



MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

Ministry of the Environment
of the Czech Republic



REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC IN 2018



Report on Water Management in the Czech Republic in 2018

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

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Dear readers,

You are about to read the *Report on Water Management in 2018*, an annual publication traditionally referred to as the *Blue Report*, published by the Ministry of Agriculture in cooperation with the Ministry of the Environment since 1997. It offers an overview of activities linked with water management under the scope of the two ministries. The main objective is to present readers with what happened in water management last year, comparing 2018 with previous years, informing about recent news and changes and what direction water management in the Czech Republic is heading.

As the *Blue Report* informs, the drought that affected our country in 2014 has persisted until 2018, a year that became with its mean annual air temperature of 9.6°C the warmest in our country since 1961. The volume of abstracted and discharged water reached, due to the prolonged period of drought, all-time lowest values.

Thanks to the publication you will learn about the activities of organizations under the scope of the ministry, Forests of the Czech Republic and River Boards, and about their results from 2018 compared with previous years. These enterprises administer 94.5% of the total length of watercourses in the Czech Republic and they expended more than CZK 3 billion on relevant costs last year. You can compare the amount of water supplied under five River Boards, state enterprises, and the share of such water intended for water supply purposes. Stable income of the River Boards, state enterprises, comes from water supplies, other sources of income may be unstable and fluctuating. In 2018, state enterprises of the River Boards used grants amounting to CZK 1.4 billion and spent CZK 2.3 billion on investment. Forests of the Czech Republic, state enterprise, expended in relation with watercourse and reservoir management almost CZK 570 million.

The State Land Office expended on water management and anti-erosion measures built as part of land adjustment almost CZK 260 million. Further CZK 289 million was spent on waterways significant in terms of transport; some significant watercourses are also under the competence of the Waterways Directorate, besides state enterprises Elbe, Vltava and Morava River Boards.

Water supply and sewerage systems are a significant part of water management. Almost 95% of the population was supplied with water from the water supply system last year and 86% of the population are connected to the sewerage system. The water supply system was extended by 166 km and now reaches the length of almost 79 thousand kilometres; the length of the sewerage system is 48.7 thousand kilometres.

Through the Ministries of Agriculture, the Environment and Transport, water management received funds totalling to almost CZK 7 billion in 2018 from national as well as transnational grant programmes. The Ministry of Agriculture administered a total of seven national and two transnational programmes.

The 2018 *Blue Report*, unlike in previous years, contains a chapter called "Implementing programmes of measures adopted in plans for river basin districts in 2015" that is presented, in accordance with the Water Act, to the government every third year. This chapter presents an overview of implementing programmes of measures, state of surface waters and underground waters and water management in river basin districts.

I believe that raising awareness on the part of the general public in the field of water management is immensely important and it is the principal mission of this annual publication. Readers get a comprehensive overview about activities linked with water management, their progress and significant events. It is complemented with photographs that show water management from the perspective of river basin administrators and with pictures separating the chapters showing water as seen through the eyes of the children who participated in a contest held by the Ministry of Agriculture on the World Water Day.



Miroslav Toman
Minister of Agriculture

Dear readers,

Like every year, you are holding the Report on Water Management in the Czech Republic in 2018 (known as the “Blue Report”). This publication offers a comprehensive overview of the state and quality of groundwaters and surface waters in our country alongside with current information about activities taken in water management last year.

First of all, I would like to mention the problems that have not changed in the recent years: consequences of the climate change. The whole world is facing them, in our territory they are manifested mainly by the landscape drying up.

No wonder, because 2018 was really an extraordinary year in terms of temperatures and it became the warmest year since 1961 in the Czech Republic.

As to rainfall, 2018 was strongly below average. A lower amount of precipitation occurred in the monitored period since 1961 only once: in 2003. The dry episode of 2014–2016 continued also in 2018 and its impact was manifested in below-average levels of surface waters and groundwaters in the whole of the republic.

In 2018, the interdepartmental commission WATER-DROUGHT that addresses the climate change drafted and discussed a mock-up of performing tasks arising from the Concept of protection against drought in the Czech Republic and it subsequently drafted the Position Report on Progress in 2018 upon filling in the mock-up.

Monitoring of the quality of surface waters and groundwaters continued also in 2018. Great attention has been recently paid to monitoring of so-called surface water microcontaminants. An assessment of the occurrence of two most significant groups of the substances in surface waters, pesticides and pharmaceuticals, was conducted in 2018.

I would also like to point out that an amendment to the Water Act was adopted, bringing about some crucial changes in 2018. They concern, for instance, the manner of administering fees for groundwater abstractions and fees for wastewater discharge in surface waters. The amendment further specifies that all waters discharged from the unified sewerage system are wastewaters, which also applies to mixtures of rainfall and waste waters. Requirements concerning, among others, the use of no-discharge cesspits serving the wastewater accumulation tightened up, which is also the case with other adjustments that should eventually result in improving the quality of waters.

The Ministry of the Environment granted funds in water management under European as well as national grants in 2018. The funds expended from the state budget amounted to CZK 3.96 billion, funds from the State Environmental Fund of the Czech Republic amounted to CZK 0.34 billion.

In conclusion, I would like to emphasise what I wrote about last year. The alpha and omega of water management under current climatic conditions is water retention in the landscape. Since watercourses flow away from the Czech Republic, we are restricted to rainfall water that often comes in the form of torrential rains. Furthermore, our landscape is, sadly, affected by insensitive interventions of the past. That is why it is necessary to have as many projects as possible that will focus, e.g., on building polders, marshes, ponds or revitalization of watercourse beds and other structures that can retain water in the landscape.

I hope that this annual publication contributes to raising awareness of the importance of water management and to gradual improvement in the quality of waters in our country.



Richard Brabec
Minister of the Environment



Agáta Suchá – Water is Life – Primary school and Nursery school G. Przecká – Moravia-Silesia Region

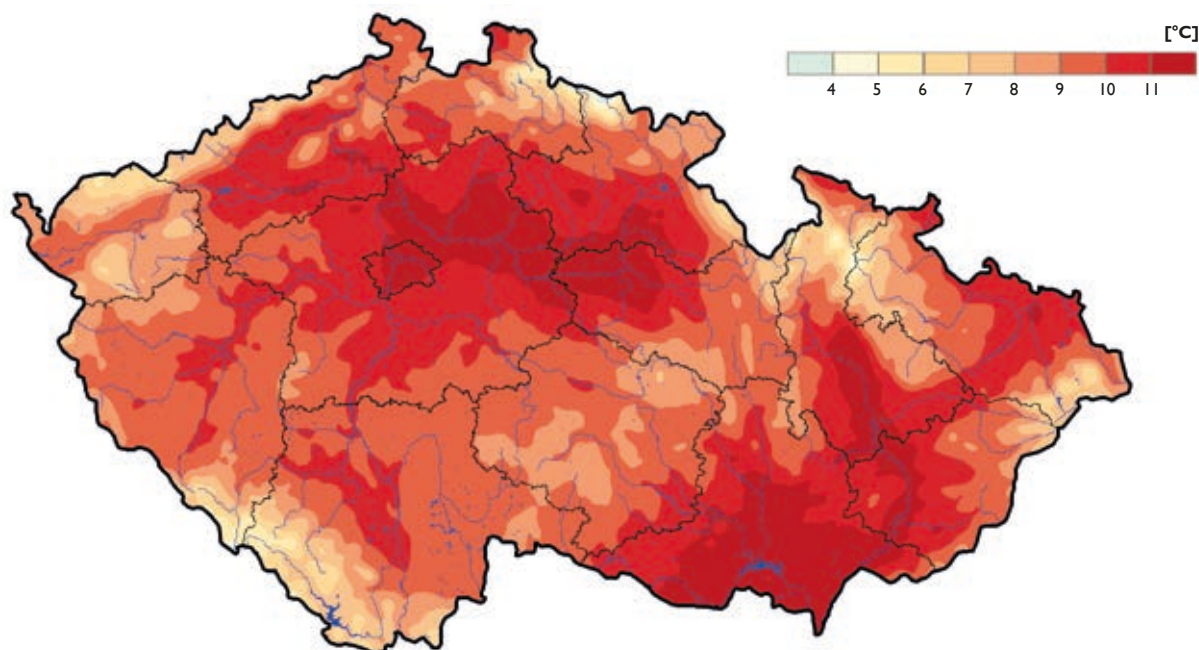
I. HYDROLOGICAL BALANCE

I.1 Temperature and precipitation

In terms of temperature, 2018 was exceptionally above the average in the Czech Republic, with the mean air temperature of (9.6 °C) exceeding the long-term average of 1981–2010 by

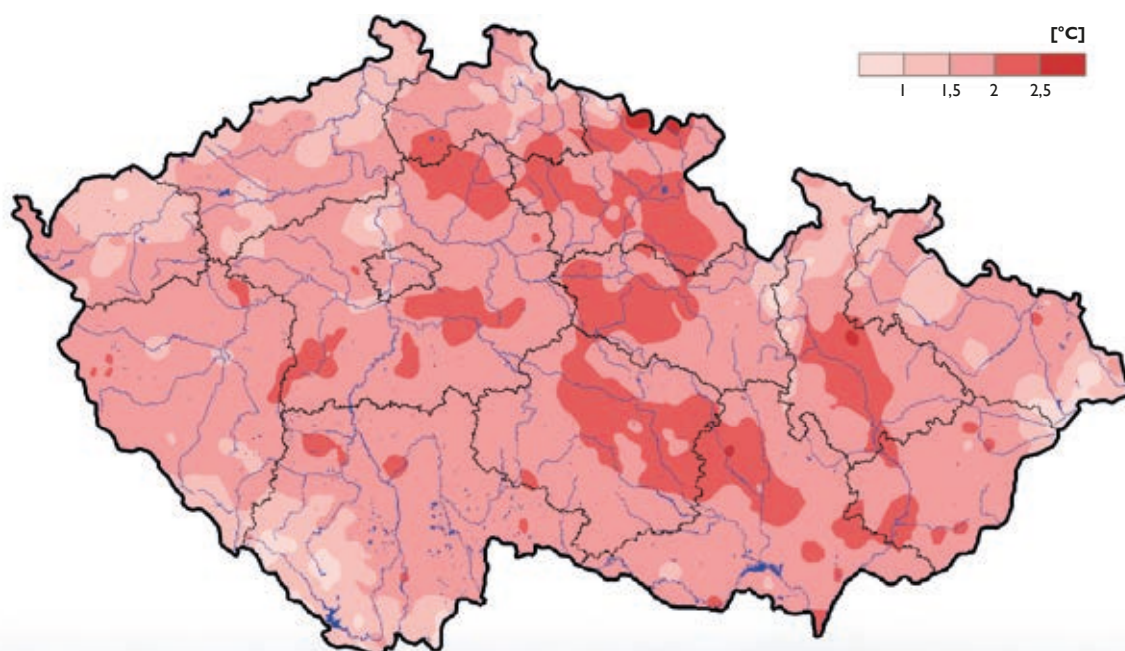
1.7°C, which means 2018 was the warmest year in the Czech Republic since temperatures started to be measured in 1961. 2018 exceeded previous warmest years of 2014 and 2015 with their average temperature of 9.4 °C and it was warmer by 1.0°C than the previous year (2017).

Figure I.1.1
Average air temperature in the Czech Republic in 2018



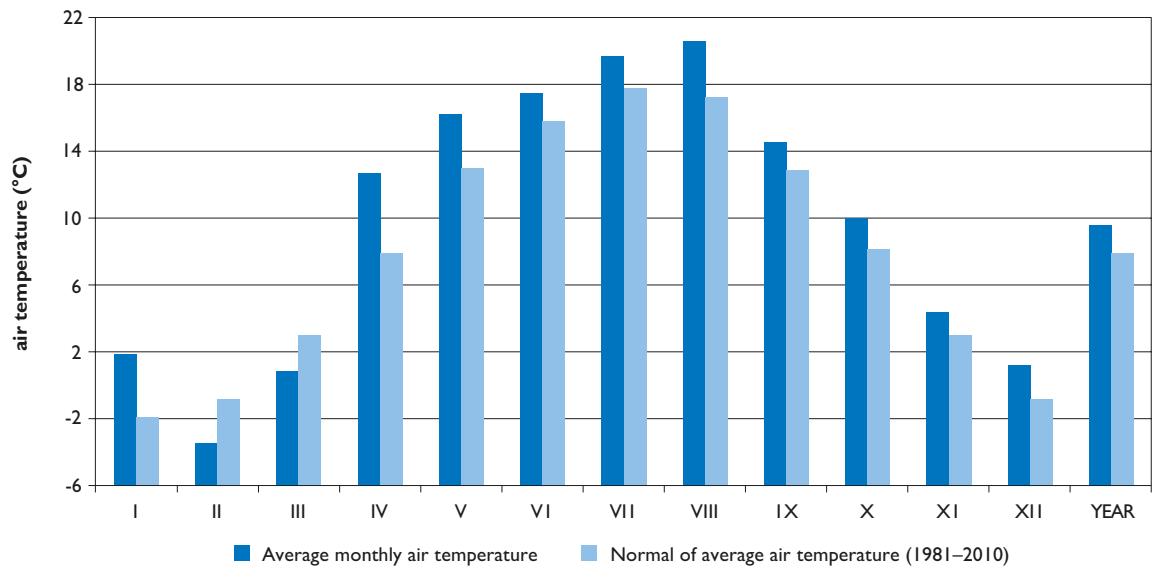
Source: Czech Hydrometeorological Institute

Figure I.1.2
Deviation from the average air temperature in 2018 from the long-term average of 1981–2010



Source: Czech Hydrometeorological Institute

Chart 1.1.1
Average monthly air temperature in the Czech Republic in 2018 in comparison with the long-term average of 1981–2010



Source: Czech Hydrometeorological Institute

Annual precipitation in the Czech Republic in 2018 (522 mm) only accounts for 76% of the average values of 1981–2010. Therefore, 2018 was strongly below average in terms of

precipitation. The lowest amount of precipitation since 1961 was recorded in 2003: 504 mm. In 2015, another dry year, the mean amount of precipitation in the Czech Republic was 532.



