri-food complex – irrigation – Stage II	8.99
129 390	Support for measures on small watercourses and small reservoirs – Stage II	63.29
129 340	Settlement of rights to immovable property affected by the planned implementation of a comprehensive drought solution in Rakovník District	106.48
129 360	Support for flood prevention IV	613.91
129 490	Support for measures on small water reservoirs and minor watercourses – Stage 3	77.26
129 500	Support for flood prevention V	197.88
129 430	Support for measures to mitigate the effects of drought – project preparation and implementation of necessary investments	67.52
17	Support for non-productive functions of fishing grounds	14.94
National programmes in total		2,527.20
	Operational Programme Fisheries 2014–2020	48.60
	Operational Programme Fisheries 2021–2027	65.30
	Rural Development Programme 2014–2020	0.00
Total		2,641.10

Source: MoA

Assurance of the quality of surface water resources

Support for reducing pesticide use on arable land in protection zones of a water resource was approved as part of the Strategic Plan for the Czech Republic for the period 2024–2027 (hereinafter referred to as the “Strategic Plan”) and concerns 4 reservoirs (Švihov, Římov, Vrchlice and Opatovice). Applications are received as of 2024.

Water supply and sewerage

In 2024, investors received support in the form of subsidies totalling approx. CZK 1,296 million under programmes of the Ministry of Agriculture 129 410 “Support for construction and technical improvement of water supply and sewerage infrastructure III”, 129 400 “Support for measures to mitigate negative impacts of drought and water scarcity” and 129 420 “Support for purchase and integration of water supply and sewerage infrastructure”.

The 129 410 programme was approved for 2021–2025, which was extended in 2024 until 2027. The programme is aimed at implementing measures to comply with European Union directives in the field of water supply and sewerage and at development of the water supply and sewerage sector itself. Under this programme, support was provided to 60 projects totalling approximately CZK 707 million.

In 2024, a total of 15 projects were supported with subsidies from the state budget totalling approximately CZK 186 million under sub-programme 129 412 Support for construction and technical improvement of water supply infrastructure III” (measures focused on water supply) and a total of 45 project totalling approx. CZK 521 million under sub-programme 129 413 “Support for construction and technical improvement of sewerage infrastructure III” (measures focused on sewerage systems).

Implementation of another programme, namely 129 400, which was also extended until 2027, continued. This programme is



Reduced Water Level at the Seč Reservoir (source: Elbe River Board, s.e.)

designed to ensure and increase availability of drinking water from water supply systems for public use, especially in areas with water shortages and in areas affected by drought. In 2024, support was provided under this programme to 38 projects in the amount of approx. CZK 589 million.

Under programme 129 420, aimed at supporting integration and transfer of ownership rights to Czech cities and municipalities, no new application was filed in 2024, the programme is approved until the end of 2025.

In 2024, a new sub-programme 129 423 “Vlachovice – settlement of rights to immovable property affected by the planned construction of a water structure – stage 2” was opened at the Ministry of Agriculture under programme 129 420, intended to co-finance the settlement of ownership rights for the purposes of implementing the Vlachovice Reservoir.

The beneficiary of the subsidy under sub-programme 129 423 “Vlachovice – settlement of rights to immovable property affected by the planned construction of a water structure – stage 2” is the Morava River Board. In 2024, a subsidy of CZK 45.35 million was provided for these settlements under 10 projects.

Table 11.1.1.2

State budget funds allocated under the Ministry of Agriculture programmes 129 400, 129 410, and 129 420 in 2024

Form of support	Water supply and treatment plants	Sewerage and water treatment plants	Renovation of water supply and sewerage systems after floods	Support for purchase of immovable property under future water structures	Total
million CZK					
Subsidies for WSS development and renovation	775.132	521.214	0	0	1,296.345
Subsidies for WSS purchase and consolidation and support for purchase of immovable property under future water structures	0	0	0	45	45
Total subsidies	775.132	521.214	0	45.35	1,341.696
Repayable financial support	0	0	0	0	0
Total	775.132	521.214	0	45.35	1,341.696

Source: MoA

Table 11.1.1.3

State support for construction of water supply systems, water treatment plants, sewerage systems and wastewater treatment plants within the Ministry of Agriculture in 2018–2024

Financial resource	2018	2019	2020	2021	2022	2023	2024
	million CZK						
Repayable financial support	0	0	0	0	0	0	0
State budget subsidies	597	974	1,087	1,895	1,998	2,048	1,296
Support from state budget	597	974	1,087	1,895	1,998	2,048	1,296
Soft loan (EIB and CEB)	0	0	0	0	0	0	0
Total support	597	974	1,087	1,895	1,998	2,048	1,296

Source: MoA



The Flood Control Measures (source: Vltava River Board, s.e.)

Flood protection

In 2024, the Ministry of Agriculture funded projects under 129 360 programme “Support for flood prevention IV”. The programme follows the previous phase, with greater emphasis on implementation of measures with retention effects. Immediate implementation of important projects straight after the programme was launched was possible due to project preparation ensured as part of the previous third stage. In 2024, 10 projects were supported, with a total subsidy of almost CZK 614 million.

The programme is divided into four sub-programmes, focused on supporting preparation of projects for major constructions, support for flood control measures with retention, support for flood control measures along watercourses and also on preparation and implementation of selected constructions related to the construction of the Nové Heřminovy Reservoir.

Sub-programme 129 363 “Support for project documentation” is intended to support project documentation for major flood control measures that will subsequently be implemented under other sub-programmes and pre-project preparation

for projects prepared on the basis of Government Resolution No. 243 of 18 April 2018, on preparation of constructing reservoirs in drought-affected regions as an effective measure to reduce water scarcity and the proposal for their funding and other major hydraulic structures.

The subject of sub-programme 129 364 “Support for flood control measures with retention” is the establishment of new retention areas, modifications to existing reservoirs with retention effect to increase the level of flood protection, flood spill measures and the establishment and reconstruction of polders including other accompanying measures.

The objective of sub-programme 129 365 “Support for flood control measures along watercourses” is to build flood control measures along watercourses by constructing, for example, protective dykes and increasing the capacity and stabilisation of watercourse channels (especially in urban areas).

In 2019, the programme was expanded to include a new sub-programme 129 366 “Support for preparation and implementation of induced investments and constructions related to construction of the Nové Heřminovy Reservoir”, the aim of which is to prepare the site for the planned construction

of the hydraulic structure by carrying out preparatory work and technical measures. The sub-programme implements the Government Resolution No. 386 of 3 June 2019 concerning the Report on the state of preparation and implementation of measures aimed at reducing flood risks in the Upper Opava River Basin, including a proposal of securing funds for preparation and implementation of investments and constructions resulting from the “Measures on the Upper Opava River” project.

As in previous years, implementation of the measures of 129 360 programme is ensured by the watercourse administrators (the River Boards and Forests of the Czech Republic and administrators of small watercourses designated by the Ministry of Agriculture pursuant to Section 48(2) of the Water Act). Municipalities actively participate in the programme as applicants for support in construction of locally-significant measures aimed at reducing the risk of flooding from heavy precipitation on small watercourses.

The programme also allows for involvement of municipalities, associations of municipalities, towns, cities and regions in the process of designing flood control measures as so-called proponents, where implementation of the measures proposed by them will be ensured by the relevant administrators of watercourses.

In 2024, funds from the European Commission's National Recovery Plan, which aims to support investment and reforms and kick-start the recovery of the Czech economy affected by the Covid-19 pandemic, were used to finance 5 projects. Under sub-component 2.6.1 Flood protection, almost CZK 64.376 million was used in 2024.

In 2023, administration of 129 500 programme “Support to flood prevention V” was launched, and in 2024, funding of the first projects began. In 2024, 42 projects were administered, of which 9 received subsidies totalling almost CZK 197.9 million.

The programme follows up the previous stages with an emphasis on implementation of measures with retention effects and systemic flood prevention measures.

The programme is again divided into four sub-programmes focusing on support for preparatory project work for major construction projects, support for flood prevention measures with retention, support for flood prevention measures along watercourses, and preparation and implementation of induced investments related to the construction of the Nové Heřminovy Reservoir.

Table 11.1.1.4
Utilisation of funds for selected major actions of the Ministry of Agriculture 129 360 programme in 2024

Watercourse administrator	Name of project	Implementation dte	Total costs	Subsidies in 2024
			million CZK	
Ohře River Board	Jezeří Reservoir – reconstruction	07/22–12/25	83,336	36,361
Vltava River Board	Orlík Reservoir – protection against floods	09/21–12/28	36,361	345,665
Elbe River Board	Harcov Reservoir – ensuring safety during floods	08/22–12/26	345,665	111,489
Morava River Board	Letovice Reservoir – reconstruction including sediment removal	08/21–01/25	111,489	19,310
Forests of the Czech Republic	Rusava – at 26,317-28,525 km stretch	03/20–06/27	19,310	1,270

Source: MoA as of 05/2024

Table 11.1.1.5
Utilisation of state budget funds under the Ministry of Agriculture 129 360 programme by watercourse administrators in 2024

Owners and administrators	Investments	Non-investments
	million CZK	
Elbe River Board	152,035	0
Vltava River Board	345,665	0
Ohře River Board	95,631	0
Morava River Board	18,602	0.708
Forests of the Czech Republic	1,100	0.170
Total	613,033	0.878

Source: MoA

Sub-programme 129 502 “Support for project preparation of significant flood control measures” is intended to support pre-project preparation and project documentation for significant flood control construction projects, which will subsequently be implemented under other sub-programmes.

The subject of sub-programme 129 503 “Support for flood control measures with retention” is the creation of new retention areas, modifications to existing water reservoirs with a retention effect to increase the level of flood protection, measures to prevent flooding, and creation and reconstruction of flood control areas, including other accompanying measures.

The objective of sub-programme 129 504 “Support for flood control measures along and on watercourses” is to construct flood prevention measures along watercourses, such as protective embankments, and to increase the capacity and stabilise the beds of watercourses (especially in built-up areas).

Table 11.1.1.6**Utilisation of funds allocated to significant projects of the Ministry of Agriculture programme 129 500 in 2024**

Watercourse administrators	Name of project	Implementation date	Total	Subsidy in 2024
			CZK million	
Elbe River Basin	Librantický Stream, Bukovina, construction of a dry retention reservoir	10/22–06/25	28.107	25.296
Oder River Basin	Protective embankment on the Oder and Orlovská Stružka, Bohumín-Pudlov	10/22–03/27	400.319	98.905
Morava River Basin	Bečva, Skalička Reservoir – pre-project preparation, technical solution	01/23–09/25	41.960	14.443
Forests of the Czech Republic	Mušlov V	08/23–06/25	27.059	22.865

Source: MoA as of 02/2025

Table 11.1.1.7**Use of state budget funds under the Ministry of Agriculture programme 129 500 by watercourse administrators in 2024**

Owners and administrators	Investments
	CZK million
Elbe River Basin	54.593
Oder River Basin	102.310
Morava River Basin	14.443
Forests of the Czech Republic	26.536
Total	197.882

Source: MoA

Sub-programme 129 505 “Support for implementation of induced investments related to the construction of the Nové Heřminovy Reservoir” focuses on preparatory work and technical measures that must be implemented prior to the actual construction of the reservoir.

As in previous years, the implementation of measures under programme 129 500 is ensured by watercourse administrators (River Boards, Forests of the Czech Republic, as well as administrators of small watercourses designated by the Ministry of Agriculture pursuant to Section 48(2) of the Water Act). Municipalities are actively involved in the programme as applicants for support for the construction of local measures aimed at reducing the risk of floods from heavy precipitation on small watercourses.

This programme also allows municipalities, associations of municipalities, towns and regions to participate in the process of designing flood control measures through the institution of the so-called proposer, whereby the implementation of the measures they propose will be ensured by watercourse administrators.

Removing flood damage

Security work after September 2024 floods

A total of CZK 300 million was allocated for initial safety work after the floods in September 2024. In 2024, CZK 238 million was provided to the Oder and Morava River Boards, for ensuring safety after the flood. The remaining funds of CZK 62 million are to be used in 2025.

In 2024, programme **129 370 “Removal of flood damage to state water management assets III”** was approved together with its **sub-programme 129 373 “Removal of the consequences of the 2024 floods”**, intended for River Boards and Forests of the Czech Republic) to remove damage caused by the floods in September 2024. The sub-programme shall be open until 2030 with an allocation of CZK 10 billion. The first grant applications are to be accepted in 2025.

Table 11.1.1.8**Estimated flood damage to state water management assets**

Investor	Estimated damage
	billion CZK
Oder River Basin	6.076
Morava River Basin	2.993
Elbe River Basin	0.786
Vltava River Basin	0.064
Forests of the Czech Republic	2.878
Total	12.797

Source: MoA

The programme addresses flood damage to watercourses and state water management assets. The objective is to repair flood damage to watercourse beds, including related objects, structures and riparian vegetation owned by the state, damaged by extreme stress during floods, and to carry out appropriate stabilisation works to ensure long-term functionality of watercourse beds and related structures and facilities in the affected areas.

Small watercourses and small reservoirs

In 2024, programme 129 390 “Support for measures on small watercourses and small reservoirs – Stage 2” continued. It is divided into two sub-programmes, sub-programme 129 392 and 129 393. A total of 27 projects were supported with a total amount of CZK 63.286 million.

Subprogramme 129 392 “Support for measures on small watercourses, ponds and small reservoirs – Stage 2” is intended for River Boards and Forests of the Czech Republic. In 2024, it

Table 11.1.1.9**Use of state budget funds and number of funded projects under 129 390 programme in 2024**

Owners and administrators	Allocation			Number of funded projects
	Investments	Non-investments	Investments	
	million CZK			
Ohře River Board	0.000	0.000	0.000	0
Forests of the Czech Republic	32.078	6.711	38.789	20
Morava River Board	2.493	3.118	5.611	2
Vltava River Board	3.124	13.859	16.983	2
Oder River Board	0.000	0.000	0.000	0
Elbe River Board	0.424	0.000	0.424	1
Total 129 392	38.119	23.688	61.807	25
Total 129 393	1.479	0.000	1.479	2
Total 129 390	39.599	23.688	63.286	27

Source: MoA

Table 11.1.1.10**Use of state budget funds and number of projects funded under programme 129 490 in 2024**

Owners and administrators	Utilisation			Number of financed projects
	Investment	Non-investment	Total	
	million CZK			
Ohře River Basin	33.065	0.768	33.833	2
Forests of the Czech Republic	16.077	6.900	22.977	42
Morava River Basin	3.993	14.989	18.982	12
Vltava River Basin	0.000	1.464	1.464	6
Oder River Basin	0.000	0.000	0.000	0
Elbe River Basin	0.000	0.000	0.000	0
Total 129 490	53.135	24.121	77.256	62

Source: MoA

provided financial support for 25 projects with a total volume of CZK 61.807 million.

Subprogramme 129 393 “Support for measures on ponds and small reservoirs owned by municipalities – Stage 2” is intended for municipalities and associations of municipalities. Under this sub-programme, financial support for 2 projects amounting to CZK 1.479 million was provided in 2024.

In 2024, a follow-up programme 129 490 “Support for measures on small water reservoirs and minor watercourses – Stage 3” was launched, which is divided into two sub-programmes, sub-programme 129 492 and 129 493. A total of 62 projects were supported with a total amount of CZK 77.256 million.

Sub-programme 129 492 “Support for measures on small water reservoirs and minor watercourses – Stage 3” is intended for River Boards and Forests of the Czech Republic. In 2024, financial support was provided for 62 projects with a total volume of CZK 77.256 million.

Sub-programme 129 493 “Support for measures on ponds and small water reservoirs owned by municipalities – Stage 3”

is intended for municipalities and associations of municipalities. No financial support was provided under this sub-programme in 2024.

Water in the landscape

In 2024, the Ministry of Agriculture continued to administer the 129 280 programme “Support for water retention in the landscape – ponds and reservoirs”, the funding of which runs from 2016 to 2024. The total amount allocated was CZK 35.26 million and 7 projects were funded in 2024. At the same time, funding under programme 129 280 was terminated in 2024, as the programme ended and is to be evaluated in 2025.

The objective of programme 129 280 is support for renovation and improvement of landscape retention ability, improvement of the technical state of the ponds in the Czech Republic and renewal of water management functions of ponds and reservoirs, increasing safety of ponds and reservoirs during floods and ensuring their passability during floods with flow rates of Q_{100} and higher, ensuring a minimum flow in watercourses below ponds and reservoirs even in periods of prolonged droughts,

removing new flood damage at dams and facilities pertaining to ponds and reservoirs and removing emergency situation and their consequences on ponds and reservoirs.

Programme 129 280 is divided into three sub-programmes, namely sub-programme 129 282 “Support for construction, restoration, reconstruction and de-mudding of ponds and reservoirs”, sub-programme 129 283 “Remediation of emergency situations on ponds and reservoirs” and sub-programme 129 284 “Remediation of flood damage on ponds and reservoirs”.

Table 11.1.1.11
Use of state budget funds under programme 129 280 in 2024

Subprogramme	Number of projects	Financial support
		million CZK
129 282	7	35.26
129 283	0	0.00
129 284	0	0.00
Total	7	35.26

Source: MoA



The Hracholusky Reservoir after Rain (source: Vltava River Board, s.e.)

Table 11.1.1.12
Use of state budget funds for selected projects under programme 129 280 in 2024

Applicant	Project name	Implementation date	Total costs	Subsidies in 2024
			million CZK	
Josef Plzák	Small water reservoir Záchlumí pod Višňovkou	11/22–12/24	10.37	3.15
Horák Fishing s.r.o.	Reconstruction and desludging of the Bohuslavice IV pond	12/22–12/24	10.04	5.66
Pavel Kršek	Construction of the Upper and Lower retention reservoirs in the cadastral area of Vintířov	12/21–12/24	16.65	10.1

Source: MoA

In 2024, financial support was provided under sub-programme 129 282 to 7 projects in a total amount of CZK 35.26 million.

In 2024, the first call for applications for the follow-up programme 129 380 “Support for water retention in the landscape – ponds and reservoirs – Stage 2” was launched.

In 2024, the Ministry of Agriculture continued programme 129 310 “Support for competitiveness of the agri-food complex – irrigation – Stage II”. Under programme 129 310, financial support was provided for 9 projects in the amount of CZK 8.99 million.

The objective of 129 310 programme is to reduce the need for water for irrigation, energy and personnel intensity of operating irrigation systems, greater flexibility of irrigation systems in meeting different irrigation requirements, a reduction in total water consumption per irrigation dose and the use of the positive environmental and non-economic effects of irrigation as one of the adaptation measures to climate change, thereby increasing the competitiveness of agricultural companies and stabilising agricultural production.

Programme 129 310 is divided into two sub-programmes. Sub-programme 129 312 “Support for rehabilitation and construction of irrigation details and optimisation of irrigation networks – Stage II” is intended to support rehabilitation and construction of irrigation details and rehabilitation, construction and optimisation of irrigation networks. Sub-programme 129 313 “Support for optimisation of irrigation networks managed by the State Land Office” is aimed at supporting rehabilitation, construction and optimisation of irrigation networks.

Table 11.1.1.13
Use of state budget funds under the Ministry of Agriculture 129 310 programme in 2024

Sub-programme	Number of funded projects	Financial support
		million CZK
129 312	7	8.19
129 313	2	0.79
Total	9	8.99

Source: MoA

Table 11.1.1.14**Use of state budget funds under the Ministry of Agriculture 129 310 programme for selected projects in 2024**

Applicant	Project	Implementation date	Total costs	Subsidies in 2024
			million CZK	
ZEKO Dyjákovice s.r.o.	Pivot irrigator – Dyjákovice U Donáta	10/24–09/25	3.30	1.65
ZEM-INVEST a.s.	Purchase of a mobile pumping station	10/24–10/24	1.20	0.60
Mutěnický dvůr s.r.o.	Purchase of an irrigation system	10/24–09/25	4.79	2.39

Source: MoA

In 2024, financial support under sub-programme 129 312 was provided to 7 projects totalling to CZK 8.19; under sub-programme 129 313 to 2 projects in the amount of CZK 0.79 million.

Preparation for construction of water structures

In 2024, new sub-programme 129 423 “Vlachovice – settlement of rights to immovable property affected by the planned construction of a reservoir – stage 2” was opened at the Ministry of Agriculture under programme 129 420. It is intended to co-finance the settlement of ownership rights in connection with the construction of the Vlachovice Reservoir.

The objective of sub-programme 129 423 is to implement the task set out in Government Resolution No. 257 of 15 April 2019, which approved the Principles for settlement of rights to immovable property affected by the planned implementation of the Vlachovice Reservoir. The main purpose of the programme is to settle the property rights of all owners affected by the construction of the future Vlachovice Reservoir in accordance with the approved incentive compensation by 2024.

The beneficiary of the subsidy under sub-programme 129 423 “Vlachovice – settlement of rights to immovable property affected by the planned construction of the reservoir – stage 2” is the Morava River Board, s.e.

The Vlachovice Reservoir is a key source of drinking water for the Zlín Region and will be able to supply water to the adjacent parts of the South Moravian and Olomouc Regions through a network of water supply systems. It is an important measure aimed at mitigating the consequences of climate change in the Czech Republic.

In 2024, the Ministry of Agriculture continued programme 129 340 “Settlement of rights to immovable property affected by the planned implementation of a comprehensive solution to drought in the Rakovník District”. Funds amounting to CZK 106.48 million were disbursed under programme 129 340 in 2024.

The aim of programme 129 340 is to implement the task set out in Government Resolution No. 971 of 5 October 2019, which approved the Principles for settlement of rights to immovable property affected by the planned implementation of a comprehensive drought solution in the Rakovník District,

Stage I, and approved funding totalling to CZK 485 million for 2020–2025. In the first stage, immovable property affected by the construction of the Kryry, Senomaty and Šanov Reservoirs is settled.

Programme 129 340 is divided into three sub-programmes, namely sub-programme 129 342 “Kryry Reservoir – settlement of rights to immovable property affected by the planned construction of the reservoir”, where the Ohře River Board is the beneficiary of the subsidy, and sub-programme 129 343 “Senomaty and Šanov – settlement of rights to immovable property affected by the planned construction of the reservoir”, where the Vltava River Board is the beneficiary of the subsidy. At the beginning of 2023, documentation was approved to extend programme 129 340 with a new sub-programme 129 344 “Kryry Reservoir feeders – the Vidhostice Reservoir; the Kolečovický Stream and the Rakovnický Stream – settlement of rights to immovable property affected by the planned implementation of the feeders”, where both the Ohře and Vltava River Boards are the beneficiaries; applications to the programme were accepted during 2024.

The Kryry Reservoir is a key element in the planned system of measures aimed at addressing drought in the Rakovník District. Together with the small reservoirs of Senomaty and Šanov in the Rakovnický Stream catchment area and the relevant feeders, it is an effective solution to enhancing water resources and mitigating the water deficit in the area.

In September 2022, the documentation for a new programme 129 430 “Support for measures to mitigate the effects of drought – project preparation and implementation of necessary investments” was approved, and the Ministry of Agriculture began financing it in 2024.

The programme focuses on implementation of pre-project preparation, project preparation and implementation of investments related to the planned construction of the Vlachovice, Kryry, Senomaty and Šanov Reservoirs, aimed at mitigating the effects of drought. Given the size of the planned reservoirs, it is necessary to ensure high-quality pre-project preparation (exploratory work, studies, assessments, etc.) and subsequently project documentation for the construction. At the same time, it is necessary to plan and implement related construction works and measures triggered by the planned construction of the reservoirs. These include a set of induced and accompanying investments, infrastructure changes, land use changes and measures to ensure the long-term use of

the newly created water source and stabilise the changed conditions in the area. These measures must be implemented before the actual construction of the specific water reservoir.

The programme is divided into two sub-programmes according to their focus, namely project preparation – sub-programme 129 432, and the implementation of so-called induced investments – sub-programme 129 433.

The measures are implemented by the relevant River Boards and in the case of sub-programme 129 433, also by municipalities (voluntary associations of municipalities) affected by the construction of the reservoirs.

In 2024, a total of 5 applications were administered under sub-programme 129 432, of which 2 projects were financed with a subsidy of more than CZK 67 million.

Table 11.1.1.15
Use of state budget funds under the Ministry of Agriculture programme 129 430 by individual watercourse administrators in 2024

Owners and administrators	Investments
	million CZK
Ohře River Basin	2.936
Morava River Basin	64.582
Total	67.518

Source: MoA

Fisheries

In order to support non-productive functions of fishing grounds, the Ministry of Agriculture established national subsidy programme 17 “Support for non-productive functions of fishing grounds” on the basis of the provisions of Art. 1, 2, 2(d) of Act No. 252/1997 Coll., on Agriculture, as amended. In 2021, it was divided into DT 17.A – Support of non-productive functions of fisheries and DT 17.B – Support of fish community recovery after a water clarity accident. In 2024, DT 17.A funds amounting to CZK 14.185 million were used and 67 applications were funded. In 2024, funds were utilised for DT 17.B in the amount of 0.750 million and 1 application was funded.

Table 11.1.1.16
Use of state budget funds under the Ministry of Agriculture subsidy programme 17 “Support for non-productive functions of fishing grounds” in 2024

Programme	No. of applications	No. of projects funded	Financial support
			million CZK
17.A	67	67	14.185
17.B	1	1	0.750
Total	68	68	14.935

Source: MoA



The Jezeří Reservoir (source: Ohře River Board, s.e.)