Significant Watercourse Bílý Stream, Polička (author: Straka Karel)



The Slezská Harta Dam (source: Oder River Board, s. e.)

Table 1.1.1
Renewable water resources in 2013–2018

Item	Annual values (millions of m ³)					
	2013	2014	2015	2016	2017	2018
Rainfall	57,336	51,815	41,957	50,240	53,868	41,170
Evapotranspiration	38,296	41,542	32,165	40,223	43,424	33,305
Annual inflow ¹⁾	845	388	398	402	339	320
Annual runoff ²⁾	19,885	10,661	10,190	10,419	10,783	8,185
Sources of surface water ³⁾	6,626	5,273	3,591	4,421	4,258	3,355
Usable sources of groundwater ⁴⁾	1,657	1,077	939	925	911	765

Source: Czech Hydrometeorological Institute

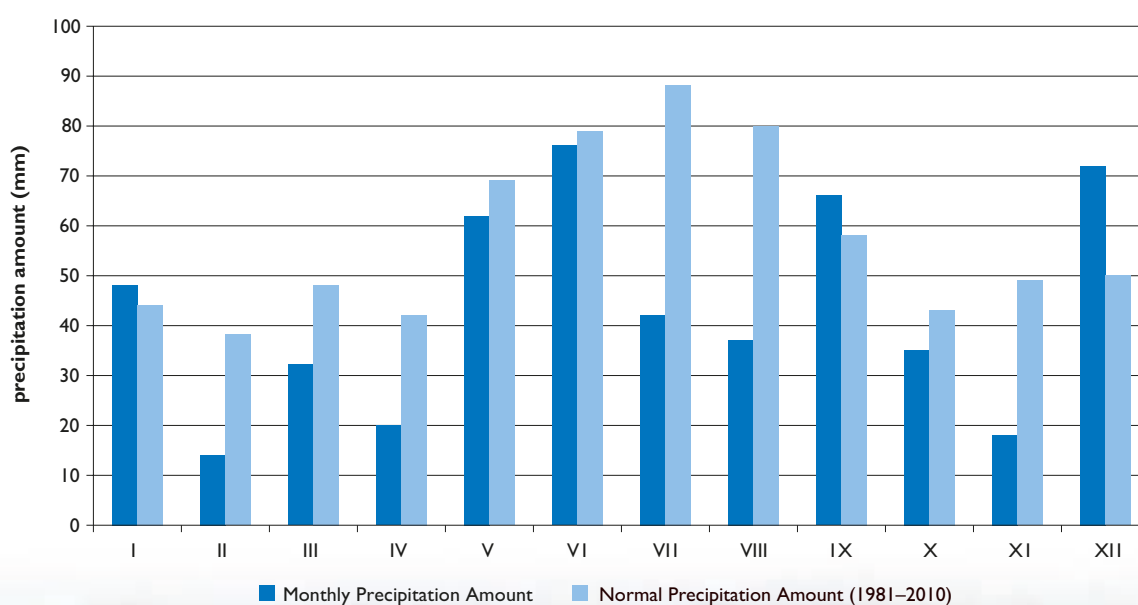
Note: ¹⁾ Annual inflow to the territory of the Czech Republic from the neighbouring states.

²⁾ Annual runoff from the territory of the Czech Republic.

³⁾ Determined as the flow in the main catchment areas with 95% probability.

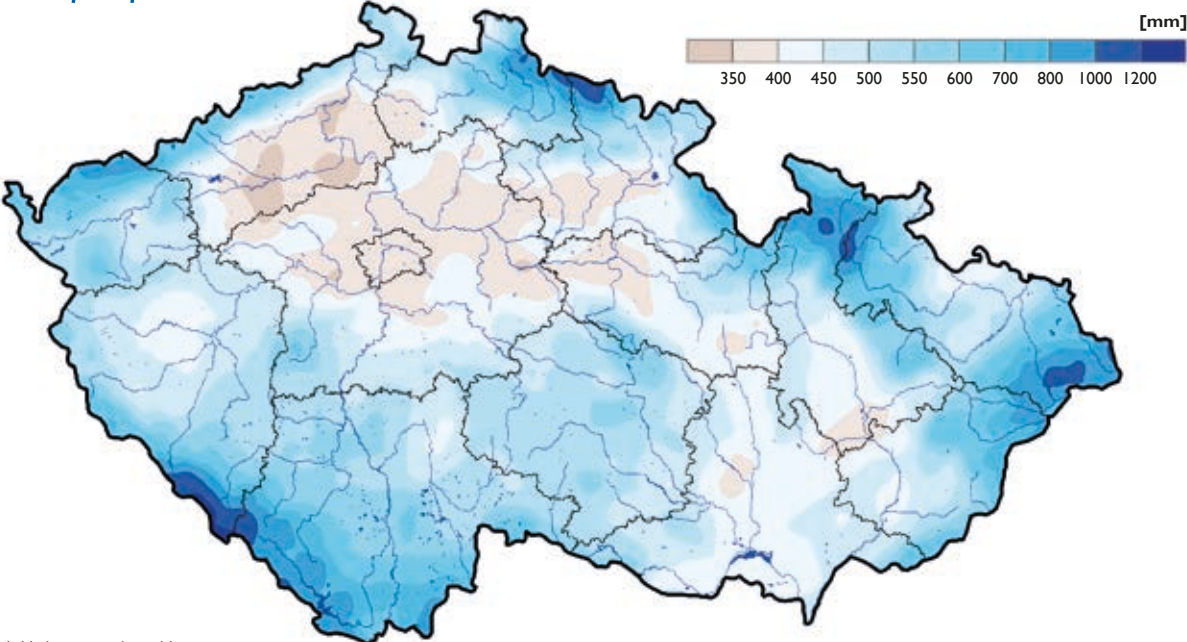
⁴⁾ A qualified estimate, more detailed specifications are published by the Czech Hydrometeorological Institute in the second half of 2019.

Chart 1.1.2
Average monthly precipitation in the Czech Republic in 2018 in comparison with the average of 1981–2010



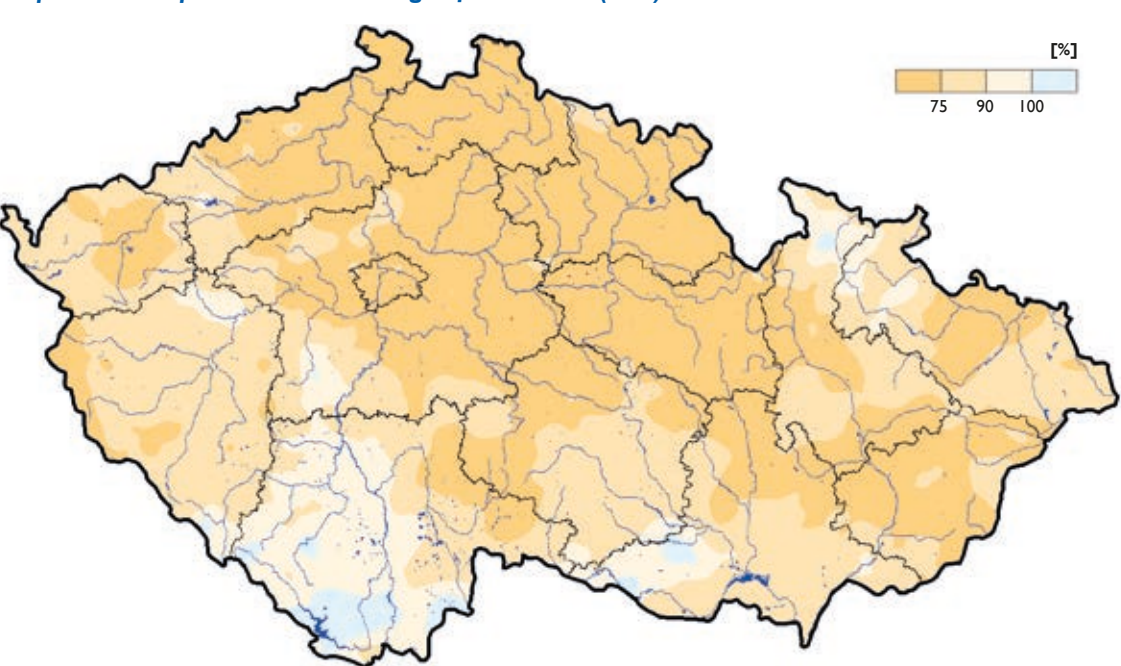
Source: Czech Hydrometeorological Institute

Figure 1.1.3
Distribution of rainfall in 2018



Source: Czech Hydrometeorological Institute

Figure 1.1.4
Total precipitation compared with the average of 1981–1910 (in %) in 2018



Source: Czech Hydrometeorological Institute



The Bystřice River in The Olomouc Region (author: Holásek Josef)

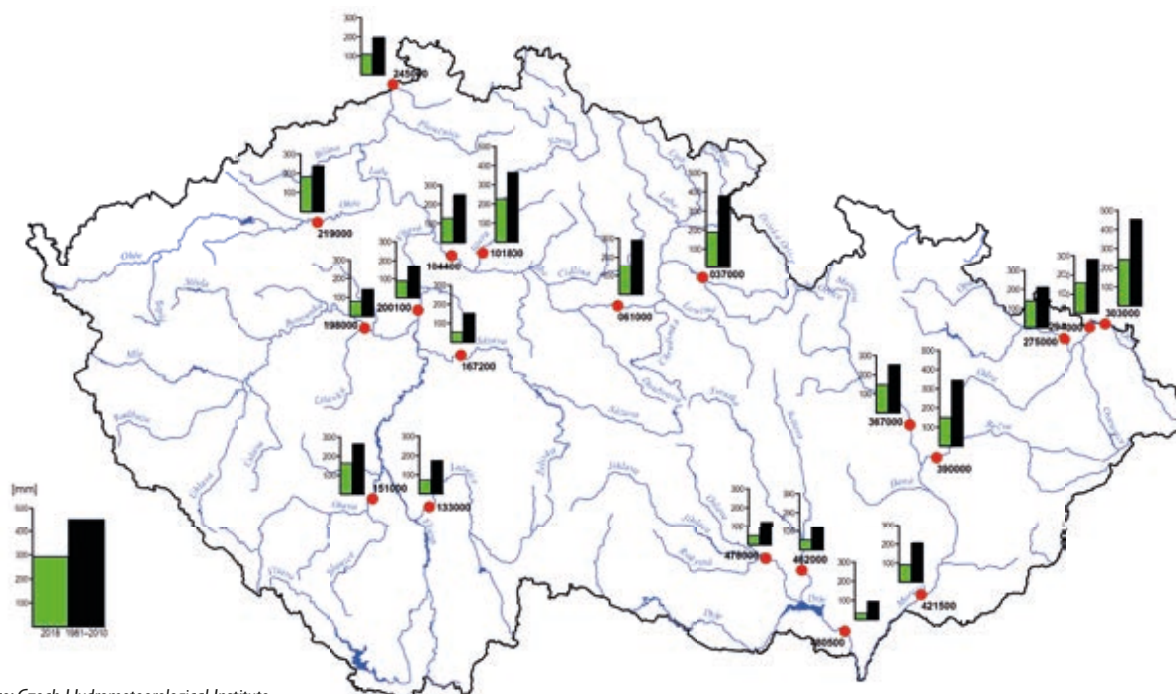
1.2 Runoff

In terms of runoff, 2018 reached below-average values in most of the territory of the Czech Republic. The lowest

flows were in the Dyje River Basin and Morava River Basin and flows in the Oder, Olše and Elbe River Basins were slightly above the half of the long-term average.

Figure 1.2.1

Annual runoff in comparison with the long-term average of 1981–2010



Source: Czech Hydrometeorological Institute

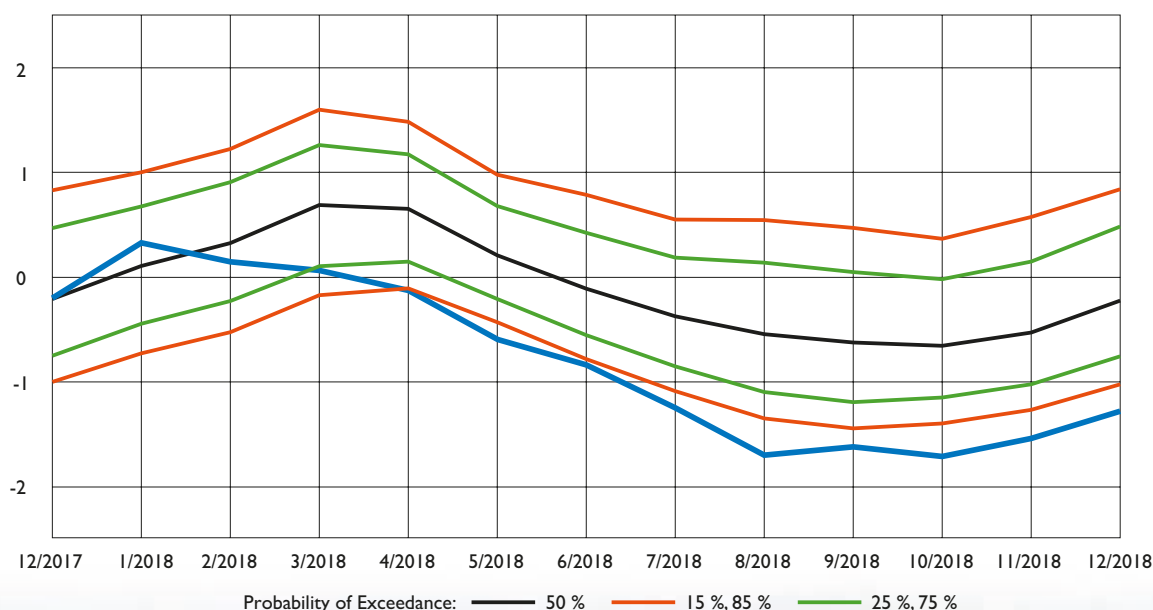
1.3 Groundwater regime

The favourable amount of ground waters at the beginning of 2018 was soon replaced with very low values of the monitored indicators and the level of surfaces in shallow wells and yield of

springs. In spring, when the values are usually the highest, the amounts ranged from slightly to strongly below-average. The driest period was between July (springs) and August (shallow wells) and the end of the year when water levels and yield of springs were strongly and even exceptionally below-average.

Chart 1.3.1

Average standardised water level of shallow wells in the monitoring network of the Czech Republic in 2018 (blue) in comparison with the long-term average values of 1981–2010



Source: Czech Hydrometeorological Institute

Note: The vertical line marks the standard deviation.

Table 1.3.1

Probability of exceeding average levels in shallow wells with respect to the monthly curve of exceeding (for 1981–2010) for the river basins

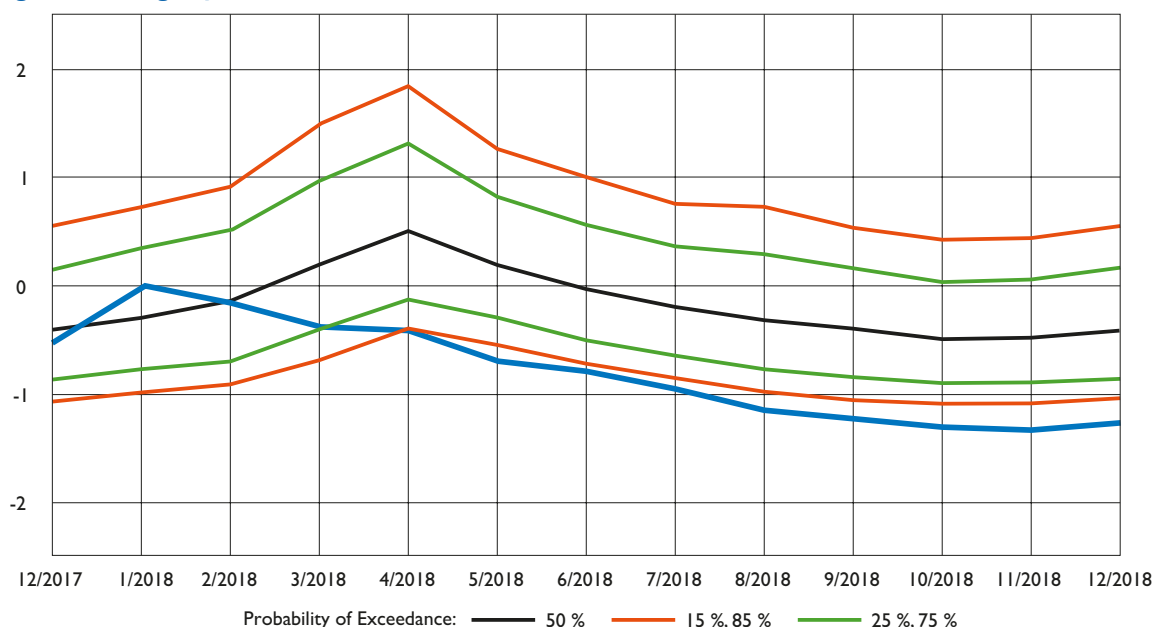
Basin	Inclusion of the water level on a monthly curve crossing – %											
	January	February	March	April	May	June	July	August	September	October	November	December
Upper and Middle Elbe	28	52	77	87	90	92	96	97	97	97	97	97
Upper Vltava	59	63	76	90	92	76	81	92	86	92	90	83
Lower Vltava	36	57	80	85	89	81	94	97	97	97	95	95
Berounka	35	53	64	78	86	78	78	86	80	84	84	79
Lower Elbe	26	51	73	76	83	80	90	94	93	97	92	89
Oder	30	56	66	82	91	76	79	85	84	89	88	88
Morava	37	49	74	79	85	86	88	90	84	87	88	91
Dyje	72	78	86	90	95	96	95	94	85	89	92	93

Source: Czech Hydrometeorological Institute

Note: The scale of colours corresponds with categories of slightly (75–85%), strongly (85–95%) and exceptionally (95–100%) below-average levels.

Chart 1.3.2

Average standardized spring yield in the monitoring network of the Czech Republic in 2018 (blue) in comparison with the long-term average of 1981–2010



Source: Czech Hydrometeorological Institute

Note: The vertical line marks the standard deviation.

Table 1.3.2

Probability of exceeding spring yield in 2018 in river basins in % with respect to the monthly curve of exceeding of 1981–2010

Basin	Inclusion of the water level on a monthly exceedance curve – %											
	January	February	March	April	May	June	July	August	September	October	November	December
Upper and Middle Elbe	33	53	79	90	91	92	95	97	97	97	97	97
Upper Vltava	48	51	66	79	89	85	67	88	91	93	96	86
Lower Vltava	60	64	79	91	93	94	97	97	97	97	97	97
Berounka	21	29	61	70	79	69	79	84	82	84	87	85
Lower Elbe	47	60	81	87	90	88	90	93	94	96	94	95
Oder	16	37	59	76	86	77	76	73	80	80	84	87
Morava	34	53	66	80	93	97	97	97	97	97	97	97
Dyje	68	70	91	90	93	94	95	97	92	95	93	95

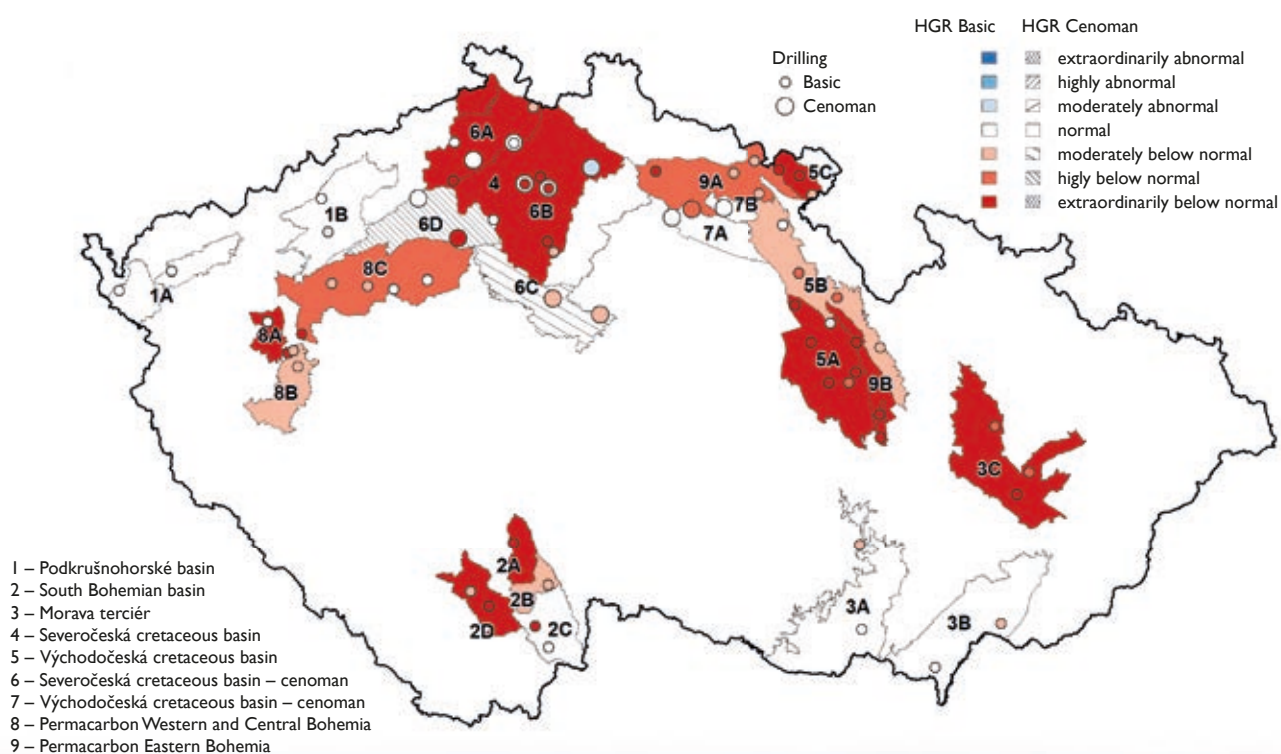
Source: Czech Hydrometeorological Institute

Note: The scale of colours corresponds with categories of slightly (75–85%), strongly (85–95%) and exceptionally (95–100%) below-average levels.



The Hučák Weir (source: Elbe River Board, s. e.)

Figure 1.3.1
Groundwater levels in deep wells in November 2018 (on aggregate with groups of hydrogeological districts)



Source: Czech Hydrometeorological Institute



David Votík – Water for All – Primary school and Nursery school Švihov – Pilsner Region

2. HYDROLOGICAL EXTREMES

2.1 Flood situations

In terms of runoff, 2018 was an average year in all profiles monitored. The total lowest runoff was lowest in the Dyje River Basin and the Morava River Basin with runoff in the Oder, Olše and Elbe River Basins being slightly above the average of long-term averages.

2.2 Remediating flood damage

The Ministry of Agriculture is running three grant programmes focused on remediating flood damage: 129 284 “Remediating Damage at Fishponds and Water Reservoirs” 129 270 “Remediating Flood Damage to State-owned Water Management Property II” and 129 320 „Support of Remediating Flood Damage to the Infrastructure of Water Supply and Sewerage Systems II”. With respect to the fact that no significant floods occurred in 2018, none of the programmes was activated.

The Ministry of the Environment continued in 2018 administering the grant programme 115 270 “MoE Clean-up after natural disasters”.



The Pastviny Dam, drought, October 2018 (source: The Elbe River Board, s. e.)



The Pastviny Dam, drought, October 2018 (source: The Elbe River Board, s. e.)

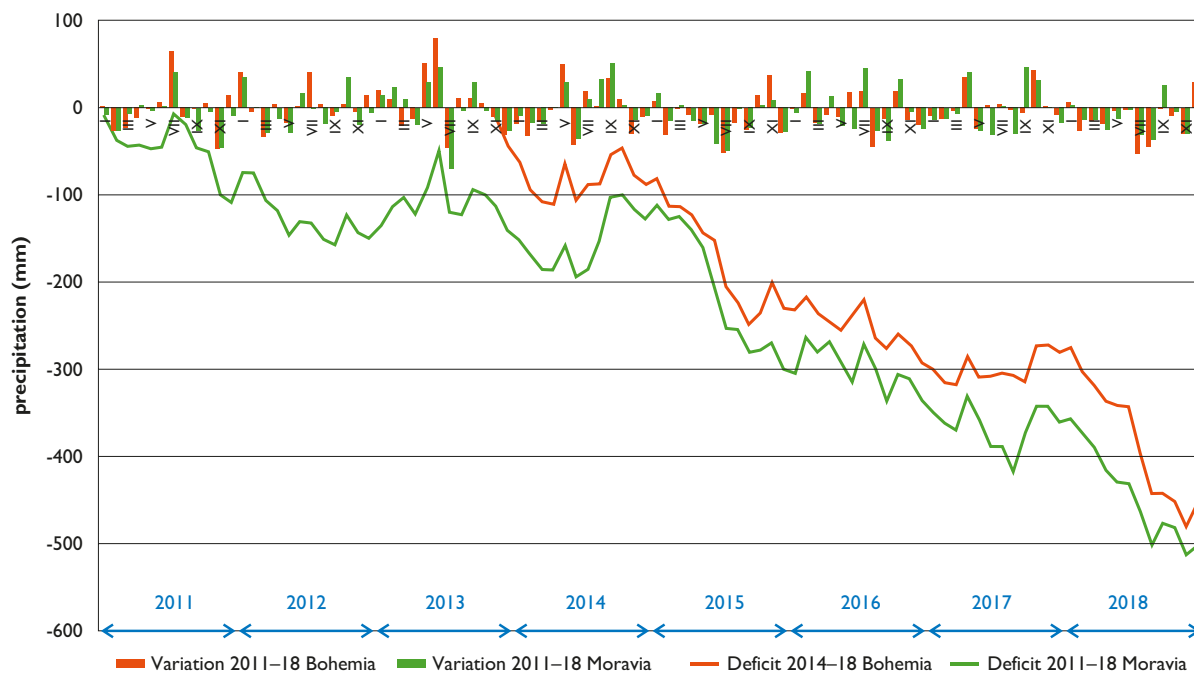
2.3 Drought situation

In the recent years, the Czech Republic has been beset by an intense dry episode. After average precipitation values in 2017, 2018 was in terms of average precipitation in the Czech

Republic again strongly below average. Thus, the dry period of 2014–2016 continued even in 2018 and its impact reflected in the below-average levels of surface and ground waters almost in the whole of the Czech Republic.