Grant Programme 17 was launched by the Ministry of Agriculture in 2015. Grant Programme 17.A was created to promote biodiversity of fish stocks in surface waters for users of fishing grounds. The subsidy rate is per hectare of fishing grounds. Funds may only be used for costs covering introduction of those fish species that are introduced in accordance with the predetermined stocking levels. The 17.B grant programme was created with the view of restoring fish populations in surface waters after an accident deteriorating water clarity resulting in a low number of survived fish community, intended for users of fishing grounds. The subsidy rate is per hectare of fishing grounds. Funds may only be used for costs covering restocking with those fish species that were planted in accordance with the predetermined stocking levels.

Operational Programme Fisheries 2014–2020

In 2024, the Ministry of Agriculture reimbursed subsidies to 56 projects from the Operational Programme Fisheries 2014–2020 totalling approx. CZK 48.6 million.

The Operational Programme Fisheries 2014–2020 is a programme under which fishermen can benefit from funding from the European Maritime and Fisheries Fund under Union Priority 2 – Supporting environmentally sustainable, innovative and competitive knowledge-based and resource-efficient aquaculture for productive investments in aquaculture, supporting new farmers, planting eels in selected fisheries in the Elbe and Oder River Basins and strengthening the competitiveness of aquaculture businesses. Under Union Priority 3 – Supporting implementation of the Common Fisheries Policy, data collection and traceability of fisheries and aquaculture products shall be supported. Under Union priority 5 Support for marketing and processing, the subsidy shall cover promotion, investment in fish processing and strengthening the competitiveness of aquaculture enterprises and fish processors.

Table 11.1.1.17
Operational Programme Fisheries 2014–2020 – Utilisation of funds in 2024

Union priority	Measure number	Name of the measure	Number of projects	Funds reimbursed million CZK
2 – Supporting environmentally sustainable, innovative and competitive knowledge-based and resource-efficient aquaculture	2.1	Innovation	6	8.1
	2.2	Productive investments in aquaculture	34	23.1
	2.3	Support for new breeders	0	0.0
	2.4	Recirculation equipment and flow systems with aftertreatment	0	0.0
	2.5	Aquaculture providing environmental services	0	0.0
	2.6	Strengthening the competitiveness of aquaculture enterprises	0	0.0
Total Union Priority 2			40	31.2
3 – Support for implementation of the Common Fisheries Policy	3.1	Data collection	2	3.4
	3.2	Product traceability	1	2.9
Total Union Priority 3			3	6.3
5 – Support for marketing and processing	5.1	Production plans	0	0.0
	5.2	Marketing of products	1	0.8
	5.3	Investment in product processing	1	4.1
Total Union Priority 5			2	4.9
Technical aid			11	6.2
Total			56	56

Source: MoA

Operational Programme Fisheries 2021–2027

In 2024, the Ministry of Agriculture reimbursed subsidies to 114 projects from the Operational Programme Fisheries 2021–2027 totalling approx. CZK 65.3 million.

In 2024, the MoA issued decisions to allocate funds to 176 projects in the total amount of approximately CZK

138.8 million and paid funds amounting to approx. CZK 12.8 million to 30 projects.

The Operational Programme Fisheries 2021–2027 is a programme under which fishermen can benefit from funding from the European Maritime, Fisheries and Aquaculture Fund under Priority 1 – Supporting sustainable fisheries and the restoration and conservation of aquatic biological resources for eel planting. Under Priority 2 – Supporting sustainable

Table 11.1.1.18
Operational Programme Fisheries 2021–2027 – utilisation of funds in 2024

Priority	Activity number	Activity name	Number of projects	Funds disbursed million CZK
1 – Support for sustainable fishing and restoration and conservation of aquatic biological resources	1.4	Data collection	0	0.0
	1.4.2	Product traceability	0	0.0
	1.6.1	Stocking of European eel	3	4.1
Total Priority 1			3	4.1
2 – Support for sustainable aquaculture activities, processing of fishery and aquaculture products and their marketing	2.1.1	Innovation	0	0.0
	2.1.2	Investment in aquaculture	71	44.6
	2.1.3	Investment in intensive aquaculture systems	1	0.2
	2.1.4	Compensation	30	10.9
	2.2.1	Promotional campaigns	0	0.0
	2.2.2	Product processing	9	5.5
Total Priority 2			111	61.2
5 – Technical assistance	5.1.1	Technical assistance	0	0.0
Total			114	65.3

Source: MoA

aquaculture activities, processing and marketing of fisheries and aquaculture products contributing to food security in the Union, innovation, investments in aquaculture and processing, compensation and promotion campaigns are supported.

Rural development programme

The Rural Development Programme of the Czech Republic for 2014–2022 is based on the Common Strategic Framework, the Partnership Agreement and other strategic documents and was prepared in accordance with Regulation No. 1305/2013 of the European Parliament and of the Council. Water management is partially concerned by the Land Consolidation section of the Programme.

The RDP subsidies are co-funded by the European Agricultural Fund for Rural Development (EAFRD) and the state budget of the Czech Republic. The support from EAFRD for the period 2014–2020 amounts to EUR 2.3 billion (CZK 63 billion), the state budget of the Czech Republic will provide additional EUR 1.2 billion (approx. CZK 32 billion). Funding under the RDP 2014–2022 takes form of pre-funding from the state budget, i.e., all payments to beneficiaries are first covered from national sources.

Within the framework of RDP 2014–2022, land consolidation is supported, for which a single beneficiary of the subsidy is defined – the SLO and its regional branches. The support builds on the previous RDP 2007–2013 programme.

100% of eligible expenditures are reimbursed. The EAFRD contribution is 49.5% of public expenditures, contribution of the Czech Republic is 50.5% of public expenditures. EUR 152.6 million (approx. CZK 3.9 billion) was originally allocated for 2014–2022, but the budget was increased to EUR 174.3 million (approx. CZK 4.6 billion) through reallocations. Applications were received as of 22 February 2016. No project was reimbursed in 2024.

Under the RDP 2014–2022 programme, a total of 438 applications for subsidies in the amount of CZK 4.6 billion were registered under Operation 4.3.1 Land Consolidation as at 31 December 2024, of which 352 applications in the amount of CZK 3.6 billion

were approved and 333 projects in the amount of CZK 3.3 billion were actually reimbursed, of which CZK 500.8 million was allocated to water management. Other projects are to be approved and reimbursed until the end of 2025.

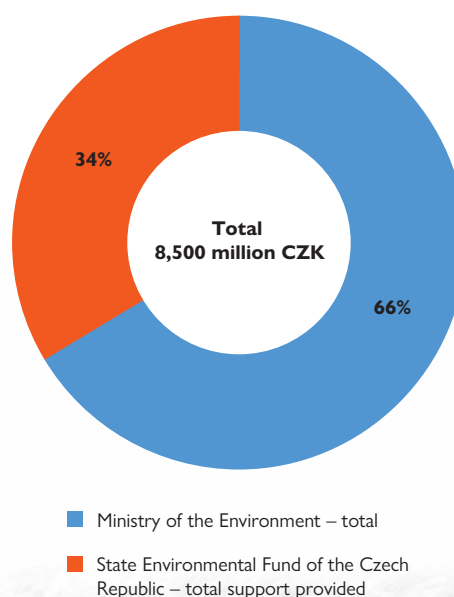
Subsidy title 4.3.1 Land Consolidation is followed by intervention 46.73 Land Consolidation under the CAP Strategic Plan. The CAP Strategic Plan for the Czech Republic for 2023–2027 was approved by Implementing Decision No. C (2022) 8338 final on 24 November 2022 and is in accordance with Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021. Same as with the Rural Development Programme 2014–2022, the rate of support will be 100% of eligible expenditures and the beneficiaries will be regional branches of the State Land Office. Applications for grants are to be received on an ongoing basis with launch in 2025. The total allocation for the period is EUR 105.4 million (approx. CZK 2.6 billion).

11.1.2 Financial support from the Ministry of the Environment

In 2024, the Ministry of the Environment provided financial support under supranational and national subsidy programmes. Financial support under the Operational Programme Environment (OPE) amounted to CZK 5,722.6 million. Financial support under programmes administered by the State Environmental Fund (SEF) of the Czech Republic was provided in the amount of CZK 2,777.5 million. Thus, the funds provided by the Ministry of the Environment in the field of water management amounted to CZK 8,500.1 million.

More detailed information about the programmes and economic activities of the SEF can be found in a document “Report on the Management of the SEF of the Czech Republic for 2024”.

Graph 11.1.2.1 Utilisation of funds provided by the Ministry of the Environment in 2024



Source: MoE, SEF



The Bystřice Stream, Dubí (source: Ohře River Board, s.e.)

Table 11.1.2.1
Funds allocated to water management by the Ministry of the Environment in 2024

Programme	Programme funding million CZK
Operational Programme Environment 2014–2020	1,054.50
Operational Programme Environment 2021–2027	4,668.08
Ministry of the Environment – total	5,722.6
National Programme Environment, (excl. NRP calls)	553.4
Floods – Restoration of environmental infrastructure after the 2024 floods	1,067.3
Loans from the SEF to OPE	349.1
Norwegian funds	72.6
National recovery plan (NRP)	676.4
OPE subsidies	1.2
OPE21+ project schemes	57.5
State Environmental Fund of the Czech Republic – total support provided	2,777.5
Total support provided by the Ministry of the Environment	8,500.1

Source: MOE, SEF

Operational Programme Environment 2014–2020

The Ministry of the Environment provides financial support under programmes co-financed from EU funds in the form of the Operational Programme Environment. In 2024, funds were drawn under the 2014–2020 OPE from the Cohesion Fund and the European Regional Development Fund under Priority Axes 1 and 4 for water management and nature in the field of landscape care and protection totalling CZK 1,054.5 million.

Under Priority Axis 1 – Improving water quality and reducing flood risks – 1 project with a total contribution from the EU of CZK 71.47 million was approved for funding in 2024. 4 projects were issued with a legal act for support from the EU of CZK 35.84 million.

Under Priority Axis 4 – Protection and care for nature and landscape, 46 projects were approved for funding under Specific Objective 4.3 – Strengthening natural functions of the landscape, with a total contribution from the EU of CZK 46.91 million in 2024. A legal act on granting support was issued for one project under Specific Objective 4.4 (Improving quality of the environment in settlements) with a contribution from the EU in the amount of CZK 0.78 million.

Of this amount, CZK 391.66 million was drawn under the Grant Scheme of the Operational Programme Environment 2014–2020 in the area of support 1.1 (166th call) and CZK 228.64 million in support area 1.2 (167th call) for the beneficiary, the State Environmental Fund of the Czech Republic, to finance projects of final beneficiaries under calls of the National Environment Programme.

Table 11.1.2.2
Projects approved for funding from the Operational Programme Environment 2014–2020 in the field of water management in 2024

Priority axis	Area of support	Number	Total costs	Total eligible expenditure	EU contribution
			million CZK		
1	1.1	1	631.64	112.11	71.47
Priority Axis 1 total		1	631.64	112.11	71.47
4	4.3	46	152.91	123.16	46.91
	4.4	1	2.90	1.29	0.78
Priority Axis 4 total		47	155.81	124.45	47.69
Total		48	787.45	236.56	119.16

Source: Monitoring System of the European Structural and Investment Funds for the 2014–2020 programming period

Note: A project approved for funding is a project approved by the Selection Committee of the Managing Authority of the Operational Programme Environment.

Table 11.1.2.3**Utilisation of funds under the Operational Programme Environment 2014–2020 in 2024**

Area of support	EU contribution million CZK
1.1 – Reducing the amount of pollution discharged to surface water and groundwater from municipal sources and input of pollutants to surface water and groundwater	493.75
1.2 – Ensuring supply of drinking water of adequate quality and quantity	228.64
1.3 – Ensuring flood protection in built-up areas	43.99
1.4 – Supporting preventive flood control measures	62.01
Priority Axis 1 Total	828.39
4.3 – Strengthening natural functions of the landscape	119.74
4.4 – Improving quality of the environment in settlements	106.37
Priority Axis 4 Total (4.3, 4.4)	226.11
Total	1,054.50

Source: Monitoring System of the European Structural and Investment Funds for the 2014–2020 programming period

Operational Programme Environment 2021–2027

Under the OPE 2021–2027, support for water management and climate change adaptation projects is directed towards the following specific objectives (SO) and measures:

1.3 Support for climate change adaptation, disaster risk prevention and resilience, taking into account ecosystem approaches

- 1.3.1 Support for nature-based measures in the landscape and settlements
- 1.3.3 Implementation of flood prevention measures
- 1.3.4 Implementation of measures to slow down runoff, infiltration, retention and accumulation of precipitation, including its further use; implementation of green roofs; measures for grey water use; measures for controlled groundwater recharge
- 1.3.5 Support for preventive measures against floods and droughts, in particular construction, expansion, improvement and renewal of monitoring, forecasting, reporting, alert and warning systems; development of digital flood plans, runoff analysis
- 1.3.6 Support for flood response preparedness, raising public awareness of flood risk, increasing resilience of vulnerable structures against floods

- 1.3.7 Monitoring and rebalancing of long-term usable groundwater resources for municipalities in the crystalline rock of the Bohemian Massif
- 1.3.11 Support for nature-based measures in the landscape and settlements (ERDF)

In 2024, 4 calls for support for water infrastructure in the field of water management and climate change adaptation were announced under this programme.

In 2024, 264 projects were approved for support under 1.3 – Climate Change Adaptation with an EU contribution of CZK 2,828.22 million. These were mainly projects concerning flood protection, rainwater management and support for preventive measures against floods and droughts. Of these, 249 legal acts granting support amounting to CZK 2,515.44 million were issued in 2024 and CZK 319.66 million was allocated.

In the area of support under 1.4 aimed at supporting water management infrastructure, 83 projects were approved for support in 2024 with an EU contribution of CZK 2,863.40 million for which legal acts granting support amounting to CZK 4,366.13 million were issued in 2024. Funds amounting to CZK 4,348.42 million was allocated to the projects in 2024.

Table 11.1.2.4**Calls for the Operational Programme Environment 2021–2027 announced in 2024 in the field of access to water, sustainable water management and support for climate change adaptation**

Call No.	Call name	Start date	Start of receipt of applications	End of receipt of applications
05_23_032	MoE_66th call, SO 1.3, measure 1.3.1, in rounds	19/06 2024	30/006 2025	260.00
05_23_036	MoE_70th call, SO 1.3, measure 1.3.6, ongoing	25/09 2024	30/04 2025	60.00
05_23_039	MoE_73rd call, SO 1.3, measure 1.3.11, ongoing for less developed regions	20/11 2024	30/06 2025	400.00
05_23_042	MoE_75th call, SO 1.3, measure 1.3.5, ongoing	29/05 2024	28/02 2025	100.00

Source: SEF

Of this amount, CZK 16.69 million was disbursed under the Grant Scheme of the Operational Programme Environment 2021–2027, specific objective 1.4, in the area of waste water (25th call), and CZK 24.79 million (25th call), and CZK

24.79 million in the area of drinking water (25th call) for the beneficiary, the State Environmental Fund of the Czech Republic, for the purpose of financing projects of final beneficiaries under calls of the National Environmental Programme.

Table 11.1.2.5

Number of projects approved for funding from the Operational Programme Environment 2021–2027 in the field of support for access to water, sustainable water management and support for climate change adaptation in 2024

Area of support	Number of projects	Total costs (million CZK)	Total eligible costs (million CZK)	EU contribution (million CZK)
1.3.1	19	185.93	133.10	114.65
1.3.3	3	772.75	738.59	728.99
1.3.4	97	1,296.54	907.57	721.86
1.3.5	79	398.84	377.49	288.24
1.3.11	66	1,250.92	1,079.95	974.48
SO 1.3 total	264	3,904.98	3,236.70	2,828.22
1.4.1	44	3,671.94	3,077.05	2,135.73
1.4.2	10	739.58	430.65	154.56
1.4.3	1	49.19	30.31	12.12
1.4.4	26	970.81	790.53	552.65
1.4.5	2	43.77	25.59	8.34
SO 1.4 total	83	5,475.28	4,354.12	2,863.40
TOTAL	347	9,380.26	7,590.82	5,691.62

Source: SEF

Table 11.1.2.6

Utilisation of funds under the Operational Programme Environment 2021–2027 in 2024

Area of support	Call No.	EU contribution in CZK million
1.3 – Rainwater and flood prevention measures	05_22_006	9.61
	05_22_019	252.14
	05_22_022	39.43
	05_23_048	12.23
SO 1.3 (1.3.3, 1.3.4, 1.3.5, 1.3.7) total		313.41
1.3 – Climate-nature (1.3.11)	05_23_046	6.25
1.3 – Climate-nature (1.3.11)		6.25
1.4 – Wastewaters	05_22_002	888.8
	05_22_021	1,656.71
	05_22_025	16.69
	05_23_042	133.51
	05_23_043	292.17
SO 1.4 (1.4.1, 1.4.2, 1.4.3) total		2,987.96
1.4 – Drinking water	05_22_003	417.83
	05_22_025	24.79
	05_22_026	849.86
	05_23_044	67.98
SO 1.4 (1.4.4, 1.4.5) total		1,360.46
Total SO 1.3		319.66
Total SO 1.4		4,348.42
TOTAL		4,668.08

Source: SEF



Finkl's Pond (source: Ohře River Board, s.e.)

State Environmental Fund of the Czech Republic

The State Environmental Fund of the Czech Republic, established by Act No. 388/1991 Coll., is a specifically focused institution that is an important financial source for supporting implementation of measures aimed at protecting and improving the state of the environment and its components.

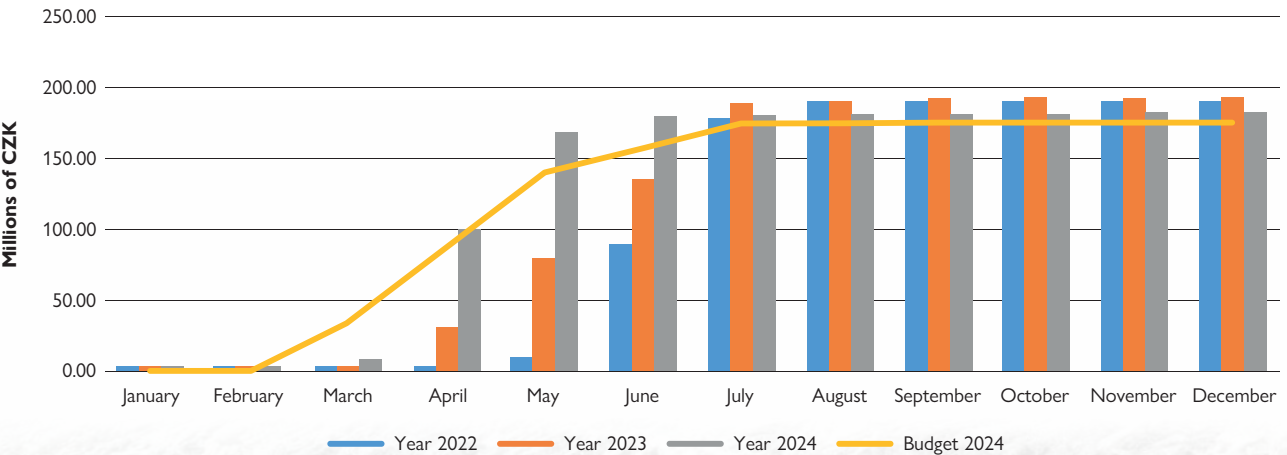
The total revenue of the State Environmental Fund of the Czech Republic (SEF) included revenues from environmental pollution charges in the amount of CZK 2,745.2 million. Revenues from fines and financial penalties amounted to CZK 59.3 million. In the area of water protection, this includes a fee for discharge of wastewaters into surface waters and a fee for abstraction of groundwater, as shown in Table 11.1.2.7

Table 11.1.2.7
State Environmental Fund – Revenue structure (water only) – 2024

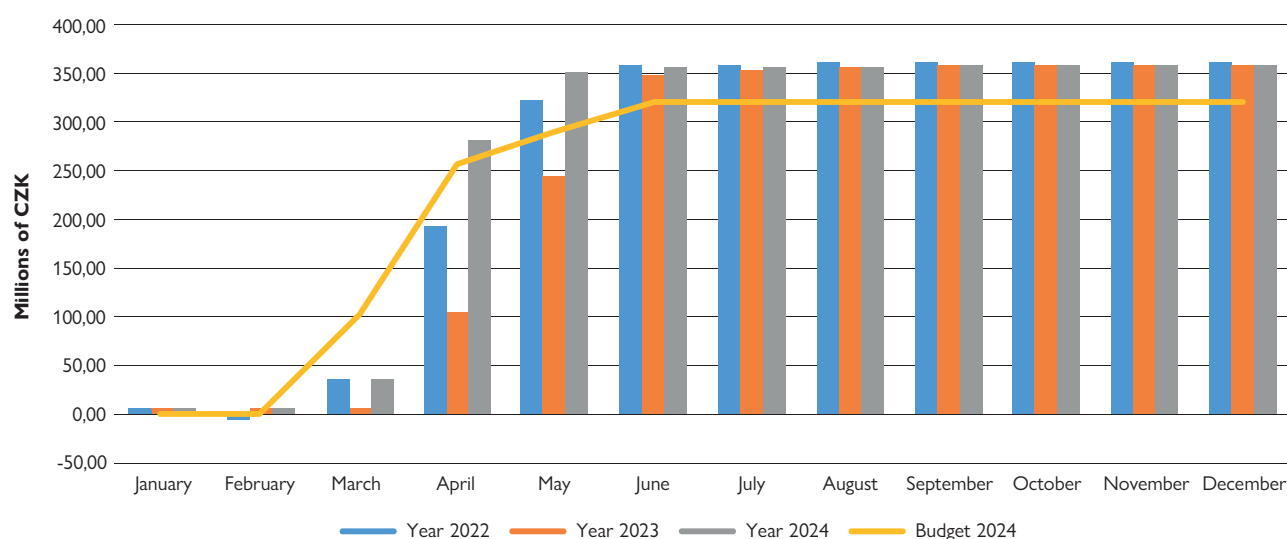
Environmental component (in water protection)	Budget 2024	Revenue as at 31/12 2024	Fulfilment	Difference
	million CZK		%	million CZK
Wastewater	175.0	181.6	104	6.6
Groundwater	320.0	355.9	111	35.8

Source: SEF

Graph 11.1.2.2
Environmental Fund – Revenues from fees under the wastewater item in 2019–2024



Source: SEF

Graph 11.1.2.3**State Environmental Fund – Revenues from fees under the groundwater item in 2019–2024**

Source: SEF

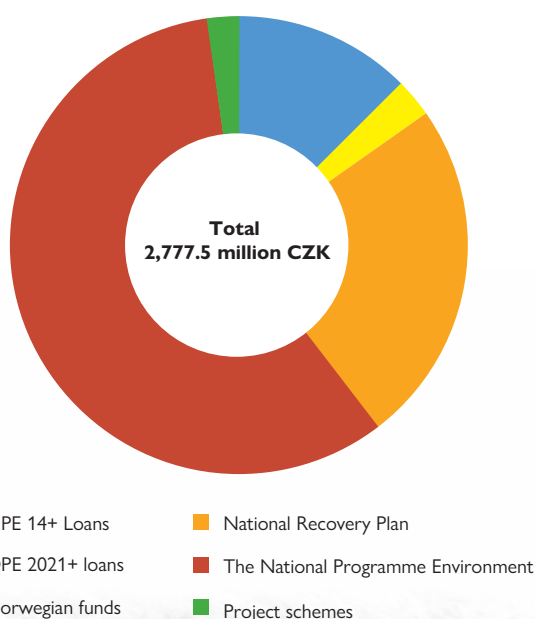
National programmes administered by the State Environmental Fund of the Czech Republic

The State Environmental Fund of the Czech Republic ensures disbursement of financial resources from national programmes and the European Union Structural Funds for the environmental sector. From its own resources, the State Environmental Fund of the Czech Republic provides financial support to projects under the National Programme Environment. The State Environmental Fund of the Czech Republic disbursed approx. CZK 2,777.5 million

to water management under the programmes it administered (except the OPE, which is accounted as state budget costs in Chapter 315 – MoE) in 2024.

National Environment Programme

The National Environment Programme supports projects to protect and improve the environment in the Czech Republic from national resources. It is intended mainly for cities and smaller municipalities. It is financed from the funds of the State Environmental Fund obtained from environmental fees and complements other subsidy titles dealing with water protection, mainly the OPE, NRP and the National Fund.

Graph 11.1.2.4**State Environmental Fund of the Czech Republic – administered programmes (in water management) – utilisation of funds in 2024 in million CZK**

Source: SEF



Stromovka Park in Winter (author: Hubalová Petra)

Table 11.1.2.8
Calls administered under the National Environment Programme in 2024

Call	Name	No. of applications	Paid in 2024 (million CZK)
12/2017	Rainwater II	101	4.82
2/2018	Drinking water resources	39	67.14
8/2018	WWTPs and sewerage	3	1.19
4/2019	Water supply and sewerage	73	310.63
12/2019	Household WWTPs	9	26.00
7/2021	Household WWTPs	9	6.45
9/2021	Drinking water resources	24	3.05
NPE-NRP 10/2021 *)	Water management in municipalities	86	676.40
9/2023	Water supply and water treatment plants	8	50.85
6/2024	Water supply and water treatment plants	4	22.20
7/2024	Sewerage systems and wastewater treatment plans	7	30.60
V2/2024	Restoration of environmental infrastructure after floods 2024	15	1,067.32
Total		378	2,266.64

Source: SEF

The above table includes an extraordinary call announced by the Ministry of the Environment through the State Environmental Fund of the Czech Republic in 2024 as part of the National Environmental Programme to support areas affected by floods in 2024, call V2/2024 – Restoration of environmental infrastructure – sewerage and water supply, for which a total of CZK 1,067.3 million was paid.