Chart 2.3.1

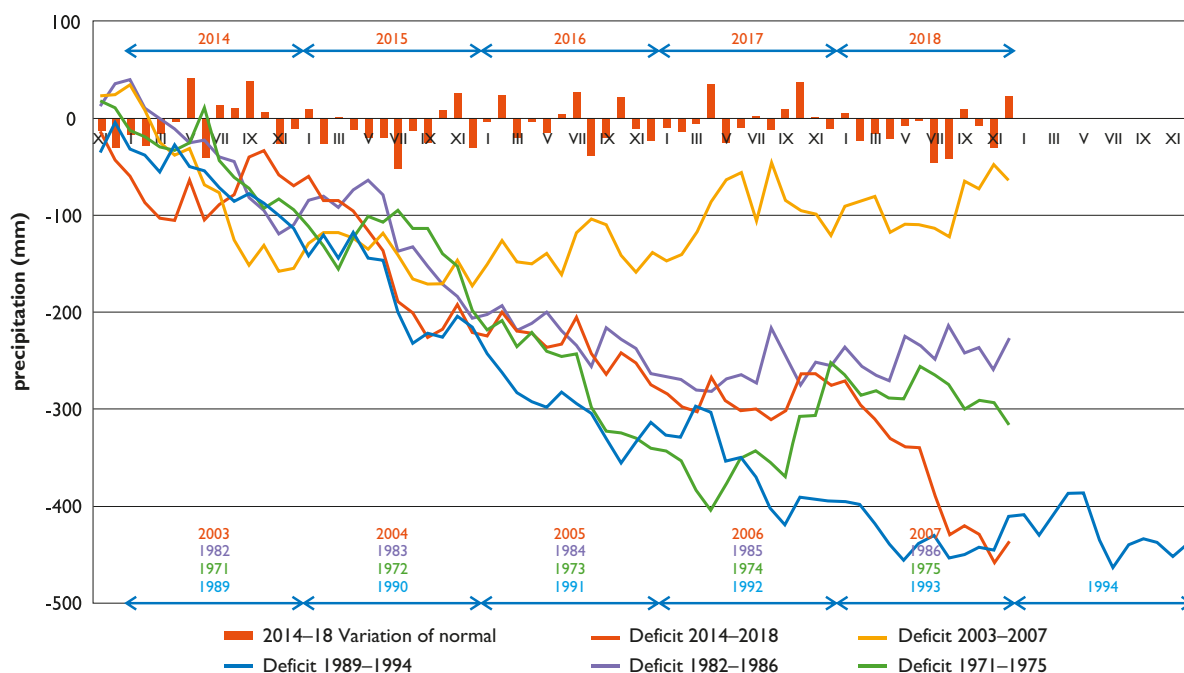
The course of precipitation deficit in Bohemia and Moravia compared with long-term average (1981–2010)



Source: Czech Hydrometeorological Institute

Chart 2.3.2

Comparison of the average precipitation deficit in the Czech Republic with other drought episodes



Source: Czech Hydrometeorological Institute

2.4 Interdepartmental commission WATER-DROUGHT

In 2018, the Interdepartmental commission WATER-DROUGHT drafted and discussed the pattern to follow for individual tasks arising from the Concept of protection against consequences of drought in the Czech Republic and it prepared a proposal of the 2018 Position Report.



The Pastviny Dam, drought, October 2018 (source: The Elbe River Board, s. e.)



The Újezd Dam, up The July 2018, down The October 2018 (source: Ohře River Board, s. e.)



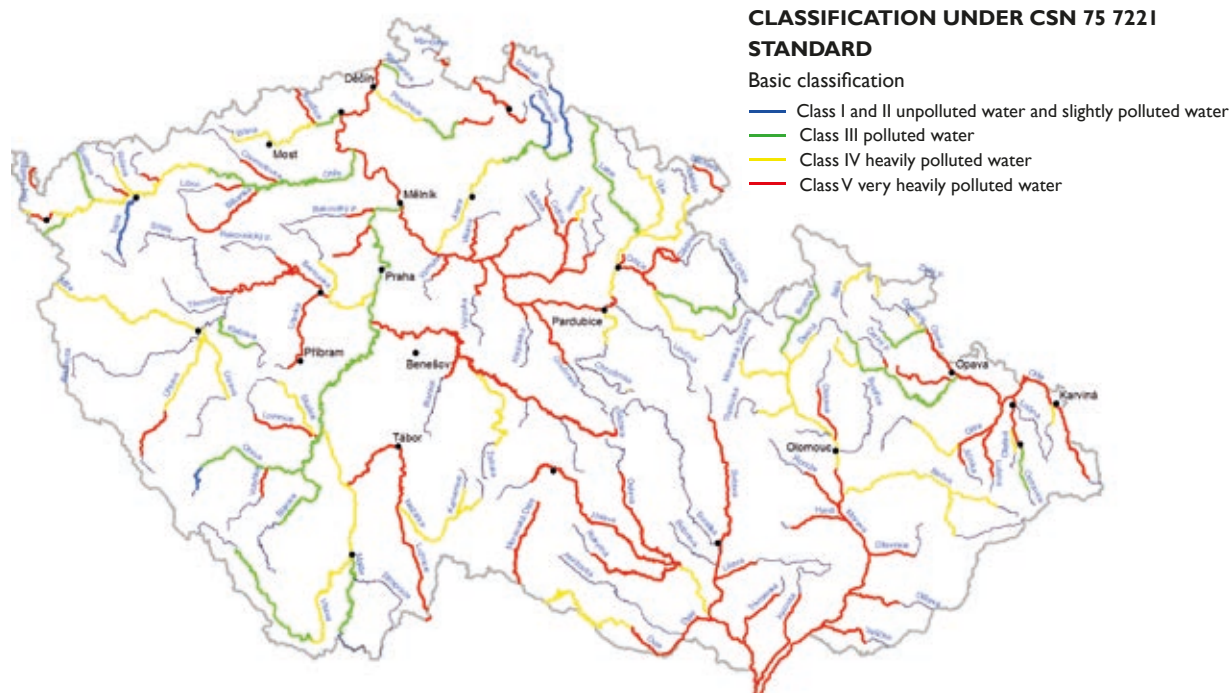
Diana Roušarová – I'm without water, I'm dying – Primary school Felberova – Pardubice Region

3. QUALITY OF SURFACE WATERS AND GROUNDWATERS

3.1 Surface water quality

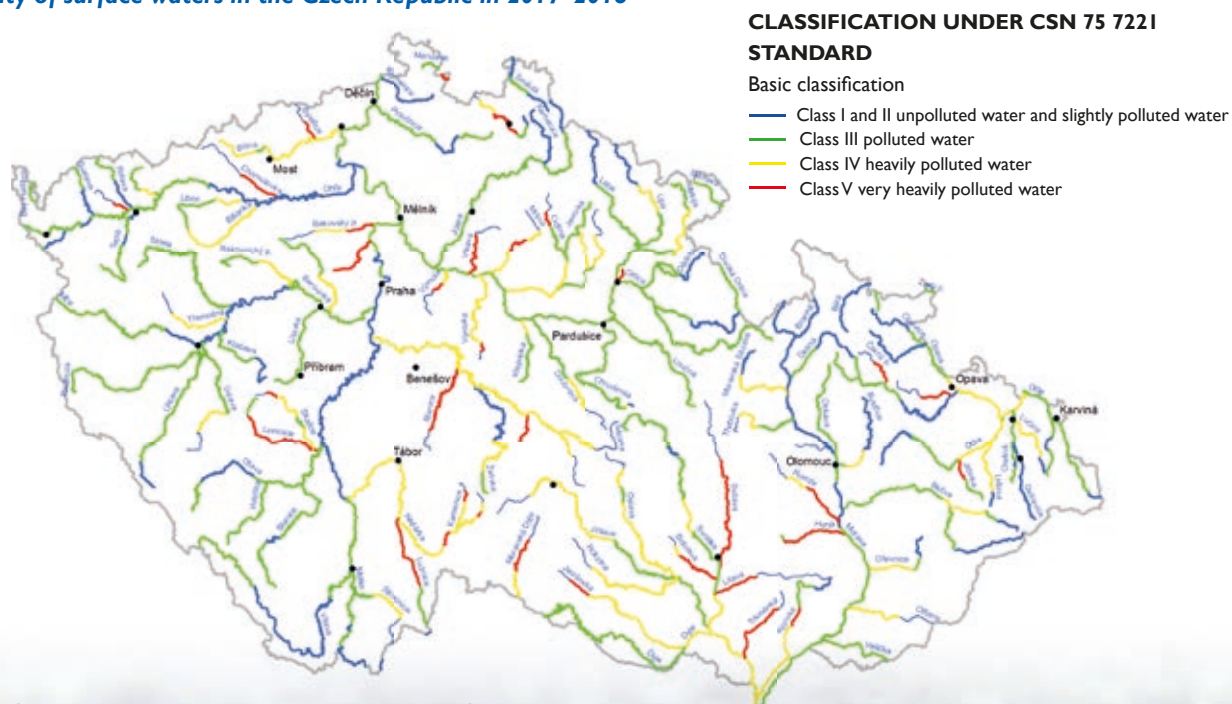
Current surface water quality under ČSN 75 7221
in comparison with the 1991–1992 period

Figure 3.1.1
Quality of surface waters in the Czech Republic in 1991–1992



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

Figure 3.1.2
Quality of surface waters in the Czech Republic in 2017–2018



Source: T. G. Masaryk Water Research Institute using data provided by the Czech Hydrometeorological Institute

Radioactivity

In surface waters, radiological indicators are monitored on a long-term basis in selected hydrometric profiles of the monitoring network. These profiles are situated at locations of nuclear facilities currently in operation and in watercourse stretches affected by the discharge of mine waters and by the seepage from refuse dumps at locations where uranium ores were formerly mined or treated.

Water quality in water supply reservoirs and other reservoirs

In connection with the ongoing climatic change there is a risk of more pronounced eutrophication (an increased content of mineral nutrients, particularly phosphorus compounds) and more intense increase in the growth of cyanobacterial water bloom. The main reason of surface water eutrophication is supply of phosphorus compounds from point sources of residential sets with imperfect purification of wastewaters and insufficient sewage removal. Such impacts can be prevented by an only way: continual limitation of phosphorus

from the catchment area. This consists primarily of minimising phosphorus emissions and of support for self-cleaning procedures and phosphorus retention in the river basins (proper pond management, watercourse rehabilitation, support of water retention in the landscape in general).

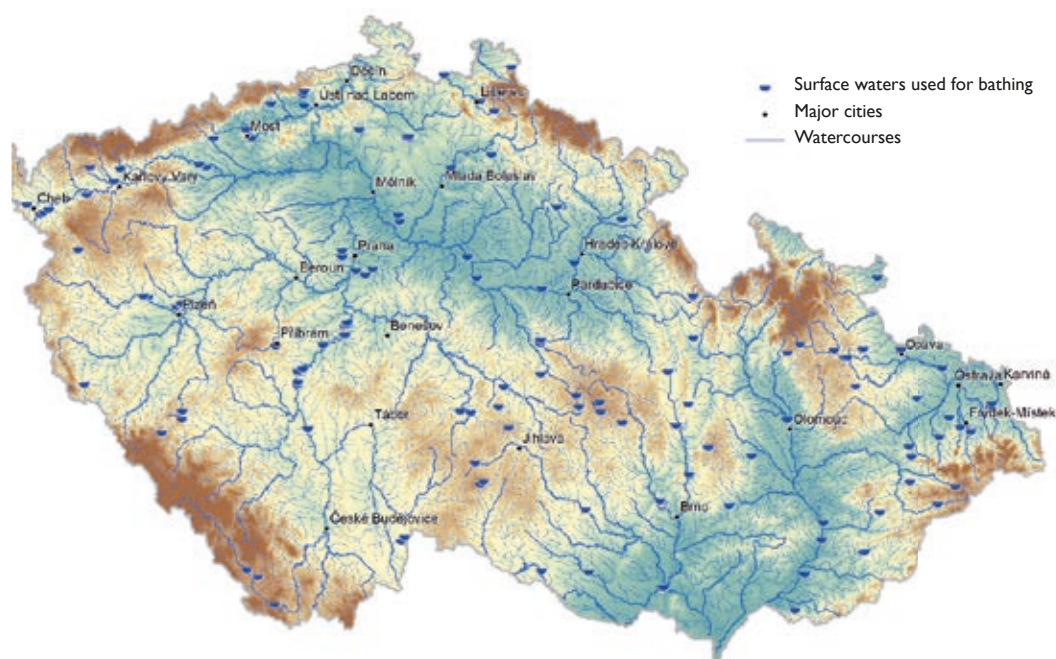
Quality of water used for bathing during the 2018 bathing seasons

During the 2018 recreational season a large part of bathing sites had problem particularly with excessive growth of phytoplankton – cyanobacteria, which was the main reason for issuing a ban on bathing. Cyanobacteria occur due to surface water pollution mainly due to the phosphorus content which – under increased temperature and duration of sunshine – contributes to their excessive development. The priority should be to restrict nutrient (especially phosphorus) dotation in surface water, i.e. by completing the third level of wastewater purification in all current wastewater treatment plants and by building new wastewater treatment plants in all cities and municipalities that do not treat wastewaters at the moment.