In connection with the floods, an extraordinary call V/2024 – Provision of assistance to households affected by floods was also announced in 2024, under which support totalling CZK 729.2 million was paid to applicants (environment component – other).

Loans from the State Environmental Fund of the Czech Republic

The aim of soft loans from the SEF is to co-finance projects that have received grants for implementation from other support programmes. In 2024, the SEF administered a total of three loan calls related to water management.

- 1/2019 PU Loan for projects supported by subsidies from OPE 2014+ (specific objectives 1.1 and 1.2)
- 1/2022 PU Loan for projects supported by subsidies from OPE 2021+ (specific objective 1.4)
- 1/2024 PU Loan for successful projects in the NPE 6/2024 and 7/2024 calls and the Ministry of Agriculture support programme

Under the Ministry of the Environment Directive No. 8/2017, a total of 78 applications were administered with a requested loan amount of CZK 1,413.7 million, of which:

- no decision was issued by the Minister in 2024,
- no contracts were concluded with beneficiaries in 2024,
- CZK 1.8 million was paid to the accounts of beneficiaries in 2024,
- projects with a decision issued by the Minister without a signed contract will not be further administered, no funds will be disbursed for any of the projects, and the values are therefore final.

Table 11.1.2.9
Calls for loans for co-financing water management projects under OPE 2014+ from 2016 to 2024

Call No.	Deadline for submission of applications	Issued Minister's decision (number)	Amount of the Minister's decision (million CZK)	Number of projects with a contract	Contract amount (million CZK)	Amount paid for the entire period (million CZK)
2/2016 PU	31/12 2018	37	674.4	37	674.4	664.6
3/2016 PU	31/12 2019	35	404.3	21	243.2	220.9
1/2019 PU	30/06 2020	6	335.0	6	335.0	334.7
Total		78	1,413.7	64	1,252.6	1,220.2

Source: SEF

Table 11.1.2.10
Calls for OPE21+ and NPE loans for co-financing in CZK million

Call number	Financial allocation of the call (million CZK)	Applications submitted in individual calls	Applications with a decision issued by the Minister (million CZK)	Contracts concluded with beneficiaries (million CZK)	Amounts paid to beneficiaries in 2023 (million CZK)	Amounts paid to beneficiaries in 2024 (million CZK)
1/2022 PU	844.5	39	0	740.0	244.8	347.3
1/2024 PU	2,000.0	117	1,347.0	0	0	0
Total	2,844.5	156	1,347.0	740.0	244.8	347.3

Source: SEF

In 2024, 117 ministerial decisions were issued, a total of 39 loan agreements were concluded in the amount of CZK 740.0 million, and CZK 347.3 million was paid to the recipients' accounts in 2024.

Norwegian Funds – the Environment, Ecosystems and Climate Change Programme

The funds came from the Norwegian Financial Mechanism 2014–2021, with the SEF co-funding 15% of the programme. The programme focused on improving the condition of ecosystems, reducing air and water pollution (including monitoring) and, last but not least, on adaptation and mitigation measures related to climate change.

A total of ten calls for calls were announced and subsequently closed under the programme. Based on the Minister's decision to grant support, contracts were concluded with more than 165 beneficiaries. All supported projects were implemented by 30 April 2024. Then the programme was officially terminated by the end of 2024, while preparatory discussions on the upcoming grant period were held.

In the field of water management, the programme focuses on the analysis of micropollutants, with an emphasis on pharmaceutical residues and their metabolites in waste and surface waters. Call-3A Ålesund focused on the purchase of equipment for the analysis of micropollutants and the introduction and/or optimisation of analytical methods for surface water monitoring. It thus significantly contributed to improving the monitoring of substances under the Water Framework Directive 2000/60/EC and the Environmental Quality Standards Directive 2008/105/EC (a list of priority substances and a list of monitored substances – the so-called “watchlist”). Three projects were supported under this call with a total allocation of CZK 53.5 million.

Call-3B Trondheim supported the implementation of six pilot projects focused on testing innovative technologies for reducing pharmaceutical pollution of surface waters. Support in the amount of CZK 77.1 million was approved for these activities.

National Recovery Plan

The National Recovery Plan (NRP) is the Czech Republic's roadmap for reforms and investments aimed at mitigating economic and social damage caused by the Covid-19 pandemic, at enhancing the green transition, and at facilitating digital transformation and economic relaunch.

Table 11.1.2.11
Overview of National Recovery Plan assets and funds disbursed in 2024

Activities of the NRP administered by the SEF	Allocation million CZK	Reimbursed in 2024 million CZK
2.9.1 Ensuring protection against drought and nature-based flood protection of Brno built-up areas	762.0	368.57
2.9.2 Ensuring rainwater management in city agglomerations	992.0	301.08
2.9.4 Adaptation of water, non-forest and forest ecosystems to climate change	758.4	0
2.6.1 Flood protection	32.4	6.75
TOTAL	2,544.88	676.40

Source: SEF

The role of the SEF in implementation of selected activities is based on the MoE Directive No. 9/2023 on the implementation of the National Recovery Plan in the framework of activities where the Ministry of the Environment acts as the owner of the component and binding methodological guidelines for the NRP. It consists primarily in the process of administration of beneficiaries' projects.

In 2021, a call for water management in municipalities was announced with a total allocation of CZK 1,754 million (Call No. 10/2021, activities 2.9.1 and 2.9.2) and two calls in the field of ecosystem adaptation to climate change for water retention projects in the landscape with a total allocation of CZK 758.4 million in 2024 (Calls No. 4/2024 and No. 5/2024, activity 2.9.4). At the same time, SEF/MoE projects contribute to the objectives of Component 2.6.1, which is now under shared responsibility of the MoE and the Ministry of Agriculture.

Nature Conservation Agency of the Czech Republic

In the OPE 2021–2027, the Nature Conservation Agency of the Czech Republic (NCA) is the recipient of a Project Scheme subsidy, under which it administers projects of final beneficiaries with simplified reporting methods (SRM). These are selected types of projects with total expenditures not exceeding EUR 200,000.

Table 11.1.2.12**Overview of calls announced for measures 1.3.1 OPE since 2023 under the NCA Project Scheme in CZK million**

Call name	SO and measure number	Allocation of European Union funds (CZK million)	Start of application acceptance	End of application submission
NCA OPE SRM_4th call SO 1.3	SO 1.3, measure 1.3.1	50	01/11 2023	30/04 2024
NCA OPE SRM_7th call SO 1.3	SO 1.3, measure 1.3.1	500	02/04 2024	31/10 2024
NCA OPE SRM_9th call SO 1.3	SO 1.3, measure 1.3.1	300	05/11 2024	30/04 2025

Source: NCA

Table 11.1.2.13**Projects submitted in 2024 with a Decision on Grant Award issued – only activities 1.3.1.1. and 1.3.1.5**

Area of support	Number of projects submitted in 2024 with a decision on the award of a grant	Total costs (CZK million)	Total eligible expenditures (CZK million)	EU contribution (CZK million)
1.3.1.1 and 1.3.1.5	136	306.069	297.536	243.155

Source: NCA

The NCA acts as the grant provider to the final beneficiaries. NCA calls for proposals in 2024 – these calls focused not only on water aspects, but also, among others, on tree planting.

In 2024, 136 projects were approved for support under support area 1.3 – adaptation to climate change, specifically activities 1.3.1.1 Creation of new and restoration of existing nature-based water elements in the landscape, including settlements, and 1.3.1.5 Removal or elimination of negative functions of drainage facilities in the landscape. The amount of the subsidy allocated under the above-mentioned activities was CZK 243.155 million. This mainly involved the construction of pools, small water reservoirs and the revitalisation of watercourse revitalisation.

The NCA is a provider of financial support under sub-programmes 115343, 115344 and 115345 of the National Recovery Plan – Landscape Natural Function Restoration Programme (NRP-LNFRP).

Under sub-programme 115345 (objective 165) – Adaptation of water, non-forest and forest ecosystems to climate change, Call No. 1/2024 with an allocation of CZK 120.0 million and Call No. 4/2024 with an allocation of CZK 60.0 million were announced in 2024.

Under sub-programme 115343 (objective 166) – Comprehensive water management studies, Call No. 2/2024 was announced in 2024 with an allocation of CZK 54.85 million.

Under sub-programme 115344 (objective 167) – Implementation of measures from comprehensive water management studies, Call No. 3/2024 with an allocation of CZK 8.23 million and

Call No. 6/2024 with an allocation of CZK 20.0 million were announced in 2024.

The Czech Agency for Nature Conservation received CZK 216.6 million for sub-programmes 115343, 115344 and 115345, which are part of sub-component 2.9.4 Adaptation of water, non-forest and forest ecosystems to climate change of the National Recovery Plan for 2024.

11.1.3 Financial support from the Ministry of Transport

In 2024, funds from the State Transport Infrastructure Fund in the total amount of CZK 635.4 million were spent on the development, modernisation and maintenance of waterways of transport importance through the Waterways Directorate of the Czech Republic, of which investment expenditures amounting to approx. CZK 516 million and non-investment expenditures of approximately CZK 119.4 million.

State Transport Infrastructure Fund

The State Transport Infrastructure Fund (STIF) was established by Act No. 104/2000 Coll., on the State Transport Infrastructure Fund, as amended. Representatives of the Ministry of Transport are members of the STIF Committee. The purpose of the STIF is to finance construction, modernisation, repairs and maintenance of roads and motorways, national and regional railways and transport-significant inland waterways within the extent provided for in the Act.

Table 11.1.2.14**Overview of NRP assets and funds disbursed in 2024**

Overview of NRP activities LFNRP administered by NCA	Allocation in million CZK	Reimbursed in million CZK in 2024
2.9.4 Adaptation of water, non-forest and forest ecosystems to climate change	216.6	37.28

Source: MoE, NCA

Waterways Directorate of the Czech Republic

The Waterways Directorate of the Czech Republic was established by the Ministry of Transport and Communications of the Czech Republic on 1 April 1998 pursuant to Section 51(1) of Act No. 219/2000 Coll., on the property of the Czech Republic and its representation in legal relations, as amended, as an organisational unit of the State. The main activity of the unit is to ensure development of the waterway infrastructure of the Czech Republic by the means of the STIF funds. It is thus an investment organisation of the Ministry of Transport.

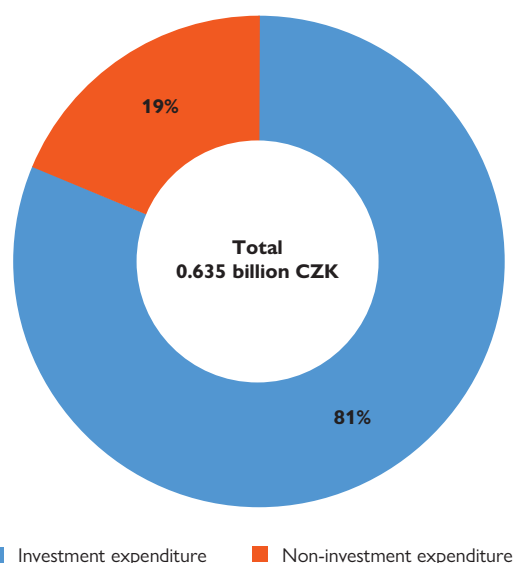
In 2024, STIF funds in the total amount of approx. CZK 635.38 million were spent on development, modernisation and repairs of transport-significant waterways through the subordinate unit of the Ministry of Transport, i. e., the Waterways Directorate of the Czech Republic, of which, investment expenditures amounted to approx. CZK 516.03 million and non-investment expenditures amounted to approx. CZK 119.35 million.

In 2024, the above-mentioned funds from the STIF were primarily used for the following projects: "Extension of the navigability of the Otrokovice – Rohatec – LC Rohatec Waterway" in the amount of CZK 175.94 million, "Waiting berth for small vessels at the Vltava River" in the amount of approximately CZK 91.66 million. Another significant project "Service Centre Roudnice nad Labem" where approx. CZK 62.76 million was disbursed, its completion is expected in 2025. Last but not least, there were other projects such as "Service vessels Prague, Slapy, Orlik" with an allocation of approx. CZK 21.30 million and "Kolín Recreational Harbour" with costs amounting to CZK 12.62 million.

Under the global item Investment Project with budgeted costs below CZK 100 million, a total amount of CZK 95.75 million was allocated in 2024 to smaller projects such as "Brandýs Wharf" with disbursement of approx. CZK 27.20 million, "Brná Wharf" with expenditure of approx. CZK 13.52 million, "Brandýs Boat Mooring" with expenditure of approx. CZK 11.85 million, "Davle Wharf" with expenditure of approx. CZK 7.74 million, "Modernisation of the wharf for passenger boats Ústí nad Labem–Vaňov" with expenditure of approx. CZK 3.69 million and "Berth for vessels Uherské Hradiště" with expenditure of approx. CZK 3.46 million. Other projects include the "Protective

berths for service vessels in Brná" with funding of approx. CZK 8.94 million and the "Modernisation of protective berths for service vessels in Prague and Nymburk" with funding of approx. CZK 5.19 million. Significant funds amounting to approx. CZK 47.17 million were expended on intensive preparation of further investment projects aimed at comprehensive development of the entire network of transport-significant waterways. The main obstacle to the continued preparation of the "Děčín Navigation Step" consists in determination of compensatory measures and in the case of the "Extension of the navigability of the Elbe waterway to Pardubice", the necessity to amend the design of the Děčín spatial plan. Furthermore, as part of the preparation of other investment projects, a building permit was obtained for the project "Waiting area for small vessels on the Vltava River" in the localities of Prague – Modřany and Miřejovice, a joint permit for the project "Flood protection of the Vraňany-Hořín Canal", extension of the port in Veselí nad Moravou as part of the project "Veselí nad Moravou – Vnorovy navigation circuit" and the addition of an operational building as part of the project "Extension of the operational facilities of the Petrov recreational port".

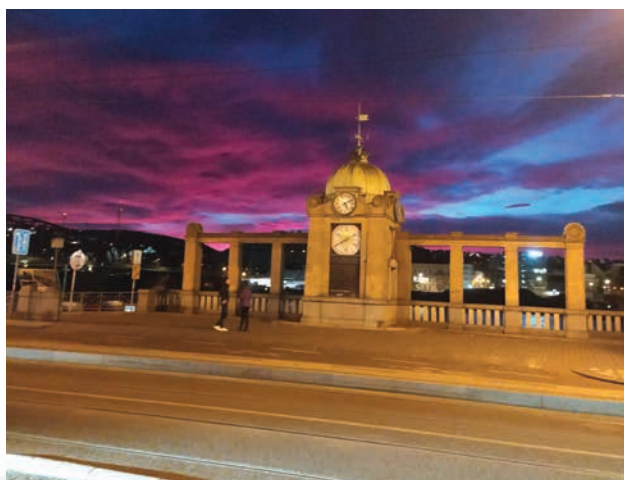
Graph 11.1.3.1
Waterways Directorate – Utilisation of funds in 2024



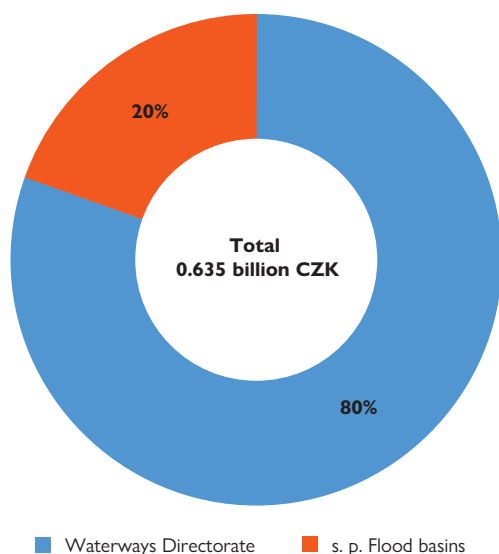
Source: Ministry of Transport

In 2024, the River Boards expended funds of CZK 228 million on the operation and maintenance of waterways, of which more than CZK 74 million was financed from their own resources and more than CZK 154 million from subsidies. Subsidies were drawn by the River Boards from the State Transport Infrastructure Fund.

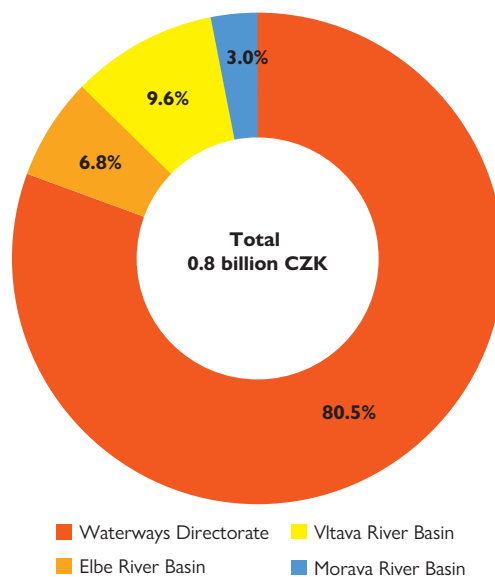
Within the framework of its activities, the Vltava, Elbe and Morava River Boards drew funds for reconstruction, operation and maintenance of waterways under their competence. They drew subsidies from the STIF in the total amount of CZK 153.6 million, of which investment subsidies amounted to CZK 55.7 million and special-purpose non-investment grants to CZK 97.9 million.



Limnigraph on Rašínovo Embankment (author: Hubalová Petra)

Graph 11.1.3.2**Utilisation of funds from the State Transport Infrastructure Fund in 2024**

Source: MoA using data provided by the Ministry of Transport and River Boards

Graph 11.1.3.3**Funds spent on transport-significant waterway through the Ministry of Transport in 2024**

Source: MoA, using data provided by the River Boards and the Ministry of Transport

Table 11.1.3.1**Waterways – selected projects of the River Boards in 2024**

River Board	Project name	Total costs million CZK	Source of funding
Elbe	Lovosice Reservoir, repair of lower gate drives and small LC bypass valves	8.235	STIF
	Roudnice n. L. Reservoir, repair of LC bypass valve drive systems	8.660	STIF
	Štětí Reservoir, repair of the LC bottom	2.914	STIF
	Střekov Reservoir, repair of LC upper gates ^{*)}	78.280	STIF + own resources
Vltava	Vrané Reservoir – reconstruction of gantry crane	14.8	STIF + own resources
	Miřejovice Reservoir – repair and replacement of multi-valve closures of LC lower gates	1.8	STIF
	Štvanice Reservoir – repair of surface protection and sealing of LC blocking beams	2.8	STIF
Morava	Modernisation of the Baťa Canal lock chambers	0.965	STIF
	Baťa Canal, LC Spytihněv, LC Veselí nad M. – overall repair	21.808	STIF
	Modernisation of control systems for the Baťa Canal	0.725	STIF

Source: River Boards

Note: ^{*)} This is a multi-year project completed in 2024; in 2024, the subsidy amounted to CZK 34.405 million, of a total of CZK 78.280 million, of which CZK 77.197 thousand was a subsidy.**Table 11.1.3.2****Funds spent by the River Boards on repairs, maintenance, construction, reconstruction and modernisation of waterways under their management in 2024**

River Board	Own resources	Special-purpose non-investment subsidies ^{*)}	Investment subsidies ^{*)}	Total subsidies	Total own resources and subsidies
thousand CZK					
Elbe	43,195	53,300	518	53,818	97,013
Vltava	24,558	22,796	53,043	75,839	100,397
Morava	6,797	21,808	2,174	23,982	30,779
Total	74,550	97,904	55,735	153,639	228,189

Source: River Boards

Note: ^{*)} Subsidy provider – STIF.

11.2 Financial support from foreign cooperation and the EU

Water management projects in the 2014–2020 / 2021–2027 programming period

All programmes from the 2021–2027 programming period are being successfully implemented. Specifically, these are the following programmes:

Cross-border cooperation

- Interreg V-A Czech Republic – Poland
- Interreg V-A Slovak Republic – Czech Republic
- Interreg V-A Austria – Czech Republic
- Cooperation Programme Free State of Saxony – Czech Republic 2014–2020
- Transnational cooperation Czech Republic – Free State of Bavaria ETC Goal 2014–2020
- INTERREG programme Bavaria – Czechia 2021–2027,

Transnational and interregional cooperation

- Interreg CENTRAL EUROPE
- Interreg DANUBE
- Interreg EUROPE

Under the aforementioned programmes, projects contributing to environmental improvement and risk prevention (natural and technological risks, including climate change and impact on the water management sector, etc.) were submitted, approved and subsequently supported.

– Programme INTERREG Bavaria – Czechia 2021–2027

1. Living gems underneath the Bohemian Forest water surface, Project No. BYCZ01-020

Partners on the Czech side: 2

Partners' budget:

- 1) Biology Centre CAS, p.r.i.: EUR 637,045.00
- 2) University of South Bohemia in České Budějovice: EUR 628,111.00

The main objective of the project is to obtain accurate knowledge based on modern and non-intrusive monitoring methods and, on the basis of these data, to develop common documents for the establishment of a coordinated conservation concept for natural populations of the indicating trout species in outdoor waters. This will strengthen resilience of its populations to climate change, ensure maintenance of functioning ecosystems for future generations and fulfil the long-term objectives and concepts for area covered by the programme (e.g. management principles in both national parks).

Such project outputs will be communicated with the institutions responsible for watercourse management covered by the programme with the view of enhancing management effectiveness. Similarly, the project results will be disseminated through the media to fisheries enterprises, fishermen's clubs and associations, as well as to the general public and educational institutions.

2. Earth, water, climate, Project No. BYCZ01-080

Partners on the Czech side: 1

Partner's budget:

- 1) Zelený poklad (Green Treasure) Foundation: EUR 150,840.24

The main objective of the project is to expand and enrich the offer of environmental education. We want to focus on educators at all levels, with an emphasis on Environmental Education, Training, and Awareness (EETA) coordinators, environmental NGOs and municipal representatives, and offer them training in current trends in EETA combined with an exchange of experience in this field. We will thematically focus education on climate change, water, soil and geology.

3. International support for pond ecosystem infrastructure through multipliers with the aim of closing the nutrient cycle. BYCZ07-220

Partners on the Czech side: 1

Partner's budget: University of South Bohemia in České Budějovice: EUR 85,008.00

Project implementation 01/07 2025 – 30/06 2027

The main objective of the project is to reduce sedimentation in ponds using natural nutrient sorbents, potential nitrification inhibitors and regular sediment extraction. Fishing businesses can thus gain a new source of income by selling high-quality organic fertiliser. Ponds will also contribute more effectively to regional water management. In addition, fewer nutrient emissions will pollute cross-border natural waters and the air. This contributes to specific objective 7, "Improving the protection of [...] nature [...]", as the natural infrastructure of extensive ponds will be preserved. Such ponds are often the cornerstone of Natura 2000 and FFH (Fauna-Flora Habitat) areas in the Bavarian-Czech border region and sometimes host more Red List species than river floodplains. The water quality in the ponds and in the receiving waters (streams, rivers) will thus remain at a high level, which can have a positive impact on sensitive fauna and flora.



SOOS 2 (author: Ondráček Max)

– Interreg V-A Austria – Czech Republic

1. *Plants4cooling – cooling effect of plants and application of innovative tools for climate change adaptation, Project No. ATCZ00093*

Partners on the Czech side: 5

Partners' budget:

- 1) South Bohemian Silva Nortica: EUR 376,860.60
- 2) Czech Union for Nature Conservation Kněžice: EUR 99,372.00
- 3) Přírodní zahrada (Natural Garden), i.o.: EUR 70,826.41
- 4) South Bohemian Region: EUR 215,254.00
- 5) Regional Union NS MAS of the Czech Republic, South Bohemian Region: EUR 57,924.00

Project implementation: 01/07 2023 – 31/12 2026

Plants4cooling is a project focusing on the cooling effect of plants and aims to develop a suitable and simple methodology, to test it in reality on the example of our diverse cross-border Czech-Austrian district in cooperation with cities and municipalities, while making it available to the public. One of the sub-activities is expected to establish a basis for a quantitative assessment of the hydrological function of surface water drainage systems in urban areas. Water storage capacity, permeability, resistance to pollutant input and energy expenditure during construction determine the potential for climate change adaptation. The result will be a science-based recommendation of suitability for use based on hydrological functionality and will contribute to comprehensive rainwater management practices in municipalities. The innovative approach consists in improving rainwater availability for green infrastructure and associated relief for drainage.

2. *Decreasing emission in the aquaculture through sustainable use of wastewater and nutrients, Project No. ATCZ00002*

Partners on the Czech side: 1

Partner's budget:

- 1) University of South Bohemia in České Budějovice: EUR 376,689.60

Project implementation: 01/02 2024 – 31/01 2027

The aim is to create a catalogue of measures aimed at reducing emissions in the aquaculture. The main objective is an approach based on circular economy using wastewater and nutrients, leading to savings of up to 70% of freshwater, avoiding nutrient emissions to the environment and reducing disposal costs. SMEs can use their systems more efficiently by processing residues into fertilisers, algae, plants and energy through optimised solid-liquid separation.