The Holásecká Lakes (author: Kučerová Jana)

Figure 3.1.3
Surface waters used for bathing



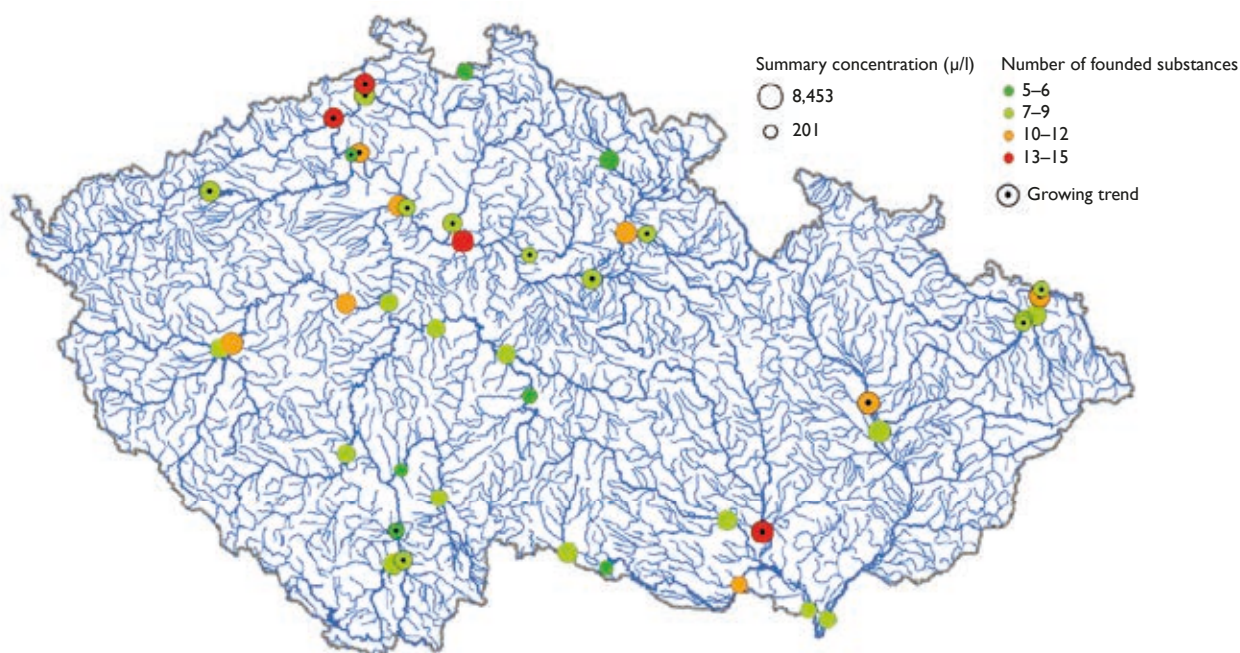
Source: T. G. Masaryk Water Research Institute

Quality of suspended matter and sediments

The comprehensive assessment of the quality of surface waters and assessment of the chemical condition of surface water bodies is information about the quality of solid components of the water ecosystem such as suspended matter; (insoluble substances transported by the flow in suspended matters) and

river sediments. In case of contaminants with significant accumulation potential, the analyses of suspended matters and sediments provide, unlike water analyses, more accurate information about the presence of the substance in waters. EU regulations require that long-term trends are monitored in a set of 20 selected priority hazardous substances, contents of the substances in the sediments should not increase.

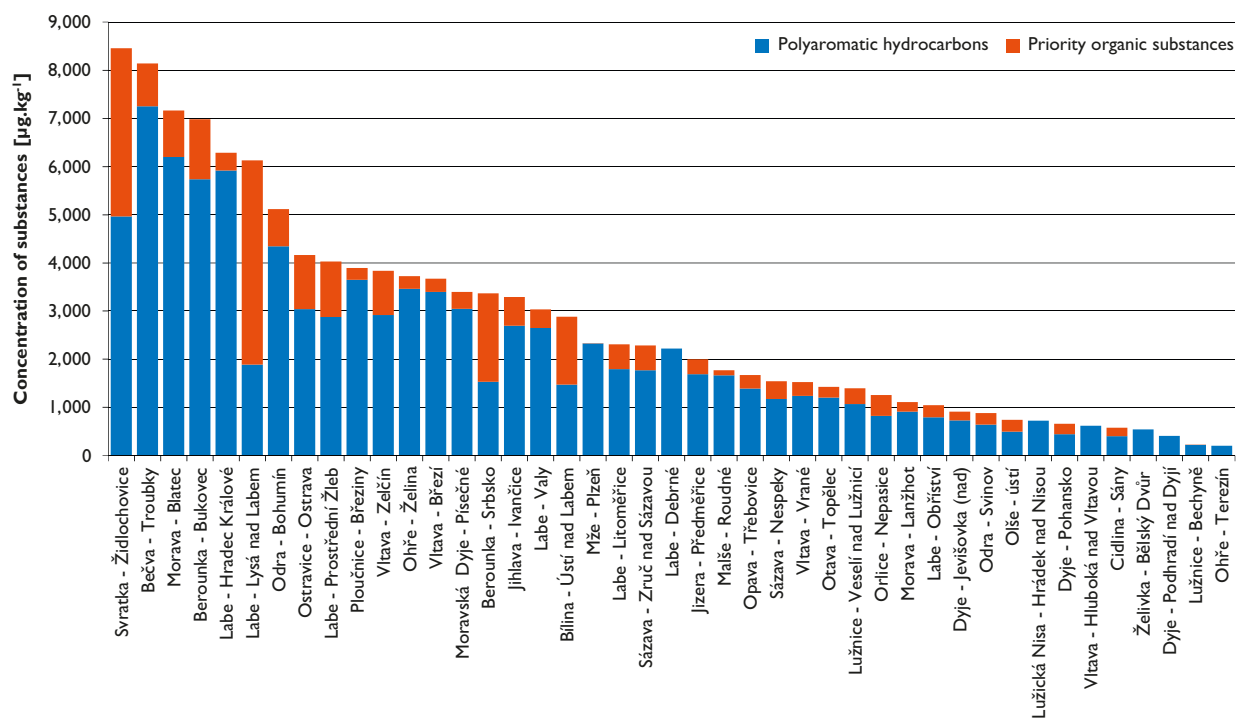
Figure 3.1.4
Finds of priority hazardous substances in sediments and detected by growing trend in solid matrices in 2018



Source: Czech Hydrometeorological Institute

Chart 3.1.1

Summary concentrations of priority organic substances in sediments with a share of polyaromatic hydrocarbons in 2018



Source: Czech Hydrometeorological Institute



Indian Summer on the Vír Dam (author: Burešová Iveta)

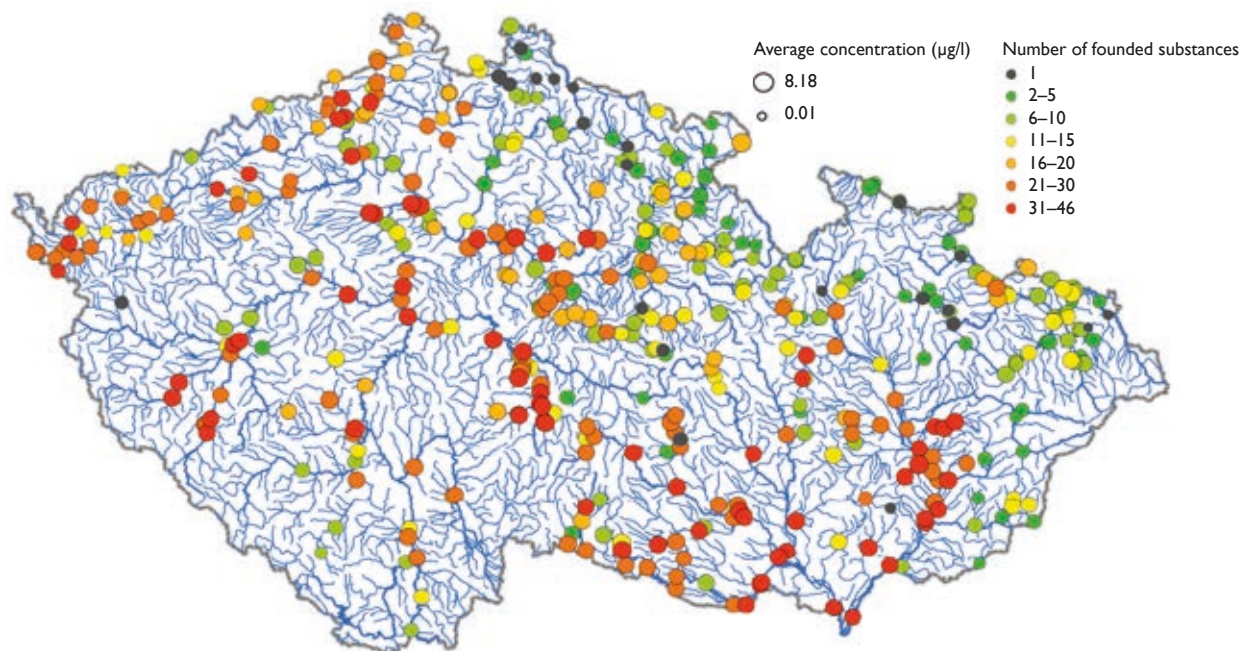
Microcontaminants in surface waters

Monitoring of so-called surface water contaminants has been at forefront in the Czech Republic in the recent years.

Monitoring is focused primarily on residues of pesticides, pharmaceuticals, roentgen-diagnostic substances, anti-corrosives and other specific substances. Occurrence of pesticides and pharmaceuticals in surface waters was assessed in 2018.

Figure 3.1.5

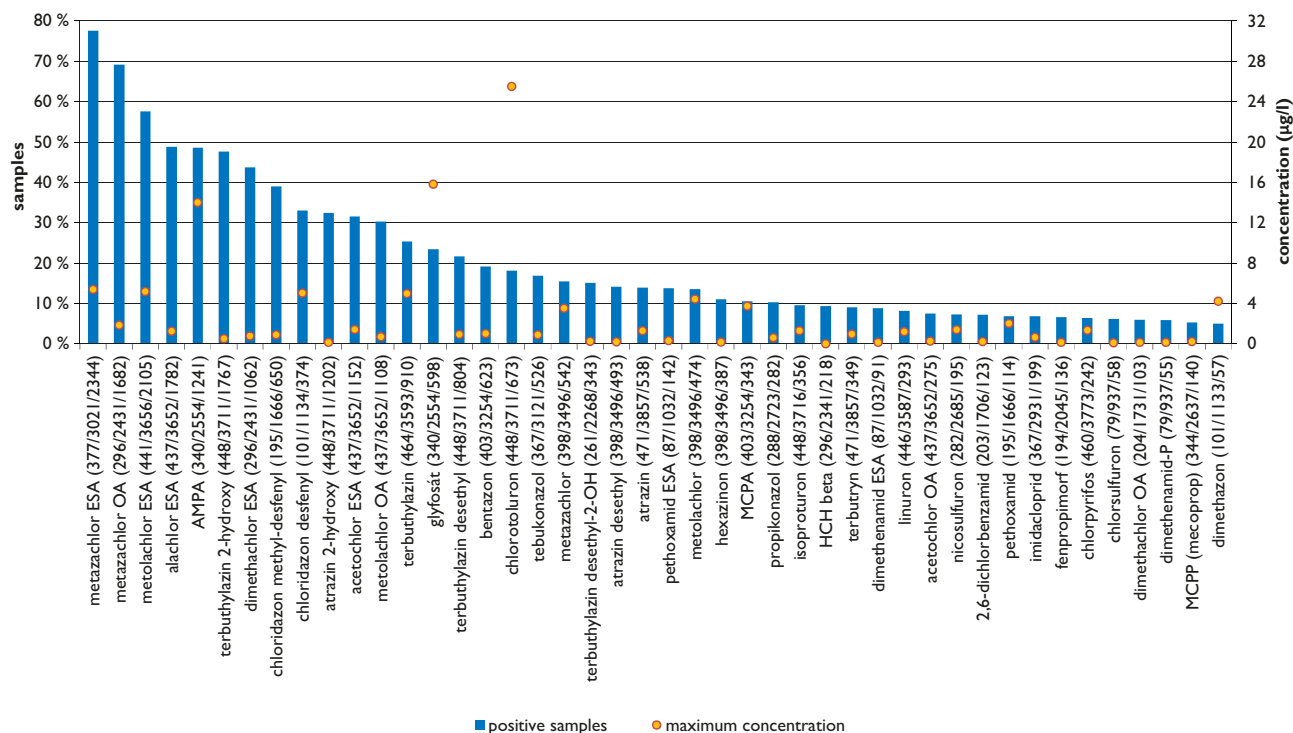
Pesticides in the Czech Republic by number and concentration in 2018



Source: Czech Hydrometeorological Institute

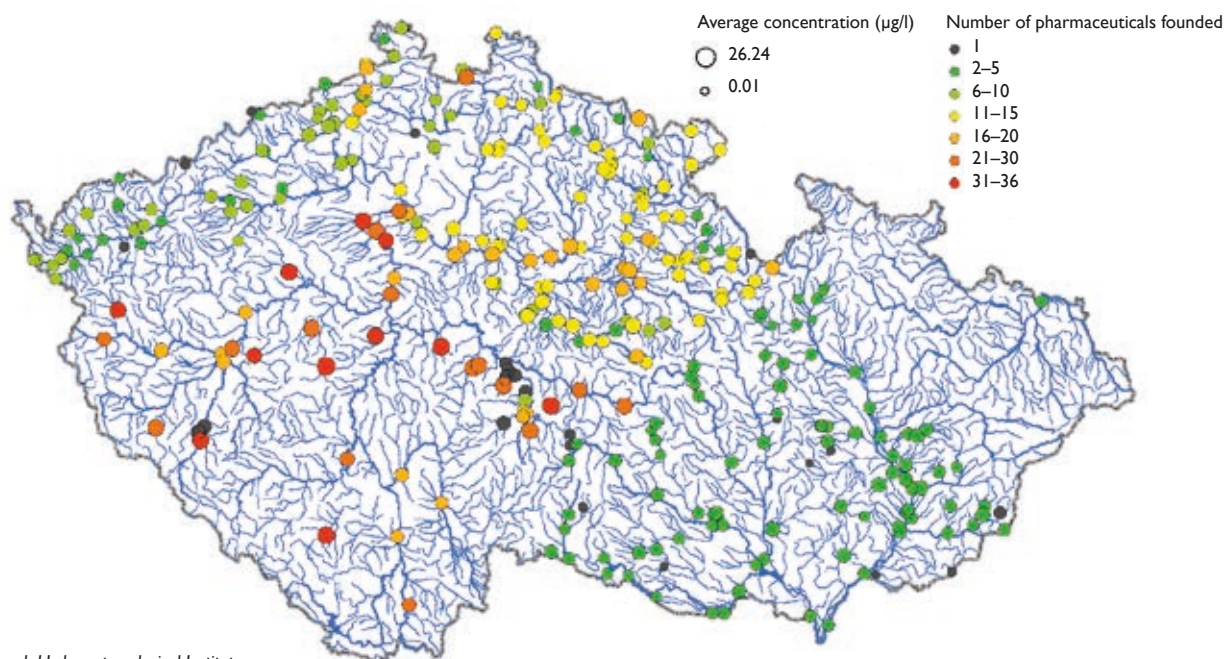
Chart 3.1.2

Monitoring pesticide substances in the Czech Republic in 2018

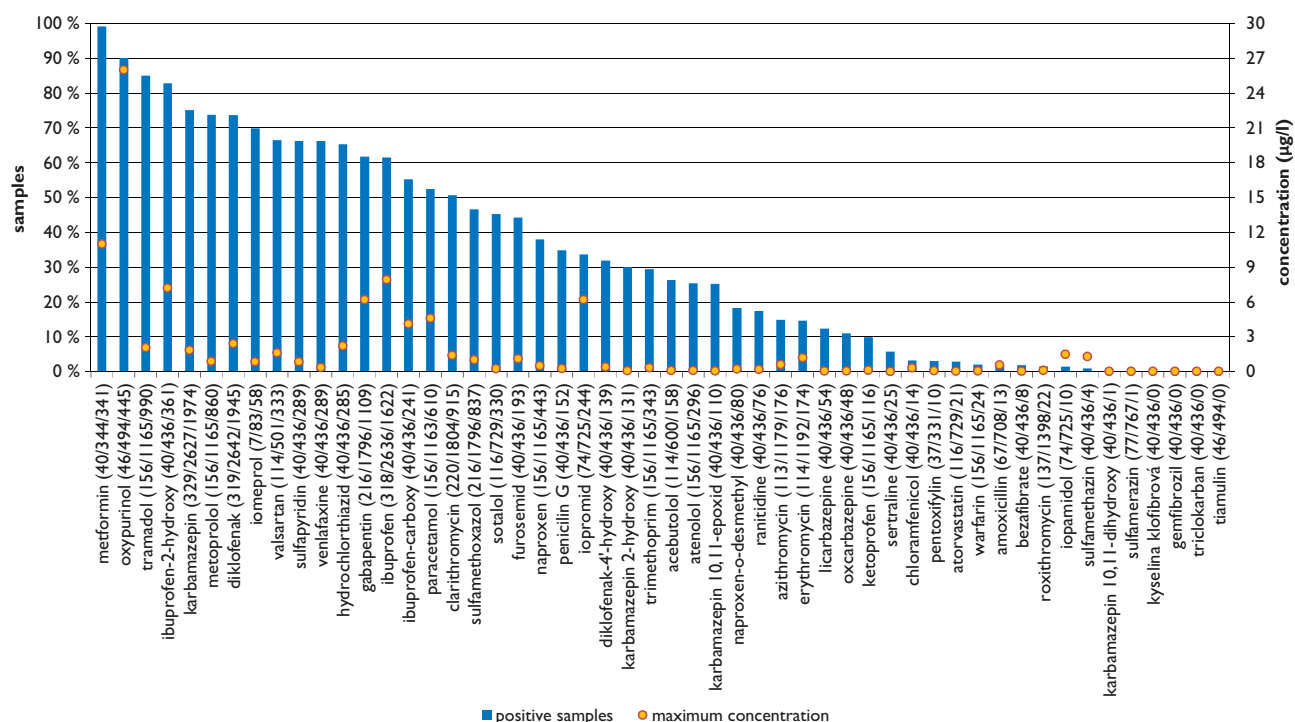


Source: Czech Hydrometeorological Institute

Note: In brackets: number of profiles / number of samples / number of positive samples

Figure 3.1.6**Pharmaceuticals detected in the Czech Republic by number and concentration in 2018**

Source: Czech Hydrometeorological Institute

Chart 3.1.3**Monitoring effective substances in pharmaceuticals in the Czech Republic in 2018**

Source: Czech Hydrometeorological Institute

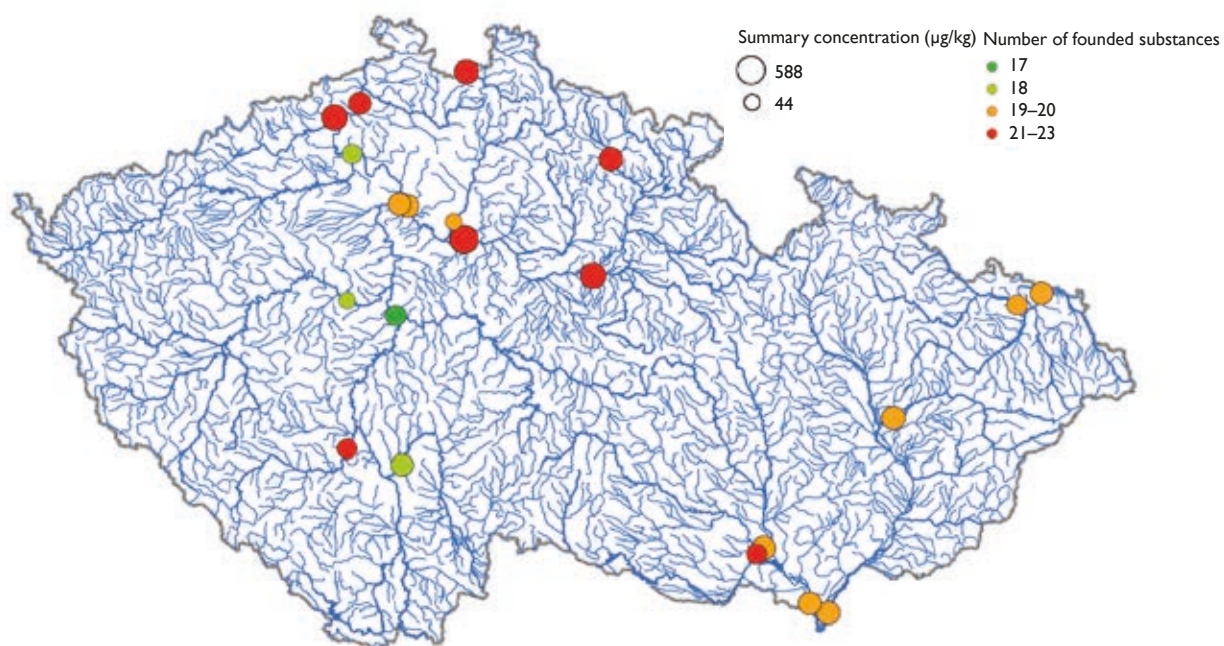
Note: In brackets: number of profiles / number of samples / number of positive samples

Accumulation biomonitoring of surface waters biomonitoring

The programme of bio-accumulation monitoring allows to comprehensively determine the status of the sites in question and it significantly contributes to an increase in knowledge of

the state of contamination by biota. Monitoring uses not only fish and fry, but also other suitable matrices accumulating poisonous pollutants in connection with the manner of feeding and type of habitat. In 2018, contamination of aquatic organisms was monitored at 21 profiles and 23 substances were preselected for assessment.

Figure 3.1.7
Finds of hazardous organic substances in fish fry in 2018



Source: Czech Hydrometeorological Institute



The Hamry Dam, excessive occurrence of green algae and cyanobacteria (source: Elbe River Board, s. e.)



From the Side (source: Ohře River Board, s. e.)

3.2 Groundwater quality

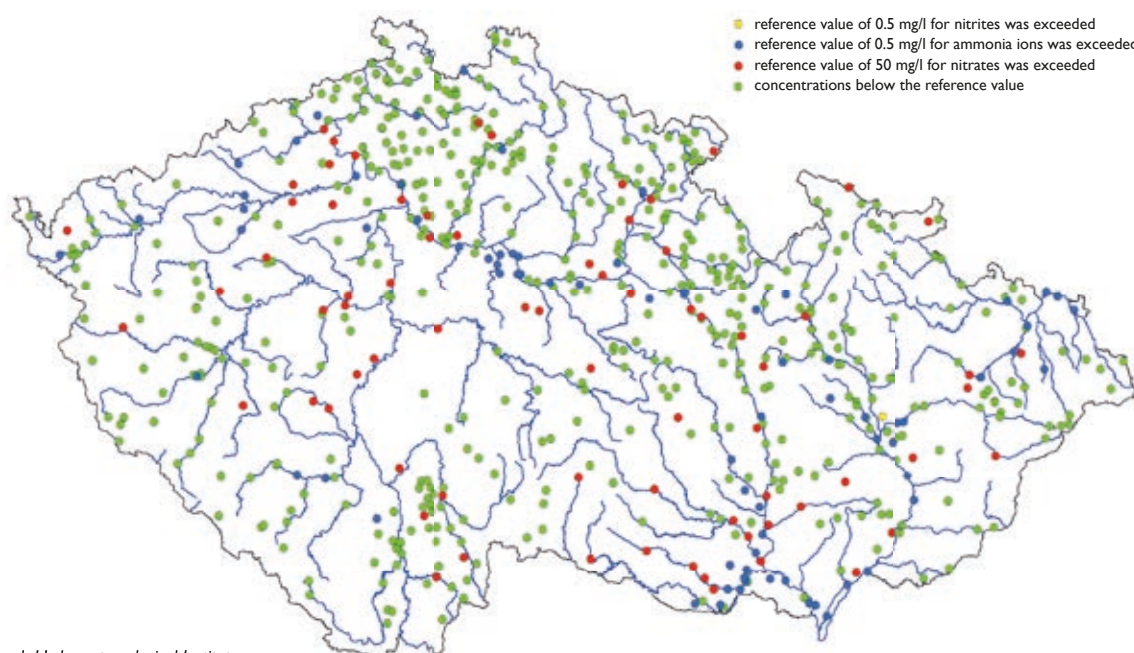
A total of 691 sites were monitored in the national groundwater quality monitoring network in 2018. They comprised 199 sources, 223 shallows wells and 269 deep wells. A total of 353 quality indicators were analysed.

Indicators from three major groups (basic indicators, metals and polar pesticides) were monitored at all sites. Other groups of indicators were analysed at a selected number of locations. A similar number of groundwater bodies exceeding limit values of monitored substances to 2017 was ascertained.

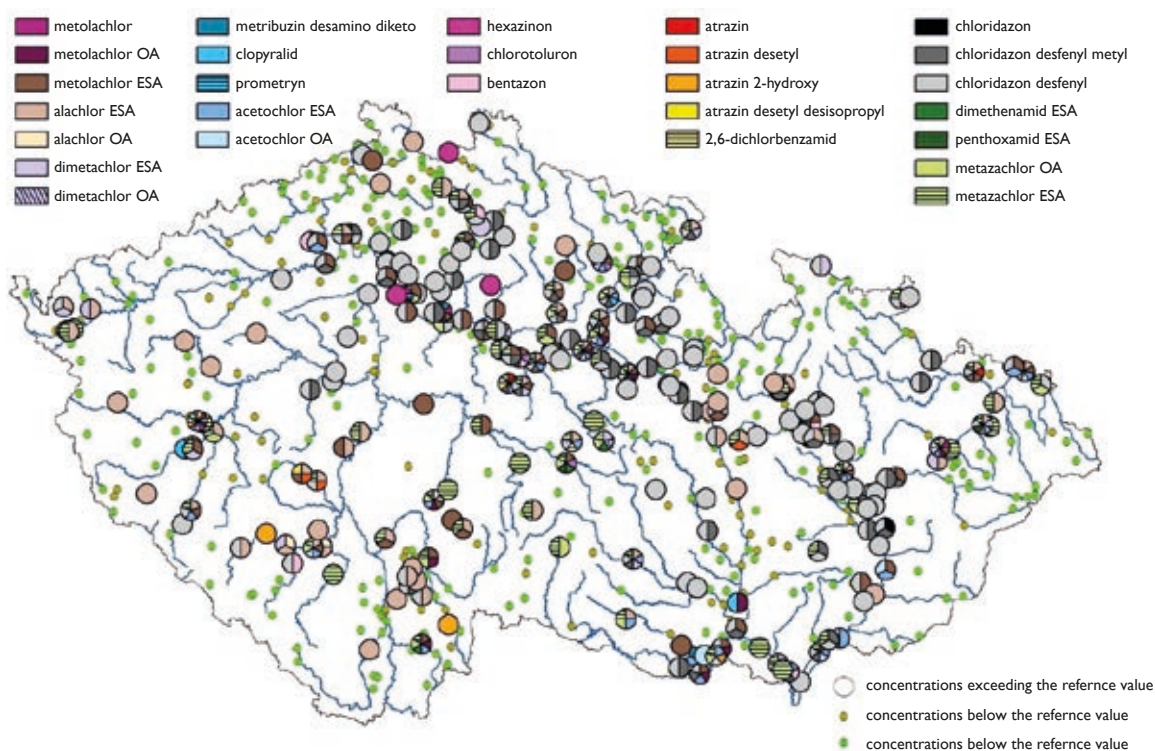
Table 3.2.1
Number of sites exceeding limits for groundwater in at least one indicator in 2018, compared with 2017 and 2016