3. *How to save water in the increasing drought prone agricultural cross-border region of Weinviertel and Southern Moravia, Project No. ATCZ00048*

Partners on the Czech side: 3

Partners' budget:

- 1) Global Change Research Institute CAS, p.r.i.: EUR 220,032.08
- 2) Regional Chamber of Agriculture South Bohemia: EUR 41,610.24
- 3) T. G. Masaryk Water Research Institute, p.r.i.: EUR 146,286.00

Project implementation: 01/09 2024 – 31/08 2027

The project has three main objectives:

- (a) In cooperation with the two agrarian chambers and academic institutions, to compile a catalogue of measures and examples of best practices focused on specific landscape management, suitable in terms of water-resource enhancing within the given area;
- b) Propose and quantify feasible and farmer-implementable measures aimed at increasing resilience to drought and assess their impact on water resources in the given river basins;
- c) Propose and examine the feasibility of innovative and hitherto unconsidered measures for better management of existing water resources and possible ways of enhancing such resources in the given region.

4. *Sustainable groundwater management in the Czech-Austrian border region, Project No. ATCZ00067*

Partners on the Czech side: 2

Partners' budget:

- Masaryk University: EUR 577,607.48
Czech Hydrometeorological Institute: EUR 130,032.00

Project implementation: 01/07 2024 – 30/06 2027

The aim of the project, scheduled to start on 1 June 2024, is to strengthen the exchange of cross-border knowledge and data to support adequate and coordinated water management in the cross-border region. The main objective will be achieved through: 1) analysis of existing and newly acquired data, 2) strengthening cooperation between key actors for better groundwater protection, and 3) implementation of joint educational events to promote and utilise a common knowledge base.

– Interreg Programme Saxony – Czechia 2021–2027

1. *Impacts of climate change to transboundary water bodies at the CZ-GER border, Project No. 100694066*

Partners on the Czech side: 1

Partner's budget:

- T. G. Masaryk Water Research Institute, p.r.i.: EUR 628,099.12

Project implementation: 01/01 2024 – 31/12 2026

The objective of the project is to identify environmental risks caused by climate change in polluted transboundary watercourses and to propose appropriate measures to minimise them. Six particularly polluted rivers in the border area (the Polava, Rožanský Stream, Jiříkovský Stream, Spree, Mandava and Lužnička) were selected for the project. A detailed programme of measurements will be carried out at several locations on each river to determine the type, extent and causes of pollution in these rivers. Appropriate transboundary measures will then be proposed to address the identified causes and improve the condition of the watercourses. Transboundary seminars will be held to exchange experience and raise awareness.

2. Cross-border management of beaver dams in the context of climate change No. 100743023

Partners on the Czech side: 3

Partners' budget:

ALKA Wildlife (NPO): EUR 46,338.43

Czech University of Life Sciences Prague: EUR 207,821.33

Czech Technical University in Prague: EUR 219,981.08

Project implementation 28/06 2024 – 31/12 2027

The aim of the project is to propose recommendations for the management of beaver dams in the border region. The project focuses on ascertaining the current status, model analysis of the hydraulic and hydrological effects of the dams on surface water and groundwater bodies, and model applications for the Bahre and Sebnitz/Vilémovský Stream areas. The project shall collect extensive data, valuable for other issues related to water and biotopes in the border region.

– Interreg V-A Programme Czech Republic – Poland

1. CZ.11.02.01/00/23_004/0000046 *Balneum Glacensis*

Partners on the Czech side: 1

Partner's budget:

City of Náchod: EUR 954,389

The project concerns spa tourism, a common area of interest of the two partners. On the Czech side, the spa colonnade, including the Ida (mineral water) drinking fountain in Velké lázně v Běloves, will be made accessible. Two Polish partners shall develop leisure infrastructure in the spa. These sites are to be used for tourism.

2. CZ.11.01.02/00/23_011/0000157 *Research into the water ecosystem in the Kladsko Basin*

Partners on the Czech side: 1

Partner's budget:

Pardubice Region: EUR 423,940.02

The project will involve more detailed research into the geological structure of the area, i.e. the environment where groundwater is formed and accumulates in significant quantities, and will also include awareness-raising focused on landscape management during climate change. The groundwater level will be mapped in relation to the nature of the geological subsoil and pollutants will be identified with respect to land use. The solution will also include transfer of the information obtained to municipal and city spatial plans and to river basin plans. The output of the project will be an expert document (a study) describing the groundwater and surface water flow regime in the area, the balance of groundwater resources and the determination of principles for their protection in terms of quantity and quality.

3. CZ.11.01.02/00/23_011/0000161 *Importance, Change and Practical Protection of Peatlands*

Partners on the Czech side: 3

Partners' budget:

Krkonoše National Park Administration: EUR 389,211.31

Charles University: EUR 369,716.90

Institute of Hydrodynamics CAS: EUR 178,635.96

The project focuses on assessing the condition and preservation of the hydrological regime and natural state of peat bogs and proposing and implementing measures for their protection, especially in the context of climate change. It is essential to understand the historical and current human impact on these ecosystems and to take appropriate measures to prevent their further degradation. As this is a cross-border issue affecting two national parks (KRNAP and KPN), it is desirable to seek common solutions. We will conduct a detailed survey of vulnerable peatland biotopes. The output will be a comprehensive inventory of peatlands. The task is to map the current spatial extent and typology of peatlands, conduct a detailed survey of biotic components, comprehensively assess the hydrological regime of peatlands, quantify their contribution to water accumulation in river basins, and assess changes in peatlands over time due to climate change and anthropogenic influences. At the same time, field measures will be taken at five sites in the Czech Republic and three in Poland.

4. CZ.11.01.02/00/23_011/0000164 *Wastewater without borders – the problem of micro-pollutants*

Partners on the Czech side: 1

Partner's budget:

Technical University of Liberec: EUR 328,228.97

The project focuses on the removal of micropollutants from wastewaters, which will have to be – as required by new EU standards – monitored and removed in wastewater treatment plants. The proposal includes: monitoring of pollutants in wastewaters on both sides of the border, development of effective methods for their removal, creation of a database and information campaigns for residents and authorities. We will share the results with local authorities on the Czech-Polish border, which will enhance more coordinated measures against pollution. Improving the management of wastewater treatment plants in terms of micropollutant removal will lead to improved surface water quality, from which drinking water is obtained, and our project will thus contribute to one of the European Union's objectives, i.e., access to clean drinking water for all EU citizens, while also fitting perfectly into the activities of the EU Blue Deal.

5. CZ.11.01.02/00/23_011/0000165 *Stěnáva – A river that knows no borders*

Partners on the Czech side: 1

Partner's budget:

Strategic Council of the Broumov Region (NPO): EUR 233,262.09

The Stěnáva River rises in the Waldenburg Mountains in Poland, crosses the Polish-Czech border at Golińsk/Meziměstí (part of Starostín), flows through the entire Broumov District, and crosses the Czech-Polish border again at the villages of Otovice and Tlumaczów. Polish and Czech municipalities thus share not only the river and its catchment area, but also problems related to ongoing climate change. They manifest themselves mainly in the form of heavy precipitation and subsequent flooding, and long periods of drought in summer months. The aim of the project is to identify sites suitable for the implementation of nature-based erosion control and water retention measures in the upper reaches of the river near the Czech-Polish border at Gmina Mieroszów



Revitalization of the Třemošná Reservoir Floodplain (source: Vltava River Board, s.e.)

and Meziměstí, and to implement nature-based measures in Mieroszków. The proposed and implemented measures will have a positive effect on slowing down any flood waves and at the same time increase the landscape's ability to retain water in the entire area of the floodplain.

– Interreg V-A Programme Slovakia – Czech Republic

1. DML1 – The Vlára and the streams of the White Carpathian

Partners on the Czech side: 1

Partner's budget: EUR 389,211.31

Morava River Basin: EUR 192,154.91

The Vlára River is an important and characteristic watercourse of the White Carpathians. Watercourse issues know no boundaries. The aim of the project is to coordinate selected approaches, particularly in relation to climate change adaptation. The main output of the project was an action plan setting short-, medium- and long-term common objectives for achieving good status and adaptation of the Vlára River and its selected tributaries to climate change. Investment plans will be developed for the short-term objectives.

2. DNJ4 – Sustainable groundwater management in the Czech-Slovak border region

Partners on the Czech side: 3

Partners' budget:

Lead partner (LP) – Masaryk University: EUR 455,855.57

Project partner (PP) – Czech Hydrometeorological Institute: EUR 62,790.12

Project partner – South Moravian Region: no budget

One of the most significant risks of ongoing climate change is long-term drought, which would have an extremely negative impact on agricultural production and drinking water supplies in particular. The droughts in 2015 and 2018 were short, and the precipitation balance was restored in the following years. The project focuses on a model situation in which the drought

was long-term, lasting several years (as in 1850–1870). The dominant hydrological and hydrogeological element in the area is the Morava River. The groundwater level in boreholes supplying the population with drinking and industrial water also depends on the flow and water level of the Morava. The project will study data on: • climate development in the Morava River Basin; • data on flow rates and water levels in the Morava River in the transboundary areas of the South Moravian Region and Trnava Region; • data on groundwater levels in boreholes in the area of interest and data on groundwater quality, composition and yield. The archived data will be supplemented by geochemical and isotopic analyses of groundwater, enabling the determination of its origin and dependence on the situation in the Morava River and local conditions. The analysis and processing of archived and new data will allow for the creation of a model of a comprehensive climate-hydrological-hydrogeological system and its behaviour. The model will provide early warning of impending drought and enable state and local authorities to prepare and implement measures to mitigate its effects. One of the steps to eliminate the shortage of quality drinking water is to use deeper groundwater. The area of interest has considerable potential to secure this resource. The entire area is covered by prospecting work related to oil and natural gas exploration. This data will be used to identify areas with potential deep groundwater resources that are not directly affected by climate change. One of the outputs of the project will therefore be an estimate of the potential for using deeper groundwater resources as a substitute for surface and shallow groundwater threatened by climate change.

3. DQV6 – Adaptation measures for water retention in agricultural landscapes Mendel University in Brno

Partners on the Czech side: 1

Partner's budget:

Mendel University in Brno: EUR 292,012.3

The main objective of the project is to develop adaptation measures for water retention in agricultural landscapes to mitigate the impacts of climate change, taking into account ecosystem approaches. The project partners will focus on

collecting and exchanging data and information necessary to prevent negative impacts on climate change, mapping the current situation in this area and transferring know-how related to climate change.

As part of the exchange of experience, new methods of water retention in the landscape will be tested and used in pilot projects based on our own experiments. On both sides of the border, at-risk geographical and climatic locations with the potential to generate flood waves will be assessed.

Based on the data, information and experience gained, the project partners will jointly design and prepare solutions to the impacts of climate change and the landscape in the border regions.

The project includes activities aimed at the general public and dissemination of information.

4. DYA6 – Increasing the level of undergraduate and postgraduate education on public health aspects of water contamination

Partners on the Czech side: 1

Partner's budget:

University of Ostrava: EUR 77,118.77

The project focuses on education in the field of public health aspects of water contamination. The main objective is to increase theoretical knowledge and practical skills of students and teachers through theoretical and practical training. The participation of graduates in selected workshop activities will enable the exchange of information and open opportunities for prevention. After completing the project, participants will be able to correctly identify and assess the impact on public health and propose preventive measures.

A multimedia interactive manual will be created as part of the project.

5. DMN3 – Zborov and Rožnov react to climate change

Partners on the Czech side: 1

Partner's budget:

Zdravý Rožnov, i.o.: EUR 127,209.97

The territories of both cross-border partners face similar problems, namely landscape devastation due to unprofessional management and insufficient adaptation to climate change. The project will jointly develop and implement the Joint Strategy and Action Plan for the management of selected landscape elements – an action plan for wetlands, agricultural land, orchards and tree lines. To mitigate the effects of climate change and educate children and residents of the region, both partners will create pilot water retention and landscape elements. Joint educational materials for teachers will also be developed.

6. DNT2 – Let's look deep into nature together and then we will understand everything better

Partners on the Czech side: 1

Partner's budget:

Town of Rožnov pod Radhoštěm: EUR 44,726.75

The joint objective of the project is to contribute to raising environmental awareness in an entertaining and engaging way through new interactive educational activities, which can subsequently contribute to or help reduce the negative impacts of climate change on the environment and society. The aim of the project is to raise awareness in the field of the environment, focusing on various target groups.

7. DQF5 – Warning and information system for towns and municipalities of the Vlára River Basin

Partners on the Czech side: 5

Partners' budget:

LP – Town of Brumov-Bylnice: EUR 483,589.77

PP2 – Town of Valašské Klobouky: EUR 417,045.37

PP3 – Municipality of Nedašov: EUR 166,431.37

PP4 – Municipality of Nedašova Lhota: EUR 140,423.89

PP5 – Municipality of Poteč: EUR 145,916.19

The aim of the project is to collect and exchange data and information needed to prevent the negative impacts of climate change, to map the current situation in the area concerned and to transfer know-how related to the management of disasters caused by climate change. As part of the project, a modern warning system will be installed in accordance with the legislation in force for municipalities in the Vlára River Basin. A comprehensive system of water level gauges based on the SmartCity concept, which will also be part of the project, is capable of monitoring water levels and informing municipalities and citizens via mobile apps, emails and SMS about floods and other disasters that could endanger their property and lives. Emphasis is placed on the rapid and effective communication of important information. The project includes the introduction of digital flood plans for each municipality. At the same time, the project includes activities to raise awareness among children and other residents about climate change and practical steps they can take to help reduce its negative impacts. A joint meeting of municipalities is also planned to share experiences, training and possibilities for expanding and further using the new system. The target group is residents and visitors to the cross-border region.

8. DRJ5 – Developing a common strategy to prevent the drying up of water resources

Partners on the Czech side: 1

Partner's budget:

District Committee of the Czech Union for Nature Conservation in Vsetín: EUR 171,905.47

The project builds on the partners' experience in the field of water ecosystem care and implements joint measures – research, assessment and analysis of the state of water and wetland ecosystems and necessary joint measures to prevent and eliminate the risk of drying up of water resource and ecosystems in the Valašské Meziříčí and Žilina Districts. The project includes site surveys and assessments as well as the development of a joint strategy to combat landscape drying and water loss. A pilot project will consist restoration and cleaning of three wetland sites in Moravian Wallachia, which will be accompanied by an international seminar for municipalities, landowners, forest owners and the general public. Most of these entities are unaware of the need for and impact of revitalisation measures

9. *DXW3 – Improving conditions for the development of biodiversity and reducing the impacts of climate change in catchment areas of urbanised drainage systems in border regions*

Partners on the Czech side: 2

Partners' budget:

Slovácké vodárny a kanalizace, a.s.: EUR 566,122.62

Vodovody a kanalizace Vsetín, a.s.: EUR 759,885.20

The main objective of the project is to increase biodiversity in watercourses by reducing pollution from sewerage networks and improving water quality. The project will create digital mathematical modelling of the sewerage network and a joint cross-border strategy, including action plans to protect and improve biodiversity in watercourses.

– Interreg DANUBE Programme 2021+

1. *Improving urban climate change adaptation capacities by testing and promoting the 'sponge city' methodology on a transnational level (DRP0200159 SpongeCity)*

Partners on the Czech side: 1

Partner's budget:

PP5 – Prague 9: EUR 129,500

A "sponge city" is an urban area designed to cope with excessive precipitation using various techniques. It mitigates/prevents urban flooding by providing the area with the ability to naturally absorb water. It reduces the extent of impervious surfaces and increases the amount of absorbent surfaces: green spaces, green walls, bio-slopes, ponds in the city centre, rain gardens, permeable pavements. Complementing this approach with canal and water retention systems also helps to address water scarcity. The project analyses the hydroclimatic characteristics and water management practices of 12 pilot settlements, creates a set of tools to support the planning of "sponge cities" measures, and tests and promotes the tools through the participatory development of local action plans, feasibility studies and demonstration investments.

2. *Development of a harmonised water balance modelling system for the Danube River Basin (DRP0200156 Danube Water Balance)*

Partners on the Czech side: 1

Partner's budget:

PP5 – Brno University of Technology: EUR 121,919.50

Extreme and trend impacts of climate change cause significant water balance problems in the Danube River Basin (DRB), which already pose major challenges also for the environment, the economy and the whole society. Water management in the Danube River Basin is characterized by scattered data availability and various national calculation methods, ultimately leading to country-scale or sub-regional mosaics about the water balance. A jointly developed data management and a water balance model is needed to cope with the transnational water quantity challenges of the basin. The Danube Water Balance project aims to overcome this situation and contribute to sustainable, integrated transnational water management in the Danube River Basin. The main outputs will cover four fields: 1) Improved data management for present and future water balance calculations. 2) The state-of-the-art, open-source water balance model

for the DRB, that allows the quantification of water balance components for the entire basin and for selected areas of interest. 3) Elaborated water balance scenarios for 4 selected transboundary sub-basins, namely Morava (CZ, SK & AT), Tisa (HU, SK, RO, RS & UA), Upper Sava (SI & HR), and Drina (RS & BA). 4) Improved stakeholder insight into transboundary water balance methodology: strong emphasis will be put on sectoral stakeholder involvement and capacity building in the project.

3. *Capacity building for management and governance of MICROplastics in DRINKing water resources of Danube Region (DRP0200442 MicroDrink)*

Partners on the Czech side: 1

Partner's budget:

PP7 – T. G. Masaryk Water Research Institute, p.r.i.:

EUR 170,000.00

MicroDrink aims to build and strengthen institutional, managerial and technical capacity of practitioners, decision-makers and policy governance at different levels and raise public awareness on this urgent environmental problem in DRB. Pre-condition for this is elaboration and acceptance of harmonised sampling and analytical methods. This is where MicroDrink steps in, by supporting cross-border and cross-sector cooperation, exchange of knowledge and experience regarding MP (microplastics) sampling, analysis, monitoring and risk assessment in DRB drinking water resources. MicroDrink aims to make Danube region more resilient to MP pollution by closing the knowledge gaps regarding MP through open online MicroDrink knowledge base offering comprehensive review of MP sampling methods, laboratory instruments and analytical techniques, establishing and maintain synergies with past and current EU projects dealing with DRB water management and protection, engaging relevant national and transnational stakeholders via targeted meetings, workshops and events.

– Interreg CENTRAL EUROPE 2021+ Programme

1. *Management of urban water resources in Central Europe facing climate change (MAURICE – CE0100184)*

Partners on the Czech side: 2

Partners' budget:

PP4 – Town of Nový Bydžov: EUR 256,258.40

PP5 – Technical University of Liberec: EUR 261,870.00

The aim of the project is to enhance the capacity of regions in Central Europe for climate change resilience in the aspect of urban water resources management by joint development of climate-adaptation solutions.

2. *Restoring degraded ecosystems along the Green Belt to improve and enhance biodiversity and ecological connectivity, CE0100098 ReCo*

Partners on the Czech side: 4

Partners' budget:

PP4 – Ametyst: EUR 183,988.00

PP9 – Research Institute for Landscape, p.r.i.: EUR 141,680.00

PP11 – Podyjí National Park Administration: EUR 107,100.00

PP12 – Ministry of the Environment of the Czech Republic: EUR 184,800.00

The project is being implemented in the European Green Belt, a unique natural and cultural monument. It commemorates the historical division of Europe by the Iron Curtain. Today, the belt has become a symbol of cross-border cooperation and shared European natural and cultural heritage. It connects not only rare natural sites in 24 countries, but also individuals, non-governmental organisations and state institutions that work together to protect and connect these valuable areas. The project will provide solutions for improving the protection of natural habitats along the Central European Green Belt. Using advanced GIS analyses and community-based approaches, it will identify areas suitable for ecological restoration. A transnational strategy and regional plans for the restoration of degraded ecosystems and their connectivity will be developed. Practical measures will be implemented in six pilot areas to restore small watercourses, pastures and wetlands, as well as measures to support the wildcat and European bison. Twelve partners from six countries are involved in the project.

3. *Restoring urban streams to promote Biodiversity, Climate adaptation and to improve quality of life in cities (ReBioClim – CE0200754)*

Partners on the Czech side: 2

Partners' budget:

PP4 – Jan Evangelista Purkyně University in Ústí nad Labem: EUR 218,591.78

PP12 – Statutory City of Jablonec nad Nisou: EUR 112,166.00

The aim of the project is to restore urban watercourses and, through nature-based measures, increase local biodiversity and the ability to adapt to climate change.

A comprehensive procedure for planning the revitalisation of urban and suburban watercourses will be developed within an international consortium of academic institutions, experts and cities. This procedure will take into account ecological, institutional, social and urban planning aspects and will be piloted in partner cities. A guide to best practices for preferred nature-based measures will be developed, as well as a handbook providing practical guidance on the restoration of urban watercourses.

4. *Increasing Climate Change Resilience in Central Europe (Climate_CRICES CE0200728)*

Partners on the Czech side: 1

Partner's budget:

PP9 – Jan Evangelista Purkyně University in Ústí nad Labem: EUR 127,146.00

The aim of the project is to increase the capacity of public authorities to manage projected climate change effects, focusing on the most important phenomena detected across the Central Europe regions: heat and drought; shortage of water and flooding; impact on biodiversity. The challenge is to use huge quantity of environmental, water and meteorological data in order to increase the knowledge of regional authorities and support the analysis and planning of climate mitigation and adaptation measures. Regions, sectoral agencies and research institutions from Austria, Germany, Poland, Hungary, the Czech Republic, Croatia and Italy need to enhance the resilience to climate change effects on rural and urban areas through more effective and accurate analyses and forecasts.

5. *CONE – Cities of nature: nature-based solutions in urban living labs (CONE-CE0200766)*

Partners on the Czech side: 2

Partners' budget:

PP6 – JAIP – South Bohemian Agency for Innovation Support (NPO): EUR 191,400.00

PP7 – Statutory City of České Budějovice: EUR 158,651.20

The project helps to solve urban challenges caused by climate change e.g., heat stress, biodiversity loss, flooding vs. water scarcity, and water quality. As identified in the environmental report of the Strategic Environmental Assessment, heat extremes and heat waves in Central Europe have increased considerably and are projected to become even more frequent and longer lasting. This is why the project partnership decided to work together with local working action groups, mobilizing public sector, private sector, civil society, and academia. Together, they will aim to increase awareness about climate change and create more democratic and digitally driven processes that support the application of nature-based solutions in urban contexts. To achieve this, the project partnership will establish 3 different pilot cases.

6. *Joint Central European actions for improving quality of urban bathing waters (UrbanBlueHealth – CE0200763)*

Partners on the Czech side: 2

Partners' budget:

PP4 – Czech Water Association, i.o.: EUR 119,000.00

PP5 – State Health Institute: EUR 187,600.00

The aim of the UrbanBlueHealth project is to describe the health impacts of bathing water on urban populations and to take measures to improve the urban environment in Central Europe. The project will develop a Blue Health Repository to help the decision makers monitor the urban bathing water quality and its change. National action plans will be elaborated, tested and implemented to provide solutions to improve the urban bathing environment on the pilot urban bathing sites. The project activities have been structured to maximise opportunities for cooperation and the pooling of experience and ideas at the transnational level.



Tadpoles in The Stromovka Park (author: Hubalová Petra)



A. Sattlerová, *The Protective Hand over the Glacier*

12. LEGISLATIVE MEASURES

12.1 Water Act and implementing regulations

In 2024, the Water Act was amended by Act No. 182/2024 Coll., amending Act No. 254/2001 Coll., on water and on amendments to certain acts (the Water Act), as amended, Act No. 114/1992 Coll., on Nature and Landscape Protection, as amended, and Act No. 465/2023 Coll., amending Act No. 416/2009 Coll., on the acceleration of the construction of transport, water and energy infrastructure and electronic communications infrastructure (Linear Facilities Act), as amended, and other related acts.

Act No. 182/2024 Coll. entered into force on 24 June 2024 by its publication in the Collection of Laws. It is an act with divided effectiveness, with the general effectiveness of the regulation taking effect on 1 August 2024. This does not apply to selected provisions, which took effect on 1 July 2024 – these are provisions on the introduction of the possibility of approving operating rules, the establishment of a voidable condition of overriding public interest for facilities producing energy from renewable sources, the transfer of requirements from the so-called documentary decree No. 138/2018 Coll. to the Water Act, and amendments to the transitional provisions of the amendment to the Linear Facilities Act. Special effectiveness is also stipulated for the provision introducing a new obligation for continuous monitoring of discharged wastewaters, which is proposed with a two-year deferral after the date of publication of the amendment in the Collection of Laws, i.e. as of 1 June 2026.

The amendment to the Water Act and certain related regulations (the so-called emergency amendment) responds primarily to practical experience linked with solving water accidents. The amendment therefore primarily introduces new comprehensive legal regulations for solving accidents. The main objective of the emergency amendment is to ensure, drawing on practical experience, that any emergency situation can be dealt with effectively in the future if preventive measures fail. To achieve this objective, the emergency amendment has introduced a new Register of Discharges from Pollution Sources into Surface Waters (Section 19a and Section 47(2)(j) of the Water Act), which will gradually include all discharges of wastewater from sources of pollution into surface waters – both those for which a water management permit has been issued and those for which, for various reasons, no such permit has been issued. The amendment specifies the reporting obligations in the event of an accident (Section 41(1) and (3) of the Water Act) and expressly stipulates that the management of rescue and elimination work in the event of an accident is the responsibility of the Fire and Rescue Service of the Czech Republic (Section 41(4)), which proceeds in accordance with the Integrated Rescue System Act. The method of providing funds from a special regional account is defined more precisely (Section 42(4) of the Water Act). The amendment now distinguishes between investigating the causes of an accident and dealing with its consequences (i.e.

managing the clean-up) and clearly establishes the competence of regional authorities to deal with accidents that extend beyond the administrative boundaries of a single region (Section 107(1)(d) of the Water Act). With effect as of 1 June 2026, the amendment introduces a new obligation to continuously monitor discharged wastewater according to its qualitative composition (Section 38a of the Water Act). The possibility of approving operating rules for selected water structures by water authorities is also reintroduced (Section 59 and Section 107(1)(s) of the Water Act). In connection with the above changes, the penalty provisions have also been amended.