Sites	Number of sites	Number of sites exceeding limit values for groundwater	% of sites exceeding limit values for groundwater		
			2018	2017	2016
Shallow wells	223	213	95.5	96.0	96.4
Deep wells and springs	468	364	77.8	76.2	82.1
Total	691	577	83.5	82.6	86.8

Source: Czech Hydrometeorological Institute

Figure 3.2.1**Concentrations of nitrogenous substances in groundwaters in 2018, exceeding limits set forth by Decree No. 5/2011 Coll.**

Source: Czech Hydrometeorological Institute

Figure 3.2.2**Concentrations of pesticides in groundwaters (substances exceeding limit values at two and more sites) in 2018**

Source: Czech Hydrometeorological Institute

Note: exceeding limit values set forth in Decree No. 264/2015 Coll. and Regulation of the European Parliament and of the Council 2006/118/ES



Hana Románková – Women and children wear rare water. There is little water. – Primary school Ohrada, Vsetín - Zlín Region

4. WATER USE

The monitoring of data on groundwater and surface water abstractions and on discharged waters is governed by Decree No. 431/2001 Coll., on the Content of water balance, the method of its compilation and on data for the water balance. In 2018, there was a decrease in the amount of surface water abstraction and volumes

4.1 Surface water abstractions

From the long-term perspective, it can be concluded that the year-on-year decrease in total abstraction of surface waters has rather stagnated. There were slight falls in the abstraction of surface waters in 2009, 2013, 2015 and 2017. There was also another decrease in 2018 (from 1,261 million m³ to 1,220.7 million m³).

Table 4.1.1

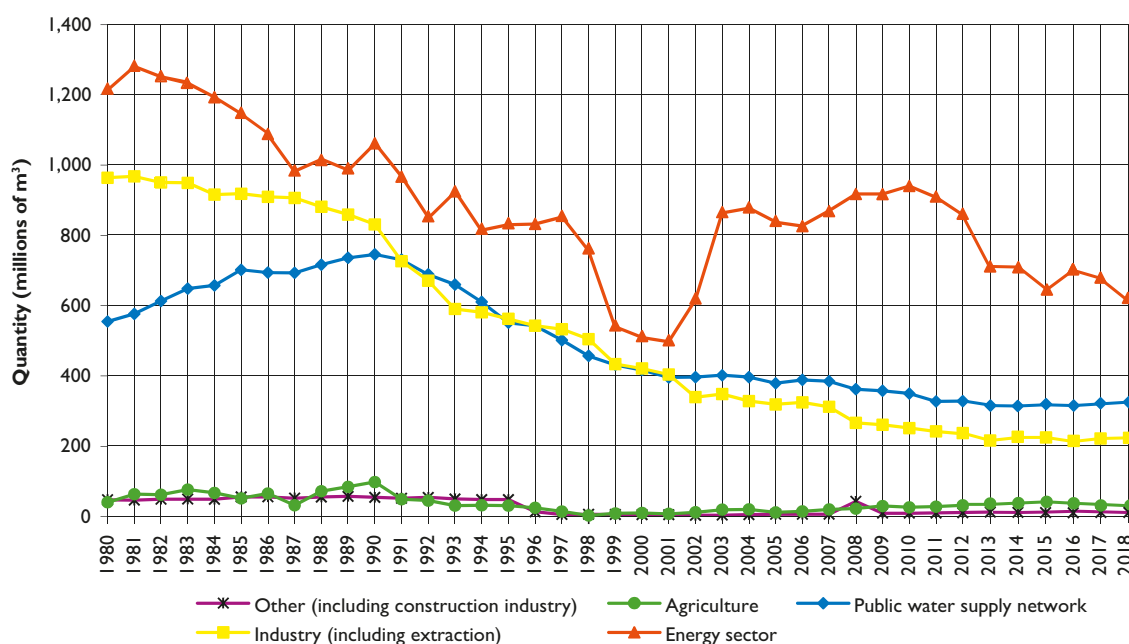
Surface water abstractions by clients exceeding 6,000 m³/year or 500 m³/month in millions of m³ in 2018

River Board, s. e.	Public water supply networks		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Others incl. construction and public sewerage systems		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe	38.9	24	13.5	53	398.2	12	90.0	64	2.3	85	542.9	238
Vltava	143.0	43	2.4	19	52.0	13	28.5	63	6.9	61	232.8	199
Ohře	41.1	20	4.3	31	44.3	9	39.8	49	0.5	27	130.0	136
Oder	64.4	24	0.0	0	11.1	16	55.1	36	0.5	30	131.1	106
Morava	38.5	36	12.2	46	121.3	9	10.8	60	1.0	52	183.8	203
Total	326.0	147	32.4	149	626.9	59	224.2	272	11.2	255	1,220.7	882

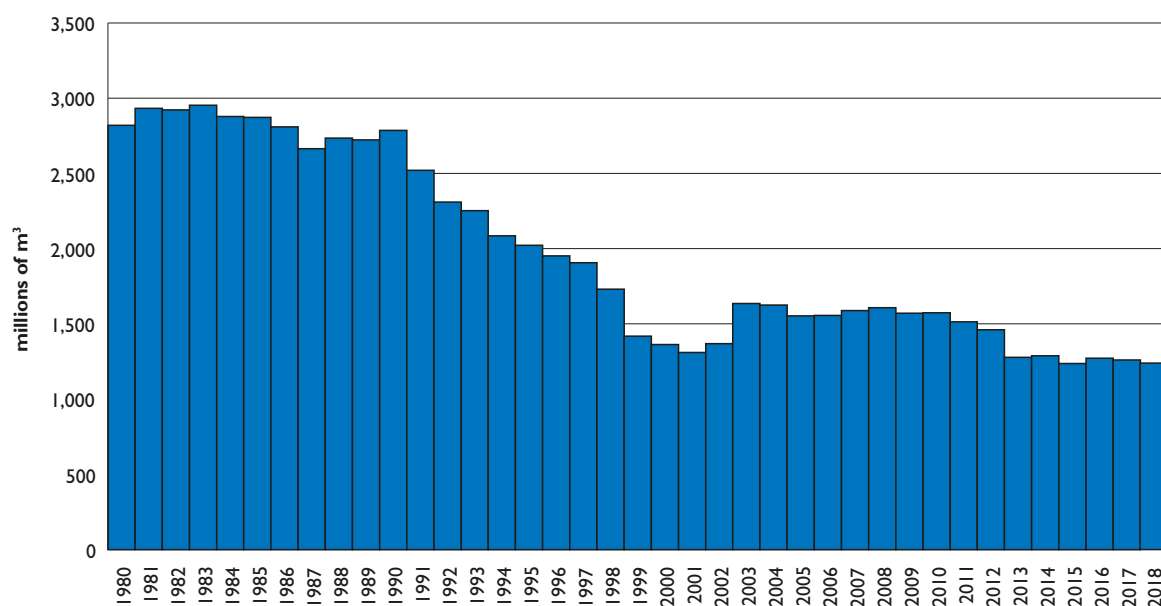
Source: River Boards, s. e.

Chart 4.1.1

Surface water abstractions in the Czech Republic by industry in 1980–2018



Source: T. G. Masaryk Water Research Institute using data provided by the River Boards, s. e.

Chart 4.1.2**Surface water abstractions in the Czech Republic in 1980–2018**

Source: MoA, using data provided by the T. G. Masaryk Water Research Institute, River Boards, s. e.

Table 4.1.2**Surface water abstractions by clients exceeding 6,000 m³/year or 500 m³/month for snowmaking in 2018**

River Board, s. e.	Snowmaking ^{*)}	
	Volume in thousands of m³	Number
Elbe	1,990.0	64
Vltava	367.0	12
Ohře	237.8	10
Oder	288.0	15
Morava	661.7	32
Total	3,544.4	133

Source: T. G. Masaryk Water Research Institute using data provided by the River Boards, s. e.

Note: ^{*)} Ascertained using internal code VHB „260410 – snowmaking of technical snow“ used by the River Boards, s. e., or by the name of the abstraction.

4.2 Groundwater abstractions

Similarly, the total amount of groundwater abstraction has recently seen only slight fluctuation. In 2018, similarly to the previous year, there was only a slight increase by 0.3% to 370.4 million m³.



The Jirkov Dam (source: Ohře River Board, s. e.)



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

Table 4.2.1

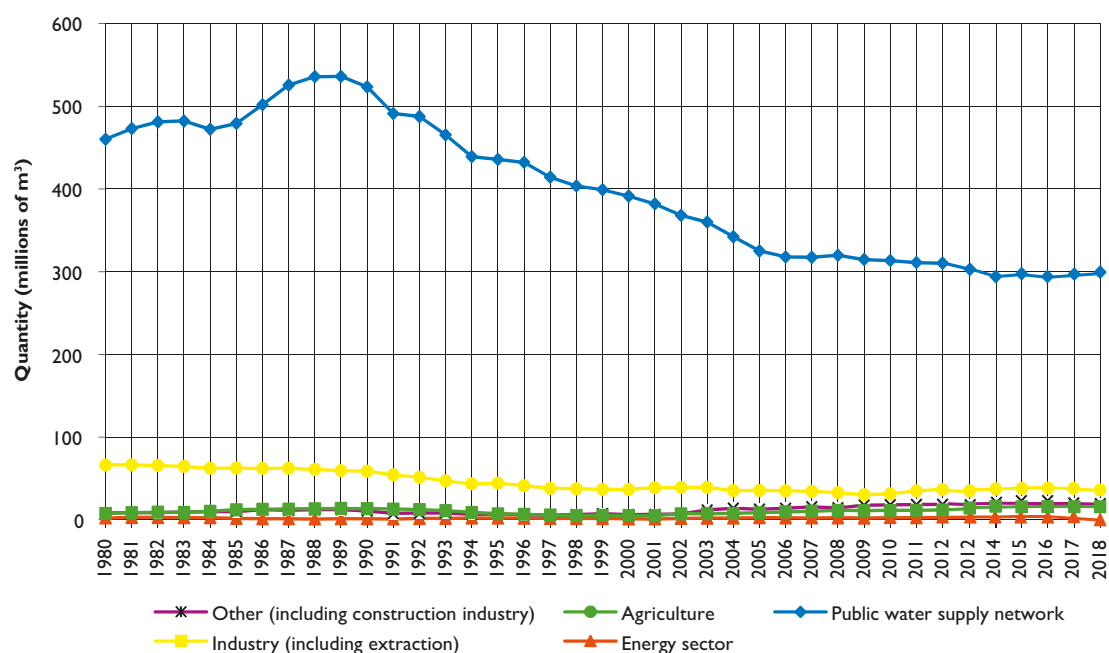
Groundwater abstractions (in millions of m³) exceeding 6,000 m³/year or 500 m³/month in 2018

River Board, s. e.	Public water supply networks		Agriculture incl. irrigation h		Energy sector		Industry incl. extraction		Others incl. construction industry and sewerage systems		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe	94.0	689	3.1	215	0.7	8	8.5	136	2.3	81	108.6	1,129
Vltava	32.3	578	5.4	361	0.4	10	10.1	117	10.3	430	58.5	1,496
Ohře	48.9	317	0.8	27	0.9	6	8.7	109	2.0	33	61.3	492
Oder	16.4	141	0.5	24	0.0	0	0.9	28	0.2	18	18.0	211
Morava	107.5	707	5.5	323	0.1	7	8.3	163	2.6	83	124.0	1,283
Total	299.1	2 432	15.3	950	2.1	31	36.5	553	17.4	645	370.4	4,611

Source: River Boards, s. e.

Chart 4.2.1

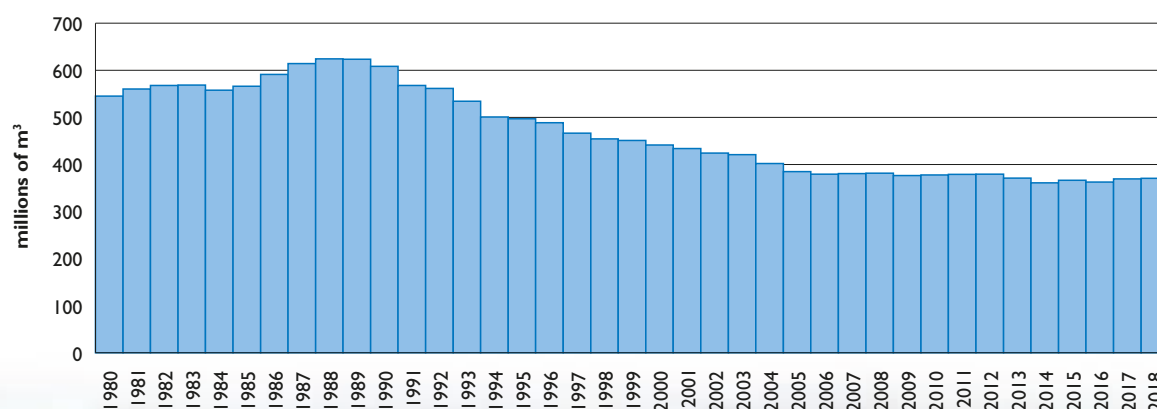
Groundwater abstractions in the Czech Republic by industry in 1980–2018



Source: T. G. Masaryk Water Research Institute using data provided by River Boards, s. e.