Other changes introduced by the so-called emergency amendment include the introduction of an obligation to submit an emergency plan in the existing Integrated System for Reporting Obligations (Section 39(2)(a) of the Water Act). The amendment also responds to the case law of the Constitutional Court and confirms the long-standing practice regarding the single compensation for limitation on ownership rights to land encumbered by water structures owned by another person (Article II, point 7 of Act No. 182/2024 Coll.). Last but not least, the amendment newly regulates the discharge of wastewaters from children's wilderness tented camps: camps clearly defined by law have an exemption from the obligation to obtain a permit for discharge of wastewaters during their operation, on the condition that measures are implemented to prevent any threat to the quality of surface water and groundwater (Section 8(3)(h) of the Water Act).

The emergency amendment also transposed Article 16f of the RED III Directive into Section 23b of the Water Act (and also into the relevant provisions of Act No. 114/1992 Coll., on nature and landscape protection). This is a transposition of Article 16f of the revised Directive (EU) 2018/2021 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, which entered into force on 20 November 2023. The transposition of Article 16f of the RED III Directive introduce a voidable condition of overriding public interest for renewable energy facilities for the purposes of proceedings for exemptions from intervention in water bodies (Section 23a(8) of the Water Act).

Another significant change brought about by the emergency amendment to the Water Act is the transfer of the requirements concerning applications from Decree No. 183/2018 Coll. on the requirements for decisions and other measures of the water authority and on documents submitted to the water authority (the so-called documentary decree) to the Water Act.

Decree No. 429/2024 Coll., on application forms submitted to the water authority and the form for proposing the establishment of a water source protection zone

On 17 December 2024, a new decree on application forms submitted to the water authority and forms for proposals to establish water source protection zones was adopted, replacing the previous Decree No. 183/2018 Coll. on the requirements for decisions and other measures of the water

authority and on documents submitted to the water authority. The new decree is effective as of 1 January 2025.

The main reason for adopting the decree was the adoption of the new Building Act No. 283/2021 Coll., which significantly affected the powers of water authorities. Water authorities are no longer competent to decide on water structures; this power now lies with building authorities. It was therefore necessary to remove from the decree the application forms relating to decisions under the Building Act. The forms for applications for building permits, occupancy permits and other permits were therefore removed. The forms for these applications have been newly established by implementing regulations to the Building Act.

Furthermore, in connection with the amendment of the Water Act by Act No. 182/2024 Coll., the requirements for applications and the obligations of applicants to submit documents relating to water management permits, consents from water authorities, statements from water authorities and approvals of operating rules for water structures and water source protection zones. These requirements and documents concerning applications were therefore also removed from the decree.

Amendment to Decree No. 471/2001 Coll., on technical safety supervision of water structures, as amended

The third amendment to the decree since its entry into force follows on from the so-called emergency amendment to the Water Act, on the basis of which the requirements for applications for authorisation to perform technical safety supervision of water structures and the list of prerequisites for so-called qualified supervision (i.e. the requirements for the person responsible for performing supervision) are now laid down directly in the Water Act. Before that, these provisions were set out directly in the decree, from which they were removed by the amendment.

Further amendments harmonise the texts of the decree with building law (i.e. the transfer of powers from authorities in matters relating to water structures), and selected provisions are clarified and references to technical standards are updated.

The amendment was published in the Collection of Laws and International Treaties as Decree No. 378/2024 Coll. and entered into force on 1 January 2025.

12.2 Act on water supply and sewerage

Act No. 274/2001 Coll., on water supply and sewerage systems for public use and on amendments to certain related acts (Act on Water Supply and Sewerage), as amended, did not undergo any changes in 2024 in connection with the amendment to Act No. 254/2001 Coll., on water and on amendments to certain other acts (Water Act). With regard to the postponed effectiveness of certain provisions of Act No. 284/2021 Coll., amending certain acts in connection with the adoption of the Building Act, changes were made relating to the integration

of decision-making powers in building matters at building authorities, which have taken over some of the powers of water authorities. Public administration in the field of water supply and sewerage is therefore now also carried out by building authorities, which are also authorised to carry out inspections and impose administrative penalties for breaches of the obligations laid down in the Water Act and regulations related to this Act in cases where they are competent to decide on the matter.

Decree No. 428/2001 Coll., implementing the Act on Water Supply and Sewerage, was amended in 2024 by Decree No. 390/2024 Coll. due to changes in building regulations and, in particular, in connection with the adoption of Decree No. 146/2024 Coll., on construction requirements. Decree No. 146/2024 Coll. on construction requirements, which is an implementing regulation to Act No. 283/2021 Coll., the Building Act, consolidates construction requirements into a single legal regulation. This regulation now includes technical requirements for the construction of water supply systems for wastewater treatment, including requirements for project documentation, construction and operation of wastewater treatment plants, and requirements for project documentation, construction and operation of sewerage networks, which were previously laid down in Decree No. 428/2001 Coll. The amendment removes duplication and aligns the two pieces of legislation. The amendment also specifies the procedure for updating the Water Supply and Sewerage Development Plans ("WSSDP"). In the area of water supply and sewerage development, the needs of individual regions are taken into account in WSSDP updates. However, these updates are required to be assessed with an emphasis on ensuring that the proposed solution is more environmentally appropriate than the solution outlined in the valid WSSDP, particularly in terms of identifying the most suitable technical and economic solution. Furthermore, this decree also specifies the scope of data that the operator is required to publish on its website and the scope of specific data on water charges and/or sewerage charges that must be regularly provided to customers via invoices or an electronic application. This decree is effective as of 1 January 2025.

With regard to the deferred effectiveness of certain provisions from previous amendments, Annex No. 19 Calculation of water and sewerage charges for the calendar year and Annex No. 19a Breakdown of calculation and other items, their content, volume and quantity items in the calculation of water and sewerage charges became effective on 1 July 2024. They have been expanded to include data relating to the calculation of reasonable profits for owners and operators of public water supply and sewerage systems. This amendment is also related to the addition of Annex No. 20 Comparison of all items in the calculation of water and sewerage charges for the calendar year, effective as of 1 January 2025. The extension of the reported data has resulted in complete harmonisation of the reports submitted by water management entities to the Ministry of Agriculture and the Ministry of Finance. The harmonisation of data has led to a change in the rules so that entities only submit one report, thereby reducing the administrative burden on these entities.

Interpretations of the Water Supply and Sewerage Act are published on the website of the Ministry of Agriculture on the sub-portal Water – Legislation – Interpretations.

12.3 Supervision of state administration in the field of water management

The Ministry of Agriculture and the Ministry of the Environment are supreme water supervisors and they are charged with the exercise of supreme state supervision by Act No. 2/1969 Coll., on the establishment of ministries and other central bodies of state administration of the Czech Republic, as amended (the Competency Act), through the provisions of Section 111 of Act No. 254/2001 Coll., on water and on amendments to certain acts (the Water Act), as amended.

Inspections of regional authorities are conducted in accordance with Government Resolution No. 689 of 11 September 2013 on Planning, Assessment and Coordination of Audits of the Exercise of Delegated and Independent Competence of Territorial Self-Government Units by Central Administrative Authorities, Regional Authorities, the Prague City Hall and the Municipalities of Territorial Statutory Cities. The Ministry of the Interior of the Czech Republic prepared a three-year audit plan for regions and the Capital City of Prague for 2023–2025.

The Ministry of Agriculture also carries out inspections of water management authorities of municipalities with extended powers. These inspections are planned in cooperation with regional authorities to avoid duplication of inspections. In 2024, five inspections were carried out at regional water management authorities and 10 inspections at water management authorities of municipalities with extended powers.

Supervisory activities of the Ministry of the Environment in the area of water management are carried out annually by state administration departments as part of their supreme water management supervision. Supervision of water management authorities of municipalities with extended powers were carried

out in accordance with the “State Supervision Plan for 2024” of the Ministry of the Environment.

In their inspection activities, both ministries focus (within the scope of their competences determining the powers of the central water management authority) in particular on the implementation of the Water Act and other regulations directly related to this legal regulation

In addition to the above-mentioned legislative framework, functioning of water authorities was also examined, including their personnel, material and organisational security, in particular the qualifications and experience of their employees.

During each inspection, randomly selected files were examined. A report from each inspection is written, describing any shortcomings found. On the basis of the inspections, it can be concluded that the performance of delegated powers of the regional authorities in the field of water management has long been at a high level. Regional water authorities are appreciated for their efforts to provide professional methodological guidance to the authorities within their area of competence. No corrective measures had to be imposed on any of the inspected entities, the irregularities found were mainly of a formal nature and in none of the cases did they render the decisions reviewed unlawful.

The findings from their inspections at water authorities are used as feedback which not only helps to deepen mutual communication at all levels of the administrative hierarchy, it is also very beneficial to central water management authorities as it provides insight into regional and local water management issues. The results of the inspections are subsequently used for methodological guidance of water authorities. Findings about application of regulations and current water management issues are presented annually at a working meeting of the Water Management Section of the MoA with individual water authorities (in 2024, the meeting was held on 7–9 October 2024 at the Skalský Dvůr in Lísk).



The Harcov Reservoir, injection (source: Elbe River Board, s.e.)



J. Tvrđý, *The Running Water Machine*

13. PRIORITY TASKS, PROGRAMMES AND KEY DOCUMENTS IN WATER MANAGEMENT

13.1 Water planning

The year 2024 marked the end of the first half of the six-year planning period for water planning. It continued the implementation of measures in accordance with the approved river basin management plans and flood risk management plans for the period until 2027, i.e. for the 3rd planning period under the Water Framework Directive and the 2nd planning period under the Floods Directive. The progress made in implementing programme measures under the river basin management plans was presented to the European Commission in the form of a progress report and is presented to the Czech Government in the form of a summary report in Chapter 16 of this report.

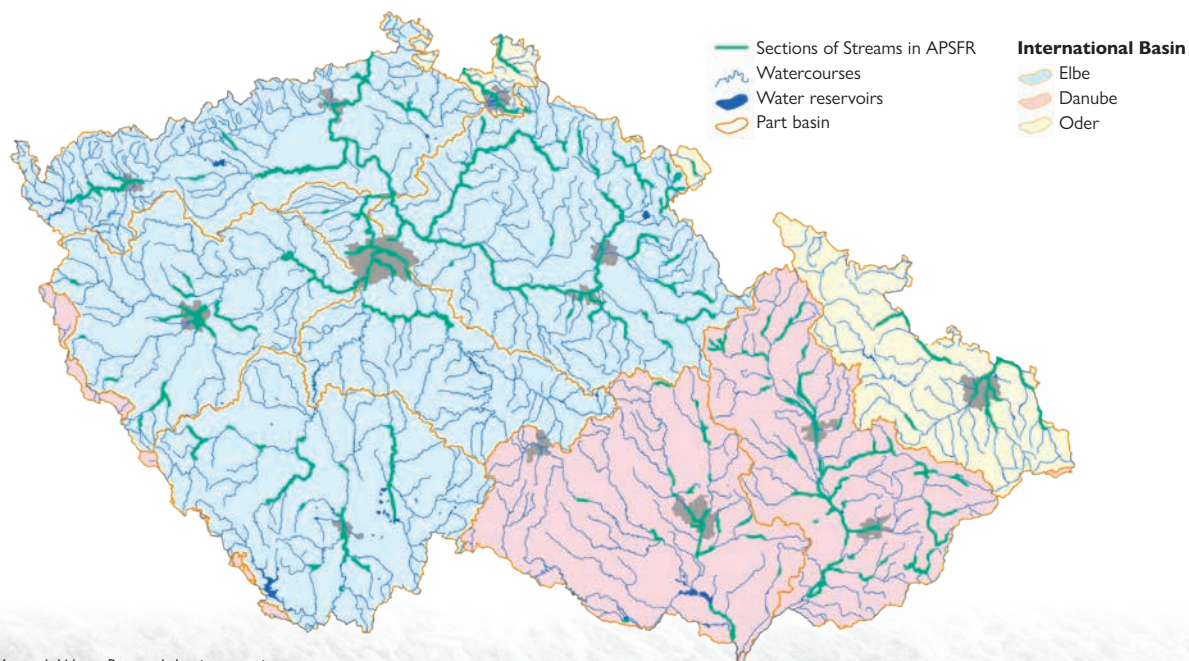
Preparations of the fourth stage of water planning were initiated, in accordance with the requirements of Section 25(1)(a)(2) of the Water Act, and one of the basic outputs was compiled: a timetable and work programme for the preparation of river basin plans and flood risk management plans was compiled and made available for comments by water users and the public for a period of six months, from 1 April to 30 September 2024. The timetable and the programme specify individual tasks in the water planning process and assign institutional responsibility for such tasks, including deadlines for their completion. The comments received were addressed and, together with the final version of the timetable and programme, published on the website of the Ministry of Agriculture on 21 November 2024.



The Ervenice Corridor (source: Ohře River Board, s.e.)

Figure 13.1.1

Areas with significant flood risk for the 2nd planning cycle under the Floods Directive



Source: T. G. Masaryk Water Research Institute, p.r.i.

River basin plans

As part of the methodological support for the water planning process, the draft national river basin plan and the draft sub-basin plan were updated in 2024. These documents define in detail the content, structure, form, data sources and methodological approach for the preparation of river basin plans and serve to unify the form in which they are prepared. Also, a draft preliminary overview of significant water management issues identified in sub-basins was prepared for the first time.

In the area of monitoring, which is a fundamental input for water planning, several significant steps were taken in 2024. First, the Framework Monitoring Programme for 2024–2030 was approved on 1 July 2024. Subsequently, the Agreement on Monitoring and Assessment of the Quality, Status and Quantity of Surface Waters and Groundwaters for the fulfilment of obligations under the Water Framework Directive was approved on 19 December 2024 with the view of fulfilling the obligations arising from national and European regulations and international agreements of the Czech Republic (so-called Monitoring Agreement) for the same period. 2024 was the last monitoring year for the assessment of the status of surface water and groundwater bodies (in the first case, the three-year period 2022–2024 will be assessed, in the second case, the six-year period 2019–2024), which will take place in 2025.

In accordance with the requirements of the Water Act (Section 26(1)), the measures adopted to achieve the water protection objectives in the programmes must be implemented within three years of the approval of the river basin management plans. By this date, the Czech Republic was also required, under Article 15(3) of the Water Framework Directive, to

submit a report to the European Commission describing the progress made in implementing the programmes of measures. A similar report is submitted to the government in accordance with Section 26(7) of the Water Act, through Chapter 16 of this report. This interim assessment of the implementation of the programmes of measures is an important input for the review and update of the river basin management plans for the next planning period.

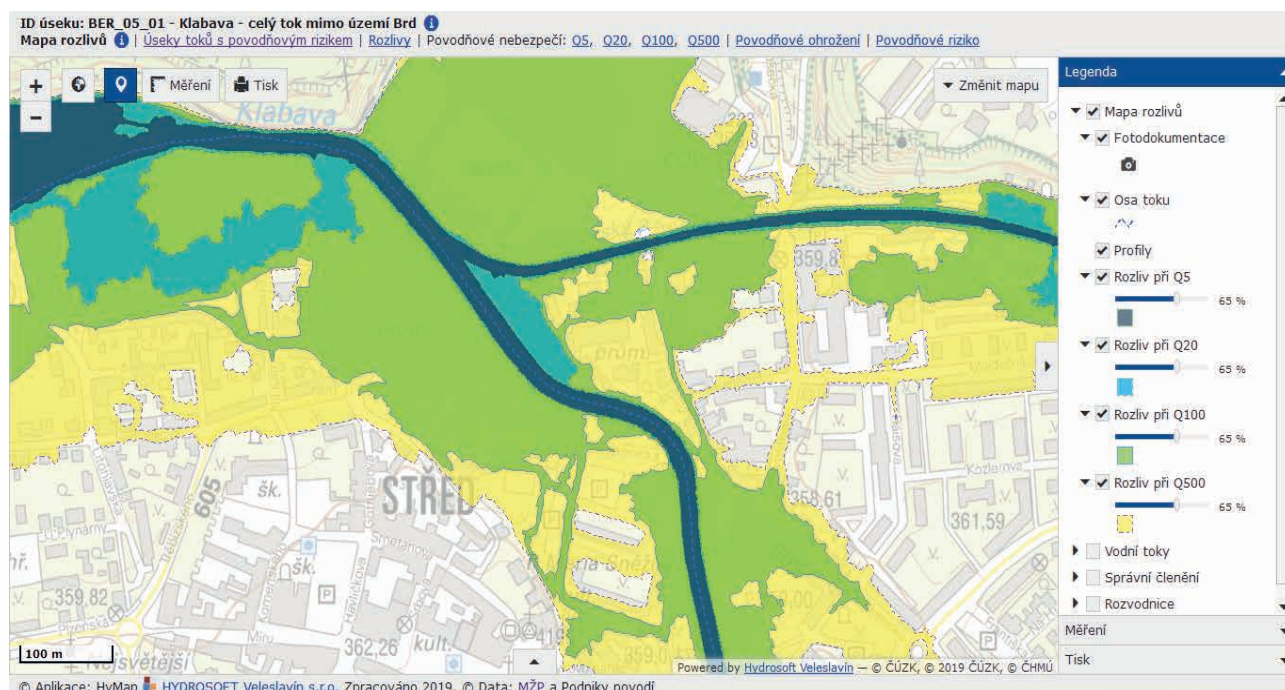
Information on the water planning process, including materials and minutes from the Water Planning Commission meetings, is published on the MoA website (<https://mze.gov.cz/public/portal/mze/voda/planovani-v-oblasti-vod>) with links to the MoE website and websites of each River Board.

Flood risk management plans

As part of the preparatory work for the third stage of flood planning, methodological procedures and background materials for the preparation of flood hazard, risk and threat maps and the creation of flood risk management plans were updated, and tenders were launched to select contractors to prepare background materials for flood risk management plans, including flood hazard and risk maps. Measures for flood risk management proposed in previous stages of the implementation of the Floods Directive are being implemented on an ongoing basis.

For the purposes of implementing the Floods Directive, the Flood Information System <https://www.povis.cz/> is used as a communication platform, where information on the process of preparing flood risk management plans is published, and flood hazard, threat and risk maps are available on the portal <https://cds.mzp.cz/>.

Figure 13.1.2
Online flood risk map



Source: MoE



The Kadaň Weir, Renovation (source: Ohře River Board, s.e.)

13.2 Water supply and sewerage development plans

The Water Supply and Sewerage System Development Plan in the Czech Republic, prepared pursuant to Section 29(1)(b) of Act No. 274/2001 Coll., on water supply and sewerage systems for public use and on amendments to certain related acts, as amended, is available on the website of the Ministry of Agriculture.

Water supply and sewerage development plans in the Czech Republic (WSSDP, RWSSDP) including their updates represent a medium-term continuously updated concept of the water supply and sewerage sector.

The Regional Water Supply and Sewerage Development Plans in the Czech Republic (RWSSDP) are the basis for the use of European Community funds and national financial resources for the construction and renewal of water supply and sewerage infrastructure. Therefore, the obligations of each applicant for the provision and use of state financial support include documenting the compliance of the technical and economic solution submitted with the valid WSSDP.

The Water Supply and Sewerage Development Plan in the Czech Republic (WSSDP) is based on a synthesis of information from the RWSSDPs prepared, discussed and approved by the regional councils, including their updates. It builds on other strategic documents and departmental policy documents and also respects the requirements arising from the relevant European Community regulations. The WSSDP includes statements of the MoA issued on each of the updates of the RWSSDP.

In its general part, the WSSDP defines the framework objectives and main principles of government policy for

ensuring long-term public interest in the field of water supply and sewerage in the Czech Republic, i.e., sustainable use of water resources and water management while adhering to requirements for water management services (drinking water supply, sewerage and wastewater treatment).

Pursuant to Section 29(1)(c) of the Act, the Ministry of Agriculture continued to issue statements on the approved RWSSDPs concerning the proposed updates to the technical solutions for drinking water supply, sewerage and wastewater treatment.

In 2024, 404 opinions were issued. A total of 10,102 opinions of the MoA were issued in 2024.

The WSSDPs in the Czech Republic are used especially by the MoA, MoE, regions, regional authorities, municipalities with extended powers (e.g. spatial planning authorities, water authorities, building authorities), municipalities, owners and operators of water supply and sewerage systems and the professional and general public.

13.3 Programmes and measures aimed at reducing surface water pollution

Water quality protection structures built in 2024

Among the most significant projects at pollution sources above 2,000 EP, the following wastewater treatment plants (WWTPs) were completed in 2024: N = nitrification, DN = denitrification, BPR = biological phosphorus removal, CPR = chemical phosphorus removal.

Table 13.3.1**New and reconstructed wastewater treatment plants with a capacity of more than 2,000 equivalent inhabitants in 2024**

Status	Wastewater treatment plans	Locations	Capacity	Nitrification	Denitrification	Chemical phosphorus removal
			Number of EPs	YES/NO	YES/NO	YES/NO
new	industrial		x	x	x	x
	municipal	Žďár nad Sázavou *)	39,400	YES	YES	YES
		Dvůr Králové nad Labem *)	15,500	YES	YES	YES
		Chotěboř *)	12,000	YES	YES	YES
		Klášterec nad Orlicí *)	4,200	YES	YES	YES
		Jeneč *)	4,000	YES	YES	YES
		Štítary *)	4,000	YES	YES	YES
reconstructed/extended	municipal	Čkyně *)	2,000	YES	YES	YES
		Kladno Dubí	9,100	YES	YES	NO
		Hluboká nad Vltavou	3,200	YES	YES	YES
		Chýnov-Chýnov u Tábora	3,250	YES	YES	YES
		Lipno nad Vltavou	6,000	YES	YES	YES
		Malá Hraštice-Velká Hraštice	1,900	YES	YES	NO
		Hanry nad Sázavou	39,400	YES	YES	YES
		Mukařov-Srbín	4,000	YES	YES	YES
		Nová Ves pod Pleší	2,000	YES	YES	YES
		Kladno-Vrapice	99,000	YES	YES	YES
		Cheznovice	1,220	YES	YES	YES
		Štáhlavy	2,500	YES	YES	YES
		Líně	6,200	YES	YES	YES
		Rychnov nad Kněžnou	18,200	YES	YES	YES
		Dvůr Králové nad Labem	13,028	YES	YES	YES
		Loučeň	2,250	YES	YES	YES
		Studénka	6,424	YES	YES	YES
		Kozlovice	3,250	YES	YES	YES
		Dolní Lutyně	3,000	YES	YES	YES
		Soběšovice	4,000	YES	YES	YES
		Paskov	2,500	YES	YES	YES
		Štramberk-Bařiny	2,595	YES	YES	YES
		Dolní Benešov	4,250	YES	YES	YES
		Kopřivnice	29,000	YES	YES	YES
		Nový Jičín	35,000	YES	YES	YES
		Sněžník	4,000	YES	YES	YES
		Bělá-Hrádkov	2,370	YES	YES	YES
		Černá Hora-Bořitov	3,400	YES	YES	YES

Source: SEF, River Boards

Note: *) WWTPs with support from the SEF.

Action programme under Council Directive 91/676/EEC (Nitrates Directive)

In 1991, Council Directive 91/676/EEC on the protection of waters against pollution caused by nitrates from agricultural sources (the Nitrates Directive) was adopted, which is transposed in the Czech Republic in the Act on Fertilisers, the Water Act and Government Regulation No. 262/2012 Coll., on the designation of vulnerable areas and the action programme, as amended. Vulnerable areas are locations where contamination of groundwaters and surface waters by nitrates exceeded or could exceed the defined nitrate concentration limit of 50 mg/l; such areas are subject to review at least every four years after their designation.

Among the main measures aimed at reducing surface water pollution by nitrates from agricultural sources is Government Regulation No. 262/2012 Coll., on the designation of vulnerable areas and the action programme, as amended. Within the framework of this legislation, so-called Nitrate Vulnerable Zones (NVZs) are defined and an action programme for the agricultural sector is announced. The above-mentioned measures are reviewed and announced at regular intervals not exceeding four years according to the current provisions of the Nitrates Directive. Significant amounts of nitrates, and nutrients in general, are washed into surface waters as part of water erosion, see more in Chapter 5.2 Area sources of pollution.

In addition to nitrate concentrations in surface water and groundwater profiles, other aspects such as surface water eutrophication in a given locality are taken into account when defining vulnerable areas, where sources of pollution other than surface pollution may be the source of such pollution. In the Czech Republic, the share of NVZ is currently about 42% of its total area, with NVZs covering about 50% of the total agricultural land area. Vulnerable areas containing nitrate-polluted waters cover more than 1.8 million hectares, i.e. more than half of the utilised agricultural land in the Czech Republic.



The Soos Nature Reserve (author: Ondráček Max)

Table 13.3.2
Designation of nitrate vulnerable zones

	Designation in 2003	1st review of designation in 2007	2nd review of designation in 2011	3rd review of designation in 2015	4th review of designation in 2019	5th review of designation in 2023
Vulnerable areas of the total area of the Czech Republic (in %)	36.7	39.9	41.6	41.9	42.0	42.36
Agricultural land ^{*)} in vulnerable areas of the total agricultural land area in the Czech Republic (in %)	42.5	47.7	49.0	50.2	49.4	49.72
Agricultural land ^{*)} of the total area of vulnerable areas (in %)	71.0	69.3	68.4	68.4	68.1	67.89
Arable land ^{*)} of the total area of vulnerable areas (in %)	57.0	58.0	54.9	53.9	53.2	53.12

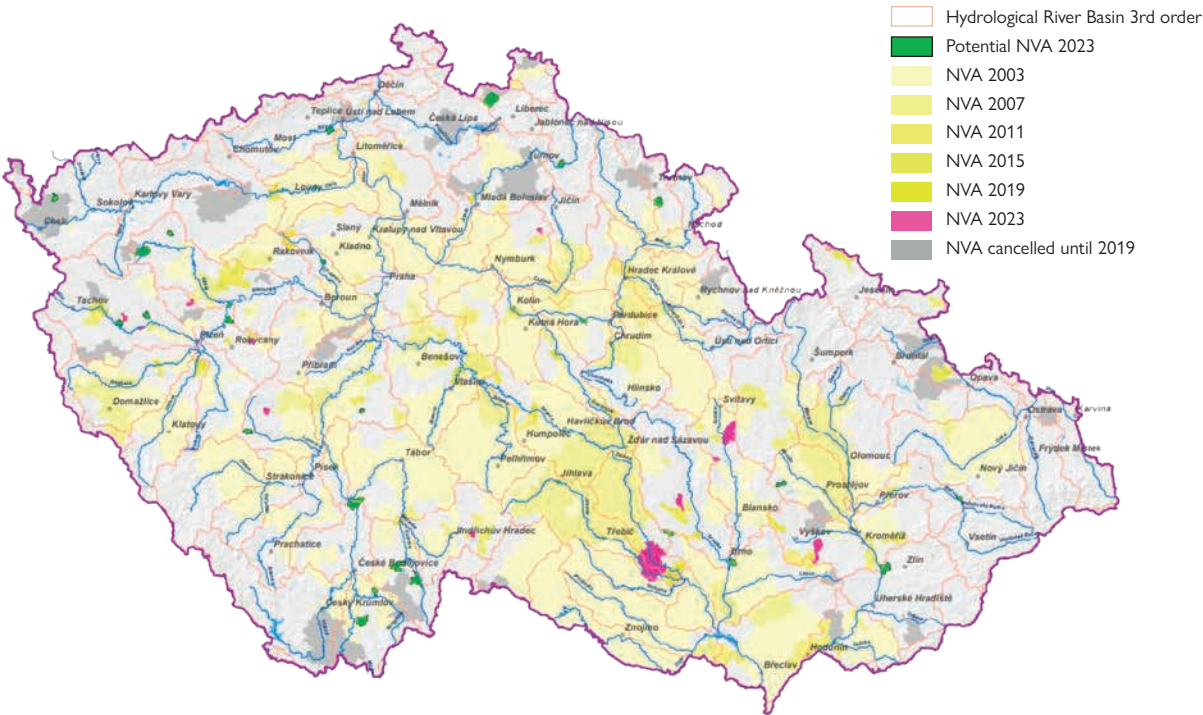
Source: T. G. Masaryk Water Research Institute, p.r.i.

Note: ^{*)} Extent of agricultural land and arable land according to Corine Land Cover 90 for 2003, Corine Land Cover 2000 for 2007, Corine Land Cover 2006 for 2011, Corine Land Cover 2012 for 2015, Corine Land Cover 2018 for 2019 and Corine Land Cover 2018 for 2023.

The measures of the action programme include a fertilisation ban period, fertilisation limits based on yield levels, crop rotation, fertiliser application on agricultural land, storage of nitrogen fertilisers, nitrogen balance, management of slopes and management in the vicinity of surface water bodies. The

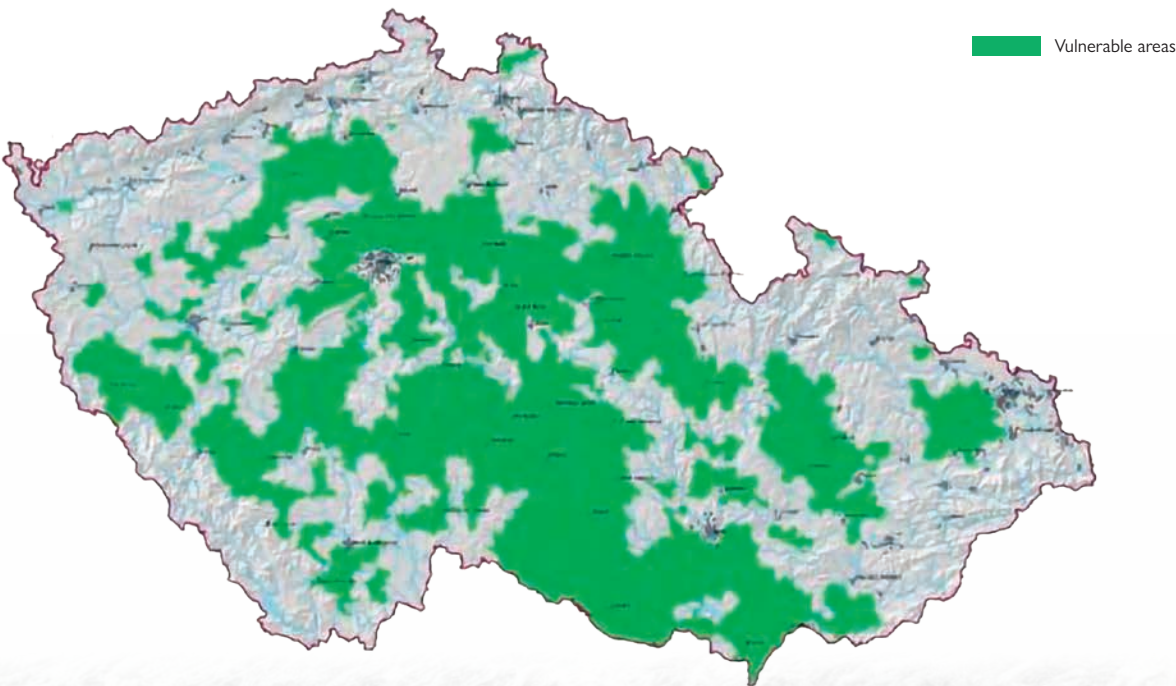
measures set out in the action programme must ensure that no farm in a vulnerable area exceeds an average annual application of manure, organic and organo-mineral fertilisers containing more than 170 kg of nitrogen per hectare per year.

Figure 13.3.1
Map of vulnerable areas and their designation for 2024–2028



Source: T. G. Masaryk Water Research Institute, p.r.i.

Figure 13.3.2
Map of vulnerable areas as per Government Regulation No. 262/2012 Coll., on the designation of vulnerable areas and the action programme – Amendment No. 277/2020 Coll., effective until 30/06 2024



Source: T. G. Masaryk Water Research Institute, p.r.i.

In 2023, the Water Research Institute, p.r.i., carried out the 5th revision of the vulnerable area designation. The new designation of nitrate vulnerable zones is based on monitoring data from the last four-year period and, together with the 6th action programme of the Nitrates Directive, is effective as of 1 July 2024. The new designation of vulnerable areas is shown in Figure 13.3.1.

Vulnerable areas containing nitrate-polluted waters cover 1.8 million hectares, i.e., more than half of the agricultural land in the Czech Republic

The measures of the action programme include a period with a ban on fertilizing, fertilization limits according to crop yield levels, crop rotation – restriction of maize cultivation in 3rd application zone, storage of fertilizers, nitrogen balance, farming on slopes and in the vicinity of surface water bodies. The measures set out in the action programme have to guarantee that no farm using organic and/or organic-mineral fertilizers for farming in vulnerable areas exceeds the limit of 170 kg of nitrogen/ha/year.

2024 was the second year of the programming period 2023–2027 under which instruments of the Common Agricultural Policy Strategic Plan were applied, which aims, inter alia, at promoting sustainable development and efficient management of natural resources such as water, soil and air. In particular, a requirement to earmark buffer strips alongside water on arable land contributes to water protection under the whole-farm eco-scheme payment, both at the basic and premium levels. This condition is linked to the standard DZES 4 – buffer strips for surface water bodies. They are grass strips with a minimum width of 6 or 12 m and prevent pesticides and pesticide residues from being washed away, reduce nutrient losses through runoff to surface waters and also contribute to reducing erosion. Another related condition of the whole-farm eco-payment is the support of adding organic matter into soil and of organic matter balance, which is key to improving soil quality and reducing erosion risk. The baseline conditionality requires that the subsidy policy is linked to compliance with the Nitrates Directive and the Water Framework Directive, in addition to the aforementioned standard DZES 4, in terms of mandatory requirements to reduce diffuse sources of phosphate pollution.



The Husinec Reservoir, flood 2024 (source: Vltava River Board, s.e.)



I. Hýzlová, *Sad Future*

14. INTERNATIONAL RELATIONS

International cooperation of the Czech Republic in water protection is based on the principles of the “UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes”, to which the Czech Republic is a party.

Within the framework of international cooperation in water protection, the so-called Joint Technical Commission between the then Czechoslovak Republic and the Republic of Austria was established as early as 1928 to deal with technical and economic modifications of the border sections of the Danube, the Thaya and the Morava Rivers, as well as watercourses in the Malše and Lužnice River Basins. Currently, the Czech Republic is a contracting partner to nine international treaties in the field of water protection.

14.1 Cooperation within the UNECE



The Convention on the Protection and Use of Transboundary Watercourses and International Lakes is intended to strengthen national

measures for the protection and environmentally sound management of transboundary surface waters and groundwaters. The Convention encourages the contractual parties to prevent, control and reduce transboundary impacts and use water in a sustainable manner.

The basic principle is bilateral cooperation between neighbouring countries on the basis of international agreements, treaties and conventions in the field of transboundary waters. Emphasis is placed on mutual exchange of information, joint research and development (e.g., through bilateral and multilateral projects, international commissions, etc.), improvement of warning and alarm systems, as well as public access to information.

UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes

The document entered into force on 6 October 1996 and the Czech Republic has been a party to it since 10 September 2000. Representatives of the Czech Republic participate in activities related to the areas of integrated management of water resources and aquatic ecosystems, protection of waters against accidental pollution from industrial sources, support for international cooperation on transboundary waters and in international river basin commissions. Cooperation under the Convention also focuses on the relationship between water quality and human health. In 2024, the Convention's summit meeting, a meeting of the contracting parties, took place. The Czech Republic actively participated in the meeting, with Deputy Minister of the Environment Pavel Janda speaking about floods in the Czech Republic and positive experience from cooperation with neighbouring countries and within international river commissions. He also presented the delegations with the main outcomes of the UN-Water case study on progress in achieving SDG 6.

Protocol on water and health

This document was produced in collaboration with the World Health Organization (WHO) and addresses the link between water and human health. The Protocol entered into force in 2005, but the Czech Republic has been a party to the Protocol since 2001 and the national targets of the Czech Republic are updated within the framework of the Protocol. The Protocol is managed in the Czech Republic by the Ministry of Health. The Council for Health and Environment entrusted a permanent working team composed of representatives from the MoH, the MoE, the MoA and the National Institute of Public Health with drafting national objectives and supervision of their implementation.

More information about the Convention and the Protocol can be found at www.unece.org/env/water.

14.2 International cooperation of the Czech Republic in the Elbe, Danube and Oder River Basins

Modern principles of water protection, based on the hydrological basins of large rivers crossing the borders of several countries, began to be applied in the Czech Republic in 1990 with the start of cooperation in protection of the Elbe River under the Agreement on the International Commission for the Protection of the Elbe River. At that time, the Agreement on the International Commission for the Protection of the Oder River against Pollution and later the Convention on Cooperation for Protection and Sustainable Use of the Danube River also began to be prepared.

Cooperation in the field of water protection at the level of the major river basins of the Czech Republic is conducted through international commissions for the protection of the Elbe, Danube and Oder Rivers and focuses primarily on:

- reducing pollution of the Elbe, Danube and Oder Rivers with harmful substances,
- striving to achieve an ecosystem as close as possible to the natural condition with a healthy diversity of species,
- enabling the use of water, especially extraction of drinking water from bank infiltration and agricultural use of water and sediments,
- reducing pollution in the North Sea from the Elbe River Basin, in the Black Sea from the Danube River Basin and in the Baltic Sea from the Oder River Basin,
- flood control,
- coordinated implementation of the Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy in integrated river basins) and the Floods Directive (Directive 2007/60/EC of the European Parliament and of the Council on the assessment and management of flood risks).

Agreement on the International Commission for the Protection of the Elbe River



On 8 October 1990, the Agreement on the International Commission for the Protection of the Elbe River (ICPER) was signed in Magdeburg.

The Agreement entered into force on 14 September 1992 and the Commission acquired legal subjectivity by the Protocol to the Agreement of 9 December 1991, which entered into force on 13 August 1993. The ICPER is the most important body of Czech-German cooperation in the field of water protection in the international Elbe River Basin.

The 37th meeting of the ICPER was held in Magdeburg, Germany, in October 2024.

On 1 January 2024, the Czech Republic took over the chairmanship of the ICPER. Ing. Tomáš Fojtík, Director of the T. G. Masaryk Water Research Institute, p.r.i., became the new president of the ICPER for 2024–2026.

A document on the timetable and work programme for the preparation of the update of Part A of the International Elbe River Basin Plan for 2028–2033 in accordance with the EC Water Framework Directive was prepared for public consultation. The draft timetable and work programme were published on the ICPER website in December 2024 for public comments.

The extraordinary International Elbe Monitoring Programme monitoring water quality in the event of extreme hydrological situations, approved at the 36th meeting of the ICPER in October 2023, was published on the ICPER website. A draft of the International Elbe Monitoring Programme for 2025 was prepared, and in January 2024, testing of backup communication channels between the flood forecasting centres in Prague, Dresden and Magdeburg was successfully completed.

In April 2024, an expert exchange of information on the reviews of preliminary flood risk assessments and flood hazard and flood risk maps in the international Elbe River Basin took place in Magdeburg.

It was agreed that the “Analysis of the low-water period 2014–2020 in the Elbe River Basin”, published on the ICPER website in July 2023, would be extended to cover the 2014–2023 decade.

In January and June 2024, the reporting channels of the International Warning and Alarm Plan for the Elbe (IWAPE) were successfully tested.

In the second half of 2024, new topics were opened and discussed in the working group for the implementation of the EC Water Framework Directive (WFD) in the Elbe River Basin and in special working meetings – water quantity management and the issue of hydrological restoration of residual pits after brown coal mining in the Elbe River Basin.

In October 2024, the first working meeting on migration permeability/migratory fish in the Elbe River Basin was held via videoconference.

Preparations began for the Magdeburg Water Protection Seminar 2025, which will take place on 8 and 9 October 2025 in Magdeburg.

The main topic is “Water management in the Elbe River Basin yesterday, today and tomorrow”. The content includes:

- Security of water resources and ecosystem functions, taking into account climate change,
- The Elbe as a waterway – possibilities and limitations,
- Strategies for monitoring and managing water (surface and groundwater).

The ICPER website and internal documents were updated on an ongoing basis.

Implementation of the Water Framework Directive, implementation of the Floods Directive, flood protection and emergency water pollution issues are still the priorities of the ICPER.

Detailed information on the activities of the ICPER can be found at: www.ikse-mkol.org.

Convention on Cooperation for the Protection and Sustainable Use of the Danube River



This multilateral cooperation aimed at the Danube protection is one of the largest international activities in water protection. The Convention on Cooperation for the Protection and Sustainable Use of the Danube River was signed on 29 June 1994 and entered into force on 22 October 1998.

The International Commission for the Protection of the Danube River (ICPDR) consists of 15 contracting parties that have committed themselves to implementing Convention on the Danube protection. The ultimate objectives are cooperation on basic water management issues with the view of ensuring that surface waters and groundwaters in the Danube River Basin are managed and used in a sustainable and equitable manner, and adoption of all appropriate legal, administrative and technical measures aimed at preserving and improving the quality of the Danube and its environment.

Two meetings were held at the level of the heads of delegations of the parties. The 22nd meeting of the ICPDR Steering Group was held in Bratislava in June, and the 26th plenary meeting of the ICPDR was held in Vienna in December. The June meeting included celebrations of the 30th anniversary of the signing of the Convention on Cooperation for the Protection and Sustainable Use of the Danube River and the 20th anniversary of the Danube Artist children's competition. The heads of the delegations ceremoniously unveiled a travelling exhibition of the winning works from the entire 20-year history of the competition, which was then also on display in Ljubljana and Budapest. In 2024, Czech participants won the international round of the competition in the Video – Juniors category for the first time (team from the Choryně Primary and Nursery School).

The ICPDR continued to address the issue of drought and water scarcity at the highest level. A report on drought in the Danube River Basin was prepared, proposing 10 main areas for possible cooperation. The heads of delegations selected six priorities for further elaboration. Experts from the member states will continue to discuss which of these are most needed. Further regular meetings of expert groups were held. The expert group on monitoring continued preparations for the upcoming JDS 5 survey of the Danube. Three locations in the Czech Republic will be included in the survey: Lanžhot, Pohansko and the wastewater treatment plant in Uherské Hradiště.

Detailed information on the activities of the ICPDR can be found at: www.icpdr.org.

Agreement on the International Commission for the Protection of the Oder River against Pollution

The International Commission for the Protection of the Oder River against Pollution (ICPORaP) was established by the international Agreement on the International Commission for the Protection of the Oder River against Pollution, concluded by governments of the Czech Republic, Poland and Germany and by the European Community on 11 April 1996. The Agreement entered into force after ratification on 26 April 1999. Following the accession of the Czech Republic and Poland to the European Union on 1 May 2004, the membership of the European Community in the ICPORaP was terminated by the Agreement on the Amendment to the Agreement on the ICPORaP adopted in Brussels on 27 November 2008.



The activity of the International Commission for the Protection of the Oder River against Pollution is focused especially on international coordination of meeting the requirements of the Water Framework Directive, the Floods Directive and water pollution prevention. Cooperation is carried out through working groups focused primarily on planning, flood protection, accidental pollution, monitoring and data management. A new ad hoc working subgroup 'Mining' was established (by resolution of the 24th Plenary Meeting of the ICPORaP of 2 December 2021) under G1, a working group for implementation of the Water Framework Directive. The subgroup was established in response to the identification of a new water management issue of interregional importance, namely the need to address adverse environmental impacts of current and former lignite mining, particularly on groundwaters.

On 6 June 2024, the 29th annual meeting of the heads of the ICPORaP delegations took place, at which, among other things, an update to the Oder Emergency Plan was approved. At the beginning of December 2024, the 27th plenary meeting of the ICPORaP was held in Wrocław, the seat of the Secretariat, chaired by the President of the ICPORaP from the Federal Republic of Germany, who chairs the Commission from 1 January 2023 to 31 December 2025.

In 2024, the ICPORaP focused primarily on the implementation of the Water Framework Directive, while continuing preparations for the third update of the International Oder River Basin Plan. In this context, a six-month public

consultation period on the timetable and work programme for updating the International Oder River Basin Plan for the fourth planning cycle was concluded on 22 June 2024 and subsequently published on the ICPORaP website. Furthermore, on 22 December 2024, a "Preliminary overview of significant water management issues identified in the International Oder River Basin" was submitted for public consultation.

Several ICPORaP working groups and subgroups worked intensively on updating the individual chapters of the "Strategy for achieving common objectives for significant water management issues in the international Oder River Basin" from 2019 (hereinafter referred to as the "Strategy"). The subgroup "Planning" was tasked with updating the chapter on morphological changes in surface waters, the subgroup "Monitoring" dealt with substance pollution of surface waters, and an ad hoc working subgroup "Mining" was tasked with preparing a completely new chapter on adverse environmental impacts of current and former lignite mining, in particular on groundwaters. The overall update of the "Strategy" should be finalised by the end of 2025.

In connection with the third cycle of implementation of the Floods Directive, the second update of the "Preliminary Flood Risk Assessment for the International Oder River Basin District" was carried out. Work also continued on the preparation of a document describing communication channels for transmission of information during floods of transboundary significance. This document aims to inform the public about the procedures and methods currently used for cross-border exchange of information in the event of flood events.

Other important activities of the "Emergency Pollution" working group included the preparation of an overview of reports submitted in accordance with the International Oder River Warning and Alarm Plan in the period from 1 January to 31 August 2024 and the application of the updated procedure and form for transmission of reports between the International Main Warning Centres in accordance with the International Oder River Warning and Alarm Plan.

The G5 "Data Management" group discussed the issue of map attachments and their updating within the "Strategy". Furthermore, after reviewing and updating the existing conditions, the document "Rules for the use of the ICPORaP Geoportal" was approved.

Detailed information on the activities of the ICPORaP can be found at: <http://mkoo.pl/index.php?lang=CZ>.

14.3 International cooperation of the Czech Republic on transboundary waters

The total length of the state border of the Czech Republic with neighbouring countries is 2,290 km. Approximately one third of the state border is referred to as the "wet" border, which means that about 740 km of the state border are constituted by watercourses and water bodies. Within the framework of international cooperation on boundary

waters, the Czech Republic has international agreements with all neighbouring countries and implements them through the respective boundary water commissions.

Boundary waters are watercourses and water bodies that are crossed by the state border as well as watercourses which cross the state border and surface waters and groundwaters where the measures implemented on the territory of one party would substantially affect water management conditions on the territory of the other party. In order to prevent any problems and disputes, the Czech Republic entered into international agreements with all its neighbouring countries.

The respective commissions for boundary waters address issues such as regulation and maintenance of boundary watercourses including construction and operation of structures on the watercourses, water supply and amelioration of border areas, protection of boundary waters from pollution (including monitoring, joint measuring of the quality of boundary waters, exchange of data and organising a warning service in case of emergency), hydrology and flood forecasting (including monitoring, joint measurements, exchange of data and organising a warning service in case of emergency), water management procedures regarding boundary waters, protection of aquatic and littoral biotopes, the delimitation of national borders on boundary watercourses, etc.

The results of the meetings of the commissions are always included in the Protocols, which are submitted to the relevant ministries for their opinion and they are subsequently approved by the Minister of the Environment.

Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Boundary Waters in the Field of Water Management

The Agreement was signed on 12 December 1995 and entered into force on 25 October 1997. Its implementation is carried out through the Czech-German Commission for Transboundary Waters (the Commission). With regard to the territorial division of the Federal Republic of Germany, the cooperation is conducted through the Standing Committee Bavaria and the Standing Committee Saxony under the umbrella of the Commission.

In 2024, the 26th meeting of the Bavaria Standing Committee was held in April, the 26th meeting of the Saxony Standing Committee was held in June and the 27th meeting of the Committee in October. In the framework of these meetings and the meetings of the working groups of the Standing Committees, the issue of elevated mercury concentrations in wash loads and sediments of the Czech-Bavarian boundary watercourse Reslava (Röslau), which are subsequently deposited in Skalka Reservoir, continue to be intensively discussed, besides dozens of other intents. In June 2024, following extensive technical discussions and trial operation, the German side put into operation an automatic sampling station in the municipality of Schirnding (Federal Republic of Germany). In 2024, the Bavarian Water Management Authority carried out erosion control measures as part of ongoing maintenance on a total of 6 km of the Kösse, Reslava (Röslau) and Ohře (Eger) Rivers in Germany. A tender is currently underway for

the modelling of watercourses and floodplains using improved laser scanning and new surveying data.

In 2024, work continued on the implementation of the project “AKWA – Impacts of Climate Change on Transboundary Water Bodies on the Czech-Saxon Border”. The project is to last for three years (01/2024–12/2026). The main objectives of the project are to improve the condition of selected boundary and transboundary water bodies, and to increase their resilience to climate change. Thanks to their active participation, the relevant authorities on both sides of the border are better connected, which strengthens their cooperation. Harmonisation of assessments will be achieved through joint water monitoring and comparison of assessment methods and results. Together, they will propose the necessary measures to improve water quality in selected water bodies. The lead partner is the T. G. Masaryk Water Research Institute, p.r.i.

Other topics discussed included specific intents on transboundary waters concerning modifications and repairs on transboundary waters, wastewater discharges, surface water and groundwater abstractions, small hydroelectric power plants, etc. Further joint transboundary projects aimed at improving the quality and quantity of surface waters, protection of the pearl mussel and thick shelled river mussel in transboundary waters and their river basins and implementation of the Water Framework Directive in transboundary waters were also discussed. Both parties exchanged information concerning the implementation of the Floods Directive at national levels and issues pertaining to the implementation of the Framework Directive for transboundary surface waters were discussed during the implementation of the Water Framework Directive.

Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on the Settlement of Water Management Issues in Boundary Waters

The Agreement was signed on 7 December 1967 and entered into force on 18 March 1970. The subject of the Agreement is performed through the Czech-Austrian Commission for Transboundary Waters that addresses current issues in transboundary waters of the two countries.

In 2024, all joint negotiations with the Austrian side were held in person as usual. The usual issues concerning the maintenance of the transboundary watercourses and monitoring of their quality were discussed. One of the main topics was again the issue of the impact of the Austrian chemical plant in Pernhofen on the Thaya River, which is currently preparing a study assessing the impact of the plant's activities on the water quality of the Thaya River for the period from 2018 to 2023. However, the main topic of discussion were the September 2024 floods, which severely affected both countries.

Agreement between the Government of the Czech Republic and the Government of the Republic of Poland on Cooperation in the Field of Water Management of Border Waters

The Agreement was signed on 20 April 2015 and entered into force on 5 October 2015. The Agreement is implemented through the Czech-Polish Commission for Transboundary

Waters (the “Commission”). Within the Commission, five standing working groups were established, focusing on investment projects and concepts (Group “P”), hydrology, hydrogeology and flood protection (Group “HyP”), watercourse regulation, water supply and amelioration of lands situated on the Czech-Polish border (Group “R”), protection of border waters against pollution (Group “OPZ”) and implementation of the Water Framework Directive (Group “WFD”). Two expert groups met 2024: an expert group for hydrogeology of boundary waters in the area of the Inner Sudetenland Basin and an expert group for addressing the impact of the Turów Coal Mine.

In 2024, the 8th regular meeting of the Commission was held in Gdańsk on 21–25 October. The expert group for groundwaters affected by the Turów Coal Mine, reactivated in 2022, continued its work, dealing with the classification and descriptive documentation of the objects of the joint groundwater level monitoring network and keeping it up-to-date, for vetting functionality of boreholes and also for designing joint hydrogeological sections, providing information on the status of the objects in the Czech Republic and in Poland, exchanging measured results and regular evaluation of the results of joint measurements.

Furthermore, the results of cooperation of all other working groups were discussed during the Commission meeting, for example, in the field of water management planning on border waters, flood control measures, exchange of hydrometeorological data and information, water management measures on border waters, assessment of the quality of border waters monitored in 2023, and cooperation with the Standing Czech–Polish committee.

The meeting itself was preceded by an extraordinary expert meeting on the issue of the occurrence of the so-called “golden algae”, *Prymnesium parvum*. Another topic was the September 2024 floods. The delegations exchanged information on the course of the event and the level of cross-border cooperation. The discussion resulted in a request to the “HyP” and “P” Groups to develop procedures for direct communication and information exchange in the event of extraordinary events on border waters where such procedures have not yet been established. With regard to drought and water scarcity management, the “WFD” Group was tasked with ensuring that the parties familiarise themselves with the relevant drought and water scarcity management plans and review and compare them.

Agreement between the Governments of the Czech Republic and the Slovak Republic on Cooperation on Transboundary Waters

The Agreement was signed and entered into force on 16 December 1999 and is implemented through the Czecho-Slovak Commission for Transboundary Waters (the Commission). The Commission is divided into four working groups dealing with technical issues (Group “T”), hydrology (Group “H”), water protection (Group “OV”) and the Water Framework Directive (Group “WFD”).

In June 2024, the 24th session of the Commission was held in the Slovak Republic. The meeting discussed the implementation

of EU Directives (the Water Framework Directive and the Floods Directive) concerning Czech-Slovak transboundary waters. The “WFD” Group continued to harmonise spatial data and characterise a new joint transboundary groundwater body – in the Czech Republic it is the “Quaternary of the Morava and the Thaya confluence area” and in Slovakia it is the “Intergranular groundwater of the Quaternary alluvial deposits of the Vienna Basin in the Danube River Basin”. The meeting also addressed current issues of treatment and maintenance of borderline watercourses (e.g. repair of the Sudoměřice weir), assessment of water quality monitoring of border watercourses for 2023, hydrological issues and water management issues. Various projects were also discussed, such as the “Extension of the navigability of the Otrokovice–Rohatec Waterway” and the “Hodonín Recreational Port”. Another important topic for discussion was the long-standing issue of property relations between the Czech Republic and Slovakia. In 2024, contact was established with the ministries of finance on both sides.

14.4 UN award for progress in sustainable water management

On 16 July 2024, Minister of the Environment Petr Hladík received an award in New York from UN-Water, the UN's coordinating mechanism for water, for the Czech Republic's progress in sustainable water management. Since 2022, UN-Water has been publishing case studies on progress towards Sustainable Development Goal 6 (water and sanitation). The aim of the case studies is to provide inspiration and replicable examples of good practice to countries. The Czech Republic was selected because it had made unique progress on a global scale across all areas of water management reported by the UN. The Czech Republic's water management is also notable for its developed international cooperation, despite the country's relatively limited water resources.

The Czech Republic was also recognised for significantly increasing the percentage of households connected to drinking water and sewerage systems over the last two decades. Major progress has also been made in the fight against water pollution. At the same time, the number of wastewater treatment plants has increased by almost 50% over the last twenty years, mainly in smaller municipalities. The UN also highlighted that municipalities are aware of the importance of water and that water management legislation is consistent and not subject to political pressure. Well-designed subsidy financing was also praised. The UN further noted that although the price of water is slowly rising, we have managed to keep it affordable for consumers.

Challenges were also identified that the Czech Republic should continue to tackle: increasing capacity in the water management sector, including education and research, ensuring wastewater treatment in sparsely populated areas, raising wastewater treatment standards, and addressing declining surface and groundwater levels.

This award recognises the decades of effort by all water managers who have contributed to the extraordinary global progress in water management over the last three decades.

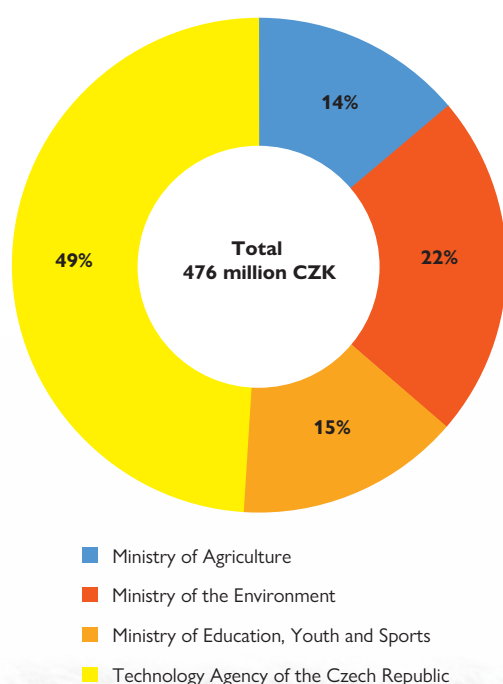


1st place, D. Knapp, Let's protect our glaciers so that they don't end up only in our freezers

15. WATER RESEARCH AND DEVELOPMENT

A number of research projects focused on water are carried out. This chapter is intended to present briefly research and development in the field of waters within the competence of the Ministry of Agriculture, the Ministry of the Environment and the Ministry of Education, Youth and Sports, which is funded by the central bodies either directly, in the form of institutional and targeted support or through the Technology Agency of the Czech Republic. Publicly accessible data on R&D projects and on institutional support provided for long-term conceptual development are available on the website of the Information System of Research, Experimental Development and Innovation at www.rvvi.cz (Central Registry of Projects, Central Registry of Activities). The results obtained from research activities are available on the aforementioned website in the Registry of Information on Results. In 2024, funding totalling almost to CZK 476 million was granted to research and development in the water sector. The Ministry of Agriculture contributed to the total amount with 14% (funds amounting to CZK 66.7 million), the Ministry of the Environment with 22% (funds of CZK 105.8 million), the Ministry of Education, Youth and Sports with 15% (funds amounting to more than CZK 70 million) and Technology Agency of the Czech Republic with 49% (funds for projects focused on water and water management amounting to CZK 232.9 million under the Environment for Life research programme under the Ministry of the Environment).

Graph 15.1
Funds allocated to water research and development in 2024



Source: MoA using data provided by the MoE and MoEYS



Research into methane evolution in watercourses (source: CzeCOS)

15.1 Research and development within the competence of the Ministry of Agriculture

In 2024, the Ministry of Agriculture provided targeted and institutional funding aimed at implementing research and development projects and long-term conceptual development of research organisations in the field of water management in an amount exceeding CZK 66.74 million.

In 2024, a total of CZK 59,852 thousand was spent on support of research and development projects. The R&D projects are mainly focused on soil and water conservation while adhering to sustainable development of the agricultural sector, creation, revitalisation and protection of cultural landscape, forests and water bodies, and rationalisation of water management, including addressing the impacts of climate change.

An overview of the R&D projects is shown in Table 15.1.1.

The water research and development projects carried out in 2024 were the result of public tenders held as part of the ministry's research programme entitled the Programme for the Support of Applied Research of the Ministry of Agriculture for the period 2017–2025, EARTH (the EARTH). And the Programme for the Support of Applied Research of the Ministry of Agriculture for the period 2024–2032, EARTH II ("EARTH II").

Specific objectives of the EARTH and EARTH II programmes are defined by three key areas and nine research directions. The key area of Sustainable Management of Natural Resources is fulfilled, among other things, by the research direction Water. The aim of this research direction is to achieve good ecological and chemical status of surface waters and good chemical and quantitative status of groundwaters, to increase the retention and accumulation of surface waters and groundwaters, to reduce pollution risk and to protect water resources from point and non-point sources, to reduce contamination by micropollutants (pesticides, pharmaceuticals and others, including their metabolites), to apply new technologies in the field of water treatment and to recycle water in circulation. Furthermore, the Water research direction focuses on optimising water management with the aim of eliminating manifestations of hydrological extremes and proposing a system of adaptation measures to mitigate them.

Within the framework of long-term development concepts of research organisations, some research organisations addressed, inter alia, the issue of water management. These are mainly the Research Institute for Soil and Water Conservation, p.r.i., the National Centre for Agricultural and Food Research, p.r.i., and, to a lesser extent, the Forestry and Game Management Research Institute, p.r.i. Institutions carrying out research in this sphere were supported with a total amount of CZK 6,890 million in 2024.

Publicly accessible data on R&D projects and on institutional support provided for long-term conceptual development are available on the website of the Research, Development and Innovation Information System <https://www.isvavai.cz/> (CRP – Central Registry of Projects, CRA – Central Registry of Activities). Data on the results resulting from research activities are available in the Registry of Information on Results – RIV.

Table 15.1.1

Research and development projects in the field of water management funded by the Ministry of Agriculture in 2024

Project No.	Project	from–to	coordinator	funds (thousand CZK)
QK21010189	Implementation of ecosystem services with a focus on water balance in viticulture	01/01 2021 31/12 2025	National Centre for Agricultural and Food Research, p.r.i.	3,399
QK21010247	Optimisation of farming on uneven land through effective mapping of soil conditions and consideration of changes in moisture conditions with the aim of stabilising yields	01/01 2021 31/12 2024	Research Institute for Soil and Water Conservation, p.r.i.	2,576
QK21010300	Optimisation of sludge treatment technology from municipal wastewater treatment plants with regard to their chemical and microbial composition and water retention capacity with the aim of their safe use on agricultural and forest land	01/01 2021 31/12 2024	Technical University of Ostrava	3,400
QK21010310	Evaluation of the possibilities of using planned linear structures to implement water transfers between basins and between water supply systems	01/01 2021 31/12 2024	Research Institute for Soil and Water Conservation, p.r.i.	2,634
QK21010328	Potential for the development of small water bodies in the landscape as adaptation measures to eliminate hydrometeorological extremes	01/01 2021 31/12 2024	Brno University of Technology	3,017
QK21010341	Optimisation of a set of measures for agricultural catchment areas within the land consolidation process	01/01 2021 31/12 2025	Research Institute for Soil and Water Conservation, p.r.i.	3,263
QK22010142	Rescue of the black poplar population and its use in water management and forestry	01/2022 12/2025	Landscape Research Institute, p.r.i.	3,090
QK22010189	The impact of deforestation on the water regime of small catchment areas	01/2022 12/2025	Forestry and Game Management Research Institute, p.r.i.	2,861
QK22020146	Technical recommendations for water management within the forest transport network	01/2022 12/2024	Czech University of Life Sciences Prague	2,971
QK22020179	Assessment of the share of sediments in eutrophication of reservoirs and possibilities of corrective measures	01/2022 12/2024	Biological Centre CAS	4,133
QK23020002	Pikeperch fry production, their adaptability and optimization of their stocking into open waters.	01/2023 12/2025	Biological Centre CAS	4,040

Project No.	Project	from-to	coordinator	funds (thousand CZK)
QK23020018	What we do not know about organic pollution of drinking and irrigation water sources: Identification of emergent compounds through non-targeted screening	01/2023 12/2025	University of South Bohemia in České Budějovice	4,204
QK23020064	Evaluation of hydrological status of trout streams in the Czech Republic and status of salmonid populations in relation to climate change	1/2023 12/2025	Mendel University in Brno	1,864
QL24010054	Impacts of climate change on small forest catchments and mitigation options through forest management and water management measures	03/2024 02/2028	Forestry and Game Management Research Institute, p.r.i.	2,879
QL24010263	Smart tools for managing irrigation systems and improving the water balance of agricultural land	03/2024 12/2028	Research Institute for Soil and Water Conservation, p.r.i.	3,604
QL24010384	Medium-term trend in the behaviour of micropollutants originating from wastewater or sludge from wastewater treatment plants in the soil environment	03/2024 12/2028	Czech University of Life Sciences Prague	4,286
QL24020321	Evaluation of possibilities to strengthen the supply of drinking water to the population by interconnecting group water supply and water supply systems as an adaptation measure to climate change	03/2024 12/2026	Research Institute for Soil and Water Conservation, p.r.i.	3,498
QL24020457	Impact of climate change on evapotranspiration and landscape water balance in the landscape in the context of water security and sustainability	03/2024 12/2026	Global Change Research Institute CAS, p.r.i.	4,133
Total				59

Source: MoA



South Bohemian Research Center for Aquaculture and Biodiversity of Hydrocenoses (source: CENAKVA)

15.2 Research and development within the competence of the Ministry of the Environment

In 2024, the Ministry of the Environment provided institutional support in a total amount of CZK 105,761,757 to its two research organisations in the field of water: the T. G. Masaryk Water Research Institute, p.r.i., and the Czech Hydrometeorological Institute with CZK 78,407,818 and CZK 27,353,939, respectively.

15.3 Research and development within the competence of the Ministry of Education, Youth and Sports

The Ministry of Education, Youth and Sports (the MoEYS) supports research and development in areas related to water management through the Joint Programming Initiative “Water for a Changing World” and the large research infrastructure projects CzeCOS and CENAKVA and related international cooperation projects of the Czech Republic in research and development. In 2024, funds amounting to more than CZK 70 million were provided.

Water JPI

In 2024, the Czech Republic continued to participate in activities of the “Water for a Changing World” Joint Programming Initiative (Water JPI), focused on wide research in the field of

water and hydrological sciences. The Czech Republic has been its member through the MoEYS since 2018.

Large Research Infrastructure CzeCOS – Czech Carbon Observation Infrastructure

In 2024, the large research infrastructure CzeCOS (“LRI CzeCOS”) continued to monitor water ecosystems, develop innovations and obtain data for hydrological studies through long-term environmental observations. One of the key activities was the monitoring of 15 small forest catchment areas within the GEOMON network, measuring hydrological and chemical parameters in precipitation water and directly in watercourses. The remote sensing infrastructure underwent significant improvements, in particular with the integration of a new VNIR-SWIR sensor.

CzeCOS played a key role in international collaborations and open access initiatives, particularly through its participation in DANUBIUS-RI, which supports hydrological research on river-sea interactions. The infrastructure also contributed to publicly available portals for climate risk assessment, including *Intersucho* (drought monitoring), *FireRisk* (fire risk prediction) and *Climate Change* (analysis of climate change impacts). Demand for hydrological and ecosystem data continued to grow, with more than 2,773 requests for access to data from 830 international researchers.

Large research infrastructure CENAKVA – South Bohemian Research Centre for Aquaculture and Biodiversity of Hydrocenoses

One of the key infrastructure milestones in 2024 was the expansion of open access to data that is essential for water environment research and ecosystem monitoring. Eleven



Research into methane evolution in watercourses (source: CzeCOS)



South Bohemian Research Center for Aquaculture and Biodiversity of Hydrocenoses (source: CENAKVA)

datasets with a total size of 320 GB were published via web platforms. These files attracted considerable interest from the scientific community, as evidenced by 407 downloads. CENAKVA also strengthened its role in international hydrological research by taking over responsibility for the operation of one of the components of the European research infrastructure DANUBIUS RI (International Centre for Advanced Studies on River-Sea Systems) – Hydrological Nexus of Central Europe, which brings together the services of the CENAKVA and CzechGlobe research centres and focuses on research into freshwater ecosystems, biodiversity and water protection in the Czech Republic.

Scientific research conducted at CENAKVA has yielded valuable insights into water quality, biodiversity and pollution in aquatic ecosystems. Key studies include research into the effects of pharmaceuticals and climate change on freshwater ecosystems, analysis of electro-sensory and mechanosensory systems in fish, which provides new insights into the adaptation of aquatic species, and investigation of the influence of antidepressants on interactions between fish and freshwater mussels. Through DANUBIUS-RI, CENAKVA has already facilitated two open access projects, expanding its services and attracting new scientists working in hydrology and water ecosystem management.

Czech participation in European research infrastructures

The Czech Republic is strategically located at the source of several European river systems, making it a key player in sustainable water management on a global scale. Through the MoEYS, LRI CENAKVA and LRI CzeCOS, the Czech Republic participates in several European research consortia focused on environmental research such as AnaEE-ERIC, ACTRIS ERIC and ICOS ERIC. Furthermore, as a founding member state, the Czech Republic is also involved in preparation of consortia intended to manage the European research infrastructures DANUBIUS-RI and eLTER-RI. The establishment of a fully-fledged DANUBIUS ERIC consortium is expected in the summer of 2025.

Within the European consortium DANUBIUS-RI, LRI CENAKVA is responsible for a component called “Hydrological Nexus of Central Europe” located in the Czech Republic. This component is built on the infrastructure provided by the CENAKVA and CzechGlobe research centres and focuses on comprehensive research on freshwater ecosystem processes, with an emphasis on maintaining biodiversity and protecting the aquatic environment. The unique services provided by the Czech component contribute to research on the sustainability of water resource use on a pan-European scale.

Table 15.3.1
Research and development projects in water management funded by the MoEYS in 2024

Project No./ designation	Acronym	Implementor, name	Funds (thousand CZK)
	AnaEE-ERIC	AnaEE European Research Infrastructure Consortium	2,608,320
	ICOS ERIC	ICOS RI European Research Infrastructure Consortium	1,723,731
LM2023038	CENAKVA	South Bohemian Research Centre for Aquaculture and Biodiversity of Hydrocenoses – LRI CENAKVA.	17,208,000
LM2023048	CzeCOS	Czech Carbon Observation System – LRI CzeCOS	48,869,000
Total			70,409,051

Source: MoEYS

15.4 Research and development within the competence of the Technology Agency of the Czech Republic

In addition to institutional support, the Ministry of the Environment has administered a research programme called Environment for Life 2 since 2024. The programme is aimed at supporting projects whose research will be carried out mainly in those thematic areas with the greatest global pressures,

i.e. in the areas of natural resources, global change, circular economy, sustainable development of the landscape and human settlements, environmentally friendly technologies and eco-innovation, and the development of an environmentally friendly society. The provider and implementor of the programme is the Technology Agency of the Czech Republic. The duration of the programme, with a total allocation of CZK 12.66 billion, is ten years, i.e., from 2024 until 2033. Half of the total expenditure is earmarked for research related to climate change. In 2024, CZK 232.9 million was allocated to support projects focused on water and water management.

Table 15.4.1

Research and development projects in the field of water management supported by the Ministry of the Environment under the seventh public tender of the Environment for Life Programme in SP1 in 2024

Project No.	Project name	Main implementor	Funds (thousand CZK)
SQ01010030	Strategy for effective wastewater treatment during drought and water scarcity in recipients	T. G. Masaryk Water Research Institute, p.r.i.	9,652
SQ01010075	Green infrastructure of mineral springs – nature-close measures supporting sustainable use of spa landscape of the Western Bohemia Region	Botanical Institute CAS	10,184
SQ01010148	Methodological tools for the identification of risk agglomerations from the point of view of combined sewer overflows and for the effective design of measures in catchments	Czech Technical University in Prague	7,613
SQ01010345	Analysis of otter (<i>Lutra lutra</i>) carcasses as a tool for monitoring bio-accumulative pollutants in aquatic ecosystems	Charles University	11,631
SQ01010176	Impacts of climate change on minimum residual flows in the Jizera River network and groundwater withdrawals near the stream	T. G. Masaryk Water Research Institute, p.r.i.	11,725
SQ01010185	Raman spectroscopy-based mobile detection and identification solution for chemical pollutants and biological agents	State Institute for Nuclear, Chemical and Biological Protection, p.r.i.	11,966
SQ01010138	Complex assessment of large rivers and their tributaries in large-scale specially protected areas - preservation and restoration of their geodiversity and biodiversity	University of Ostrava	11,044
SQ01010193	Sustainable tools for evaluating and limiting the impact of wastewater overflows on recipients	University of Chemistry and Technology, Prague	11,975
SQ01010130	Methods of identification and stabilization of existing and restored spring areas	T. G. Masaryk Water Research Institute, p.r.i.	11,884
SQ01010194	Innovative methods of monitoring the genetic integrity and biological condition of crucian carp under conditions of threat from the invasive activity of gibel carp	Masaryk University	9,308
SQ01010267	Determination of the concentration of heavy metals in environmental samples for the purposes of control and characterization of ecological burdens	Czech Technical University in Prague	7,822
SQ01010045	Toxicological methodology for comprehensive assessment of groundwater contamination by organic pollutants	Research Institute of Veterinary Medicine, p.r.i.	8,926
Total			123,730

Source: Technology Agency of the Czech Republic

Table 15.4.2

Research and development projects in water management supported by the Ministry of the Environment under the seventh public tender of the Environment for Life Programme in SP2 in 2024

Project No.	Project name	Main implementor	Funds (thousand CZK)
SQ01020060	Sustainable filter systems eliminating pesticides and other hazardous substances	Jan Evangelista Purkyně University in Ústí nad Labem	10,131
SQ01020164	PFAS removal from groundwater including final disposal	DEKONTA, a.s.	13,773
SQ01020103	Device for field eradication of invasive fish species	University of South Bohemia in České Budějovice	11,197
SQ01020040	Textiles for microbially exposed workplaces eliminating the risk of persistent pollutants leaking into wastewater thanks to advanced active decontamination technology	Centre for Organic Chemistry s.r.o.	13,880
SQ01020272	Optochemical sensor for monitoring persistent organic pollutants in the aquatic environment	Technical University of Liberec	13,108
SQ01020023	Advanced identification and mitigation of methane from sewer network and wastewater treatment plants	University of Chemistry and Technology, Prague	9,083
SQ01020096	Verified technology development for reduction of invasive fish species in small water bodies with fyke nets	Biological Centre CAS	10,674
SQ01020207	DNA barcoding of Czech aquatic insects: building a database of reference sequences	Biological Centre CAS	10,402
SQ01020133	Development of a fertilizer based on a mixture of freshwater algae biomass cultivated in wastewater and humic substances for soil application	Mendel University in Brno	13,869
Total			106,117

Source: Technology Agency of the Czech Republic

The programme is divided into three sub-programmes:

- Innovation and operational research in public interest (SP1)
- New solutions for the economy, the environment and society (SP2)
- Environmental and climate challenges in the long term (SP3)

In 2024 (on 24 April 2024), the first call for tenders was announced with the receipt of applications by 12 June 2024. A total sum of CZK 300 million was allocated to SP1 and CZK 150 million to SP2. A total of 13 Priority Research Objectives (PROs) were set for SP1, 15 PROs for SP2. A total of 235 project proposals were submitted to the call for tenders, of which

60 project proposals (32 in SP1 and 28 in SP2) were supported, which means a success rate of 25.5%. The supported projects in the field of water management are listed in Tables 15.4.1 and 15.4.2.

In the field of research, the MoE also uses the “Public Procurement Programme in Applied Research and Innovation for the Needs of the State Administration BETA2 (2017–2024)”. No new projects were supported in 2024 as this programme came to an end on 31 December 2024. Table 13.4.3 shows an overview of the currently running research projects commissioned on the basis of the needs of the MoE.

Table 15.4.3

Research and development projects in the field of water management funded by the Technology Agency of the Czech Republic (BETA2) for the Ministry of the Environment in 2024

Project No.	Project name	from–to	Main implementor	Funds (thousand CZK)
TITSMZP945	Analysis of water regime change of land and streams in the Krkonoše National Park caused by the road network	09/12 2021 – 31/05 2024	T. G. Masaryk Water Research Institute, p.r.i.	3,149
Total				3,149

Source: Technology Agency of the Czech Republic



E. Valtrová, Last Glacier

16. IMPLEMENTATION OF PROGRAMMES OF MEASURES ADOPTED BY RIVER BASIN PLANS FOR THE THIRD PLANNING PERIOD

Every three years, the Ministry of Agriculture, in cooperation with the Ministry of the Environment and regional authorities, submits to the government a summary report on the implementation of programmes of measures in accordance with Section 26(7) of the Water Act through this chapter. At the same time, EU Member States submit a report describing the progress made in implementing the programmes of measures to the European Commission within three years of the publication of the river basin management plans as part of the reporting process in accordance with Article 15(3) of Directive 2000/60/EC (Water Framework Directive). More detailed information on this report is provided in Chapter 13.5 “Reporting activities of the Czech Republic for the EU”.

16.1 Description of the current river basin plans

The Water Framework Directive introduced new objectives for the protection and restoration of water ecosystems in 2000, which are to serve as a basis for long-term and sustainable water use. The requirements of the Directive were incorporated into the Water Act and related legislation, and river basin plans and the programmes of measures

proposed therein for each sub-basin were established as the main instrument for implementing the Directive. River basin management plans are among the most important strategic planning tools in the field of water and form the basis for public administration, in particular for spatial planning and water management.

As part of the water planning process, the following documents were prepared and subsequently approved for the third planning period, i.e. for the years 2021 to 2027:

- **National River Basin Plans** (“NRBPs”), namely the NRBPs for the Elbe, the NRBPs for the Oder and the NRBPs for the Danube, which represent a long-term concept and strategy for water protection and use. They integrate the objectives and targets of ministerial policies of the central water authorities in the sharing of competences within the meaning of Section 108 of the Water Act. They are prepared for the Czech parts of international river basin districts and are drawn up by the MoA and the MoE in cooperation with the relevant river basin administrators and locally competent regional authorities. The NRBPs were approved by the Czech Government by Resolution No. 31 of 19 January 2022. The MoA subsequently issued NRBPs on 28 January 2022 through measures of general nature in accordance with Section 25(4) of the Water Act, which entered into force on 13 February 2022.



Open Day on World Water Day (source: Vltava River Board, s.e.)

- **River sub-basin plans** (hereinafter referred to as “RSPs”), namely the RSP for the Upper and Middle Elbe, the RSP for the Upper Vltava, the RSP for the Berounka, the RSP for the Lower Vltava, the RSP for the Ohře, the Lower Elbe and other tributaries of the Elbe, the RSP for the Morava and tributaries of the Váh, the RSP for the Thaya, the RSP for other tributaries of the Danube, the RSP for the Upper Oder, the RSP for the Lusatian Neisse and other tributaries of the Oder, are conceptual documents that summarise information on the status of water bodies in sub-basins and set specific objectives aimed at achieving and maintaining their good status, preventing deterioration of the water environment, promoting sustainable water use, reducing the effects of extreme flow conditions (floods and droughts), and proposing measures to achieve these objectives by 2027. They are drawn up by the relevant river basin administrators in cooperation with the relevant regional authorities and central water authorities. The RSPs were approved by the regional councils of the relevant regions on 30 January 2023.
- **International river basin plans**, namely the International Elbe River Basin Plan, the Oder International River Basin Plan and the Danube International River Basin Plan, were drawn up in accordance with Article 13(2) of the Water Framework Directive and Section 24(3) of the Water Act, on the basis of which the Member States sharing the relevant international river basins ensured the preparation of an international river basin plan. The Czech Republic actively participated in the preparation of the relevant river basin plans through its representatives and experts in the working groups of the international commissions for the protection of the Elbe, Oder and Danube rivers (ICPER, ICPOraP and ICPDR). The international river basin plans were updated on 22 March 2022.

The approved river basin plans and information on their review and update process are published on the websites of the MoA (www.mze.gov.cz), the MoE (www.mzp.gov.cz) and the River Boards, s.e. (www.pla.cz, www.pmo.cz, www.pod.cz, www.poh.cz, www.pvl.cz).

Measures for achieving the objectives of the river basin plans

The river basin plans set out all the measures necessary for achieving good status of all water bodies in terms of the objectives of good ecological status/potential and good chemical status for surface waters and good quantitative and good chemical status of groundwaters. Measures in the RSPs and NRBP can generally be divided into three groups and characterised by their scope:

- **Measures with a Type A action sheet** represent a proposal for specific activities to reduce or eliminate significant impacts. In river basin plans, these are typically measures relating to sewerage networks and wastewater treatment plants, revitalisation and renaturation of watercourses, removal and clearing of transverse obstacles and remediation of old environmental burdens. These measures are implemented by municipalities, cities and towns, regions, river basin administrators, watercourse administrators, the Nature Conservation Agency of the Czech Republic and other entities. The effect of these measures is usually local, within a given water body, in some cases the effect of the measure may extend further downstream.
- **Measures with a Type B action sheet** propose a general procedure for reducing or eliminating a specific impact. Such impact has been identified through exceeding of



The Dolánecký Stream (source: Ohře River Board, s.e.)

a status assessment indicator, but the specific source of the impact is unknown. Since the impact on the water body is known (e.g. exceeded P_{total} limit resulting in eutrophication of the aquatic environment), a general solution can be proposed, but since the source of the impact is unknown, the measure must be applied to the entire water body. Operational or exploratory monitoring can be used to find the source of the impact, or a search study can be carried out.

- **Measures with a Type C action sheet** are measures with nationwide effect. These measures mainly include changes to legal regulations, creation of strategic documents, databases, etc. These measures draw attention to loopholes in legal regulations and in strategic steps taken by the state that cannot be addressed by measures with a Type A or B action sheet. Such measures are implemented by central water management authorities, in particular the MoA and the MoE, and other entities. Once the measures are implemented, they can be expected to have a significant nationwide effect.

Measures at local and regional level (i.e. measures with an action sheet of Type A and B) are proposed in the RSPs. These measures are then assessed through an economic analysis of water use in the NRBPs in terms of their contribution to the achievement of the objectives. Based on the estimated effect of the measures, all measures proposed in the river sub-basin plans are ranked and then, the respect to the financial resources available, measures are selected for inclusion in the programme of measures, which is the main instrument for achieving the objectives set out in the river basin plan. The final selection contains the most cost-effective combination of measures that respond to the assessment of the situation and significant impacts identified. Measures at local and regional level complement measures at national level (measures with a Type C action sheet) proposed in the NRBPs. Measures included in the programme of measures must be implemented within three years of the approval of the river basin plans. An action sheet is drawn up for each measure. The measures can be found in Chapter VI of the RSP and in Chapter V of the NRBPs.

The final assessment of the status of measures after the end of the entire six-year planning period will be published in the introductory chapter of the NRBPs for the subsequent fourth planning period 2027–2033 and in the Report on Water Management in the Czech Republic in 2027.

16.2 Status of implementation of measures

Data on the status of implementation of measures were assessed for the first half of the third planning period, i.e. for 2022, 2023 and 2024. In addition to the status of implementation of measures, data on the assignment of measures to key types, their inclusion in programmes of measures and their focus on anthropogenic impacts and water bodies in which the measures are implemented were taken into account. All data on the status of implementation of measures are based on the report describing the progress achieved in the implementation of programmes of measures for the European Commission.

The river basin management plans for the third planning period contain a total of 3,554 measures, of which 3,260 are measures with a Type A action sheet, 273 are measures with a Type B action sheet and 21 are measures with a Type C action sheet (these measures are further divided into 110 sub-measures). Of the total number of 3,554 measures, 2,442 were included in programmes of measures. The remaining 1,112 measures are classified as “other measures”.

In the period under review, a total of CZK 34,796.21 million was spent on the implementation of measures, of which CZK 16,649.01 million came from EU funds. For measures included in action programmes, the total investment costs amounted to CZK 28,202.49 million, of which CZK 14,288.78 million came from EU funds.

The following table shows a detailed overview of the status of all measures included in the river basin plans, distinguishing between the type of list of measures, classification in the action programmes and the status of implementation.

The main reasons for not implementing measures with a Type A or B action sheet proposed in the 3rd planning period are financial obstacles (alone or in combination with other obstacles, reported for 538 measures), followed by technical or technological obstacles (354 measures) and time constraints; typically cases where more time is needed for the preparation, approval and implementation of measures (314 measures), and to a lesser extent property reasons or obstacles (111 measures).

Table 16.2.1

Overall status of implementation of all measures proposed in the river basin plans (measure sheets of Types A, B and C) as at 31 December 2024

Type of measure sheet	In the programme of measures	Status of implementation				Total measures
		completed	in progress	not started	cancelled	
A	yes	264	815	1,119	33	2,231
A	no	171	348	492	18	1,029
B	yes	1	154	38	1	194
B	no	1	11	65	2	79
C	yes	0	16	1	0	17
C	no	0	4	0	0	4
Total		437	1,348	1,715	54	3,554

Source: MoA, MoE, River Boards

Table 16.2.2**Status of implementation of sub-measures with a Type C action sheet as at 31 December 2024**

Name of measure	Status of implementation				Total
	completed	in progress	not started	unknown	
Determination of natural groundwater resources for groundwater bodies	0	1	5	0	6
Introduction and support of artificial infiltration	2	2	0	0	4
Tightening of requirements for municipal wastewater treatment	0	3	0	0	3
Addressing the issue of industrial pollution sources connected to public sewerage systems	2	5	0	0	7
Improvement of the interconnection of concepts and databases of reported data in water management, including their applicability	1	1	0	0	2
Solutions for domestic wastewater treatment plants	0	1	1	0	2
Limiting negative effects of relief chambers	1	0	1	0	2
Limiting negative impacts of agriculture on surface waters and groundwaters	1	4	1	0	6
Limiting negative effects of pesticides on surface waters and groundwaters	1	8	3	0	12
Inspection of economic entities in agriculture	1	4	0	0	5
Support for transition to organic farming	0	4	0	0	4
Reducing water pollution from atmospheric deposition	1	1	0	0	2
Addressing the issue of water pollution from transport	0	3	1	5	9
General principles for dealing with water pollution from old contaminated sites	1	2	1	0	4
Restoration of natural watercourse beds	0	5	0	0	5
Measures supporting passability of the river network in the Czech Republic, ensuring records of migration barriers on watercourses and providing methodological guidance to state administration bodies	1	6	3	0	10
Protected areas (areas designated for protection of habitats or species and wetlands)	0	3	2	0	5
Elimination of invasive plant and animal species	2	5	0	0	7
Improvement of the database of protected areas designated for water abstraction for human consumption	0	3	0	0	3
Reduction of surface water pollution originating from ponds	0	0	3	0	3
Prevention and mitigation of the effects of drought and water scarcity	1	8	0	0	9
Total	15	69	21	5	110

Source: MoA, MoE, River Boards

In the case of measures with a Type C action sheet, the reasons are varied, with no significant repetition. Measures that were not implemented in the first half of the planning period will be implemented in the second half of the planning period.

Implementation of measures adopted by national river basin plans

The NRBPs contain a total of 21 measures with a Type C action sheet, which include 110 sub-measures shown in the following table.

Implementation of programmes of measures adopted by river sub-basin plans

The RSPs contain a total of 3,533 measures with a Type A or B action sheet, of which 2,425 measures are included in action programmes and 1,108 measures are classified as other measures. The following tables and graphs show the status of implementation of these measures for individual river sub-basin plans.

Table 16.2.3

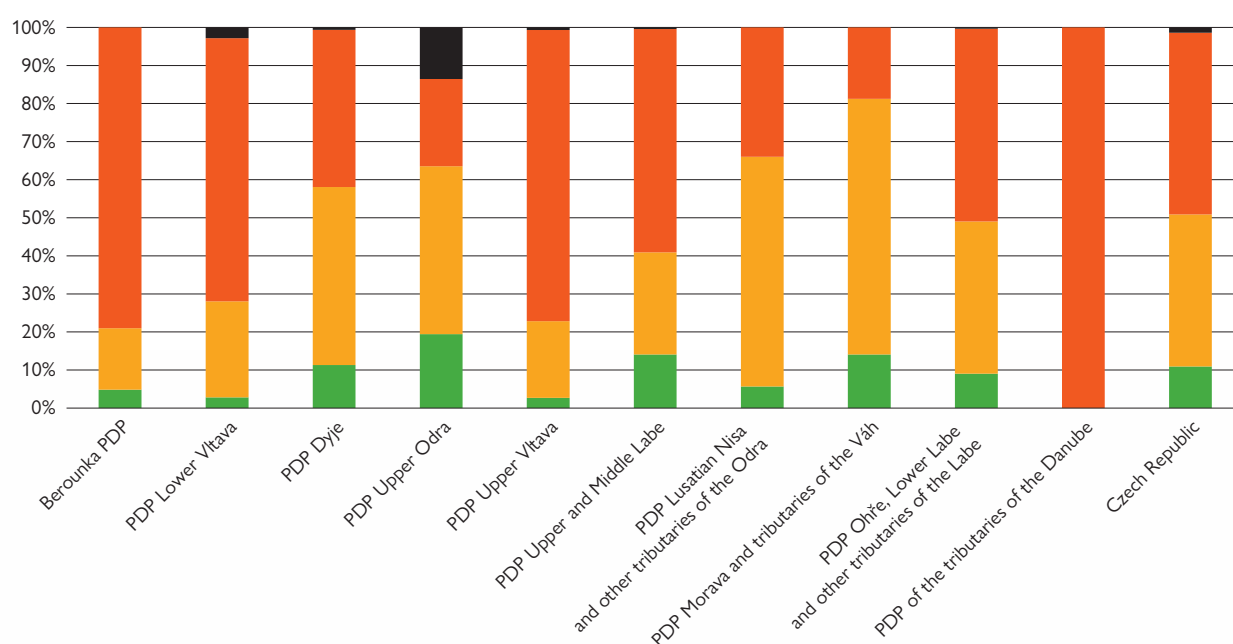
Status of implementation of measures with action sheets of type A and B included in action programmes by sub-basin plans

Sub-basin plan	completed	in progress	not started	cancelled
RSP Berounka	9	30	147	0
RSP Lower Vltava	3	27	74	3
RSP Thaya	72	298	263	4
RSP Upper Oder	33	75	39	23
RSP Upper Vltava	4	30	114	1
RSP Upper and Middle Elbe	65	124	271	2
RSP Lusatian Neisse and other tributaries of the Oder	3	32	18	0
RSP Morava and tributaries of the Váh	48	229	64	0
RSP Ohře, lower Elbe and other tributaries of the Elbe	28	124	157	1
RSP of other tributaries of the Danube	0	0	10	0
Total (Czech Republic)	265	969	1,157	34

Source: MoA, MoE, River Boards

Graph 16.2.1

Status of implementation of measures with Type A and B measures included in action programmes by river sub-basin plans



Source: MoA, MoE, River Boards

■ Completed ■ In progress ■ Non started ■ Cancelled

Table 16.2.4

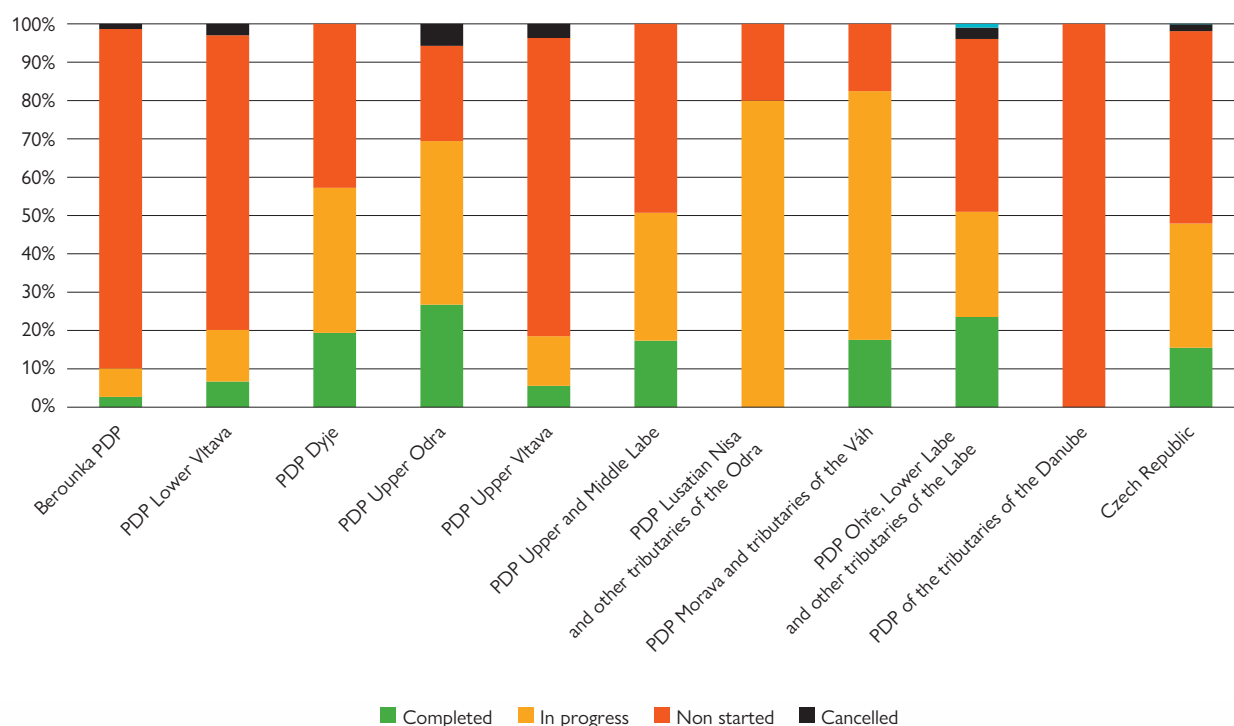
Status of implementation of measures with action sheets of types A and B not included in action programmes (so-called other measures) by river sub-basin plans

River sub-basin plan	completed	in progress	not started	cancelled
RSP Berounka	4	11	131	2
RSP Lower Vltava	9	18	103	4
RSP Thaya	39	76	86	0
RSP Upper Oder	42	67	39	9
RSP Upper Vltava	3	7	42	2
RSP Upper and Middle Elbe	25	48	71	0
RSP Lusatian Neisse and other tributaries of the Oder	0	8	2	0
RSP Morava and tributaries of the Váh	26	96	26	0
RSP Ohře, Lower Elbe and other tributaries of the Elbe	24	28	4	3
RSP of other tributaries of the Danube	0	0	10	0
Total (Czech Republic)	172	359	557	20

Source: MoA, MoE, River Boards

Graph 16.2.2

Status of implementation of measures with action sheets of types A and B not included in action programmes (so-called other measures) by river sub-basin plans



Source: MoA, MoE, River Boards

Selected interesting data for 2024

- Basic hydrological network – 99,197 km of watercourses
- Funds expended on watercourse management (River Boards, Forests of the Czech Republic, s.e.): CZK 3.3 billion
- River Boards:
 - Revenues: CZK 6.563 billion (2% increase)
 - Costs: CZK 6.246 billion (2% increase)
 - Investment: CZK 2.632 billion (5.5% decrease) – of which 1.3 billion from own resources (49%)
 - Grants: CZK 1.7 billion
 - Number of small hydroelectric power plants: 106
- Land consolidation – implementation in the amount of CZK 1.5 billion, of which CZK 158 million for water management measures, CZK 58 million for anti-erosion measures
- Water supply and sewerage:
 - Population supplied with drinking water: 10.4 million (95%), connected to sewerage system: 9.8 million (90%)
 - Water consumption – water invoiced to households – 88.3 l/person/day (year-on-year increase of 1.6 l/person/day)
 - Length of the water supply network 83,867 km (extended by 2,441 km compared to the previous year)
 - Length of the sewerage network 55,425 km (extended by 3,052 km compared to the previous year)
 - Number of wastewater treatment plants: 3,416 (year-on-year increase by 44)
 - Average water charge: 57.79 CZK/m³
 - Average sewerage charge: 52.10 CZK/m³
- State financial support in the field of water management: CZK 11.8 billion
 - Programmes of the Ministry of Agriculture: CZK 3,466 million
 - o 12 national programmes (CZK 2,527 million) + 3 transnational programmes (CZK 114 million)
 - Programmes of the Ministry of the Environment: CZK 8,500 million
 - o Operational Programme Environment 2014–2020, water management (CZK 5,722.6 million), State Environmental Fund (CZK 2,777.5 million)
 - Support from the Ministry of Transport: CZK 635 million
 - o State Transport Infrastructure Fund (CZK 635 million)
- Science and research in water management: CZK 476 million
 - MoA: CZK 67 million
 - MoE: CZK 106 million
 - MoEYS: CZK 70 million
 - Technology Agency of the Czech Republic: CZK 233 million

Acronyms

AOX	adsorbable organically bound halogenated compounds (halogens)
Bq	Becquerel
BOD ₅	biochemical five-day oxygen demand
BPR	biological phosphorus removal
BTEX	volatile organic compounds found in petroleum products: Benzene, Toluene, Ethylbenzene, and Xylene
CAP	EU's Common Agricultural Policy
CAS	Czech Academy of Sciences
CEB	Council of Europe Development Bank
CEF	Connecting Europe Facility
CEI	Czech Environmental Inspection
CENAKVA	South Bohemian Research Centre for Aquaculture and Biodiversity of Hydrocenoses
CHC	chlorinated hydrocarbons
CHMI	Czech Hydrometeorological Institute
COD	chemical oxygen demand
CPR	chemical phosphorus removal
CRA	Central Registry of Activities
CRF	Compulsory Requirements for Farming
CRP	Central Registry of Projects
CRW	Central Register of Watercourses
CSNF	Cultural and Social Needs Fund
CSO	Czech Statistical Office
CZ-NACE	Classification of economic activities according to the CSO (in accordance with Eurostat standards)
CzeCOS	Czech Carbon Observation Structure
ČSN	Czech State Standard
DDT	Dichlorodiphenyltrichloroethane
DEHP	di(2-ethylhexyl)phthalate
DIS	dissolved inorganic salts
DN	denitrification
eAgri	website of the Ministry of Agriculture
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
ECB	European Central Bank

ECm	monthly exceedance curve
EIA	Environmental Impact Assessment
EP	equivalent population
EQS	Environmental Quality Standard
ERDF	European Regional Development Fund
ESA	ethane sulfonic acid
EU	European Union
FAD	flood activity degree
FAO	Food and Agriculture Organization of the United Nations
HGR	hydrogeological region
HS	hydraulic structure
ICPDR	International Commission for the Protection of the Danube River
ICPER	International Commission for the Protection of the Elbe River
ICPORaP	International Commission for the Protection of the Oder River against Pollution
i.o.	interest organization
ISVS	Information System for Public Administration
JPI	Joint Programming Initiative
LC	lock chamber
LRI	large research infrastructure
MoA	Ministry of Agriculture of the Czech Republic
MoE	Ministry of the Environment of the Czech Republic
MoEYS	Ministry of Education, Youth and Sports
MoH	Ministry of Health
N	nitrification
NCA	Nature Conservation Agency of the Czech Republic
N _{inorg}	inorganic nitrogen
NM	non-dissolved matters
N-NH ₄	ammoniacal nitrogen
N-NO ₃	nitrate nitrogen
NRBP	National River Basin Plan
NRP	National Recovery Plan
NVZ	nitrate vulnerable zones

OA	Oxamic acid
OPE	Operational Programme Environment
PAH	polyaromatic hydrocarbons
PBDE	polybrominated diphenyl ethers
PCB	polychlorinated biphenyls
PFOS	perfluorooctane sulfonic
p.r.i.	public research institution
PRO	priority research objective
P _{total}	total phosphorus
Q _m	average monthly flow rate
Q _{355d}	flow reached or exceeded on average 355 days per year in a given profile, its exceedance is indicative of hydrological drought
Q _{364d}	flow reached or exceeded in the profile throughout the year
RDP	Rural Development Programme
RIV	Registry of Information on Results
RSP	River sub-basin plans
RWSSDP	Regional Water Supply and Sewerage Development Plans
s.e.	state enterprise
s.r.o.	limited company established under Czech law
SEA	Strategic environmental assessment
SEF	State Environmental Fund of the Czech Republic

SLO	State Land Office
SO	specific objective
SP1	Support for projects in public interest
SP2	New procedures, eco-innovation
SP3	Long-term research
SPR	Selected Property Records (data from Public Water Supply and Sewerage Systems Assets Registry)
SOR	Selected Operating Records (data from Public Water Supply and Sewerage Systems Operational Registry)
SRM	simplified reporting methods
STIF	State Transport Infrastructure Fund
TOC	total organic carbon
UNECE	United Nations Economic Commission for Europe
VAT	value added tax
WFD	Water Framework Directive
WSS	Water supply and sewerage for public use
WSS Act	Act No. 274/2001 Coll., on water supply and sewerage for public use and on amendments to certain related acts, as amended
WSSDP	Water Supply and Sewerage Development Plans in the Czech Republic
WWTP	wastewater treatment plant



The flood, The Opava Stream (source: Oder River Board, s.e.)

Important contacts in water management

Ministry of Agriculture of the Czech Republic
Těšnov 65/17, Prague 1, 110 00, www.mze.gov.cz/en
Ministry of the Environment of the Czech Republic
Vršovická 1442/65, Prague 10, 100 10, www.mzp.gov.cz
Elbe River Board, state enterprise
Víta Nejedlého 951/8, Hradec Králové, 500 03, www.pla.cz
Vltava River Board, state enterprise
Holečkova 3178/8, Prague 5, 150 00, www.pvl.cz
Ohře River Board, state enterprise
Bezručova 4219, Chomutov, 430 03, www.poh.cz
Oder River Board, state enterprise
Varenská 3101/49, Ostrava, Moravská Ostrava, 701 26, www.pod.cz
Morava River Board, state enterprise
Dřevařská 932/11, Brno, 602 00, www.pmo.cz
Forests of the Czech Republic, s.e.
Přemyslova 1106/19, Hradec Králové, 500 08, www.lesy.cz
Czech Hydrometeorological Institute
Na Šabatce 2050/17, Prague 412 – Komořany, 143 06, www.chmi.cz
T. G. Masaryk Water Research Institute, p.r.i.
Podbabská 2582/30, Prague 6, 160 00, www.vuv.cz
State Land Office
Husinecká 1024/11a, Prague 3 – Žižkov, 130 00, www.spucr.cz
Research Institute for Soil and Water Conservation, p.r.i.
Žabovřeská 250, Prague 5 – Zbraslav, 156 27, www.vumop.cz



The Vyšní Lhoty Weir (author: Hubalová Petra)



The Jesenice Reservoir, abrasion (source: Ohře River Board, s.e.)



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As of 31 December 2024

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A team of authors: Ing. Petra Hubalová, Ing. Tereza Slámová

Editor-in-Chief:

Ing. Daniel Pokorný
Ing. Jan Kocián
Ing. Petra Hubalová

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Pyty/Shutterstock.com – The Orlik Water Reservoir, drone view

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