Chart 4.2.2

Groundwater abstractions in the Czech Republic in 1980–2018



Source: MoA using data provided by T. G. Masaryk Water Research Institute and River Boards, s. e.



The Mlýnice Dam (source: Elbe River Board, s. e.)

Table 4.2.2

Groundwater abstractions by clients exceeding 6,000 m³/year or 500 m³/month for snowmaking in 2018

River Board, s. e.	Snowmaking ^{*)}	
	Volume in thousands of m ³	Number
Elbe	10.1	1
Vltava	3.4	1
Total	13.5	2

Source: T. G. Masaryk Water Research Institute using data provided by River Boards, s. e.
 Note: ^{*)} Ascertained using internal code VHB „260410 – snowmaking of technical snow“ used by the River Boards, s. e., or by the name of the abstraction.

4.3 Wastewater discharges

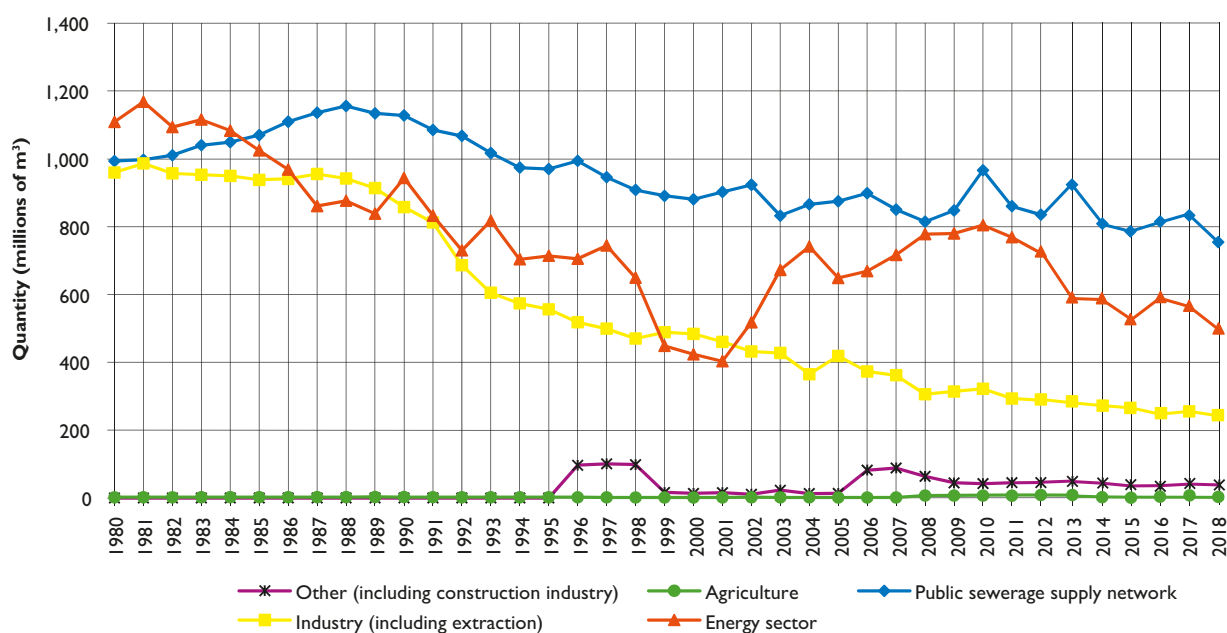
In 2018, in total 1 540,8 million m³ of wastewaters and mine waters were discharged into surface waters, which means a year-on-year decrease by almost 10%. This decrease is caused, inter alia, by the fact that the discharged volume includes rainfall and ballast water, which is in fact groundwater that seeps in the sewerage system.

Table 4.3.1

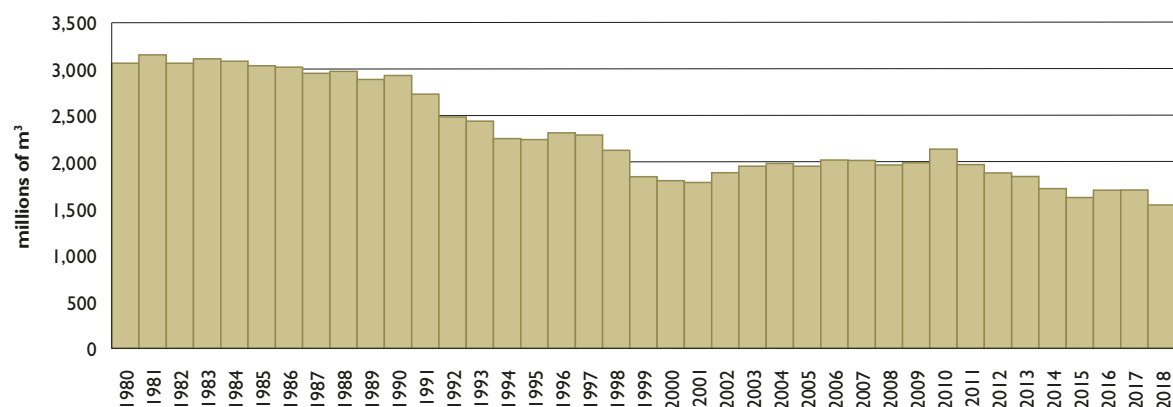
Discharges of wastewaters and mine waters (in millions of m³) into surface waters from sources exceeding 6,000 m³/year or 500 m³/month in 2018

River Board, s. e.	Public water supply networks		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Others incl. construction industry and public sewerage systems		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe	159.0	728	0.1	4	365.8	22	78.0	161	2.4	57	605.3	972
Vltava	246.2	759	0.8	5	15.9	26	32.3	142	26.2	671	321.4	1,603
Ohře	72.1	287	3.3	2	21.7	23	67.7	143	3.6	26	168.4	481
Oder	87.4	297	0.0	2	7.6	14	52.4	75	3.9	71	151.3	459
Morava	187.3	1,140	0.3	7	87.8	15	16.4	144	2.6	75	294.4	1,381
Total	752.0	3,211	4.5	20	498.8	100	246.8	665	38.7	900	1,540.8	4,896

Source: River Boards, s. e.

Chart 4.3.1**Discharge of wastewaters in the Czech Republic by industry in 1980–2018**

Source: T. G. Masaryk Water Research Institute using data provided by River Boards, s. e.

Chart 4.3.2**Discharge of wastewaters in the Czech Republic in 1980–2018**

Source: MoA, using data provided by T. G. Masaryk Water Research Institute, River Boards, s. e.



The Klapý Dam (source: Ohře River Board, s. e.)

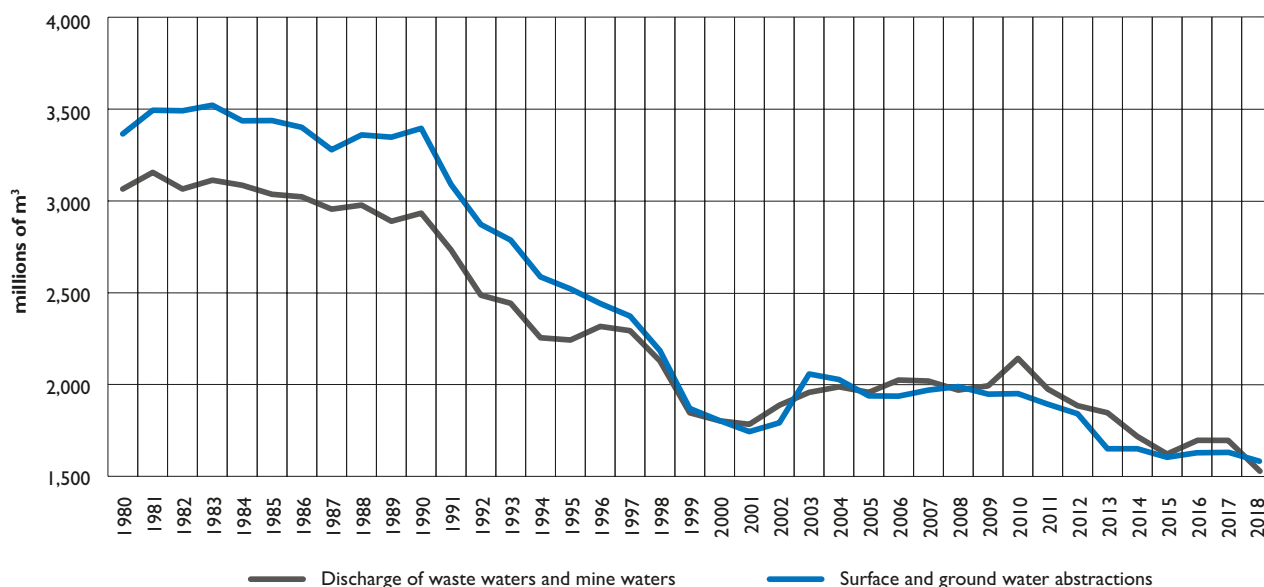
4.4 Overall comparison of water management

In 1980–2018 there was a very significant decrease in water abstractions and discharging since 2001 when there was a slight growth, however, after 2010 we witnessed another

decrease in the volume of abstractions and discharging. The volumes of abstracted and discharged water in 2018 reached – due to a prolonged episode of drought – the lowest values. Lower volume of rainfall caused that the discharged volume was actually smaller than the amount of abstractions.

Chart 4.4.1

Water abstractions and discharges in the Czech Republic in 1980–2018



Source: MoA using data provided by T. G. Masaryk Water Research Institute, River Boards, s. e.



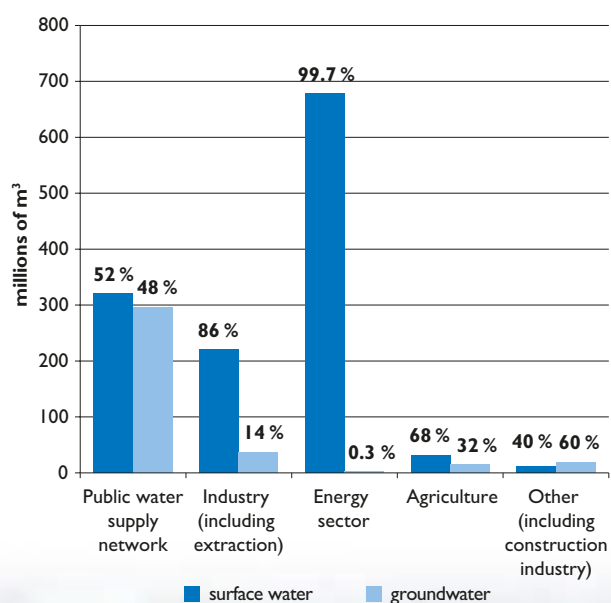
The Chomutovka River (source: Ohře River Board, s. e.)



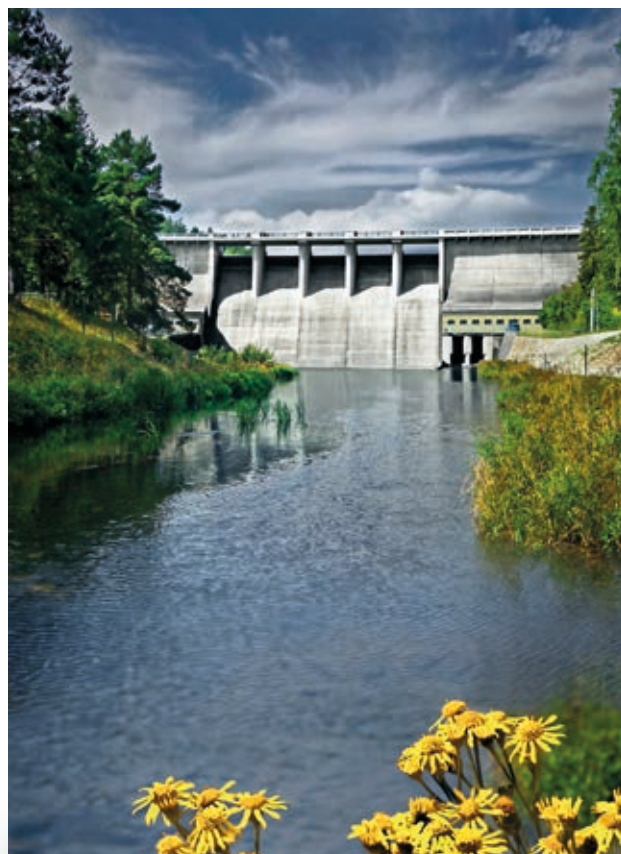
The Hubenov Dam in Winter (author: Chmelař Petr)

When comparing surface water and groundwater abstractions by industries, we can conclude that abstractions for water industry are balanced, while most other industries use mostly surface water.

Chart 4.4.2
Surface and underground waters abstractions by industry in 2018



Source: MoA using data provided by T.G. Masaryk Water Research Institute, River Boards, s. e.



The Kružberk Dam, Subdam (source: Oder River Board, s. e.)



Johana Štefanová – Hope in the Water for All – Primary school Senice – Olomouc Region

5. SOURCES OF POLLUTION

5.1 Point sources of pollution

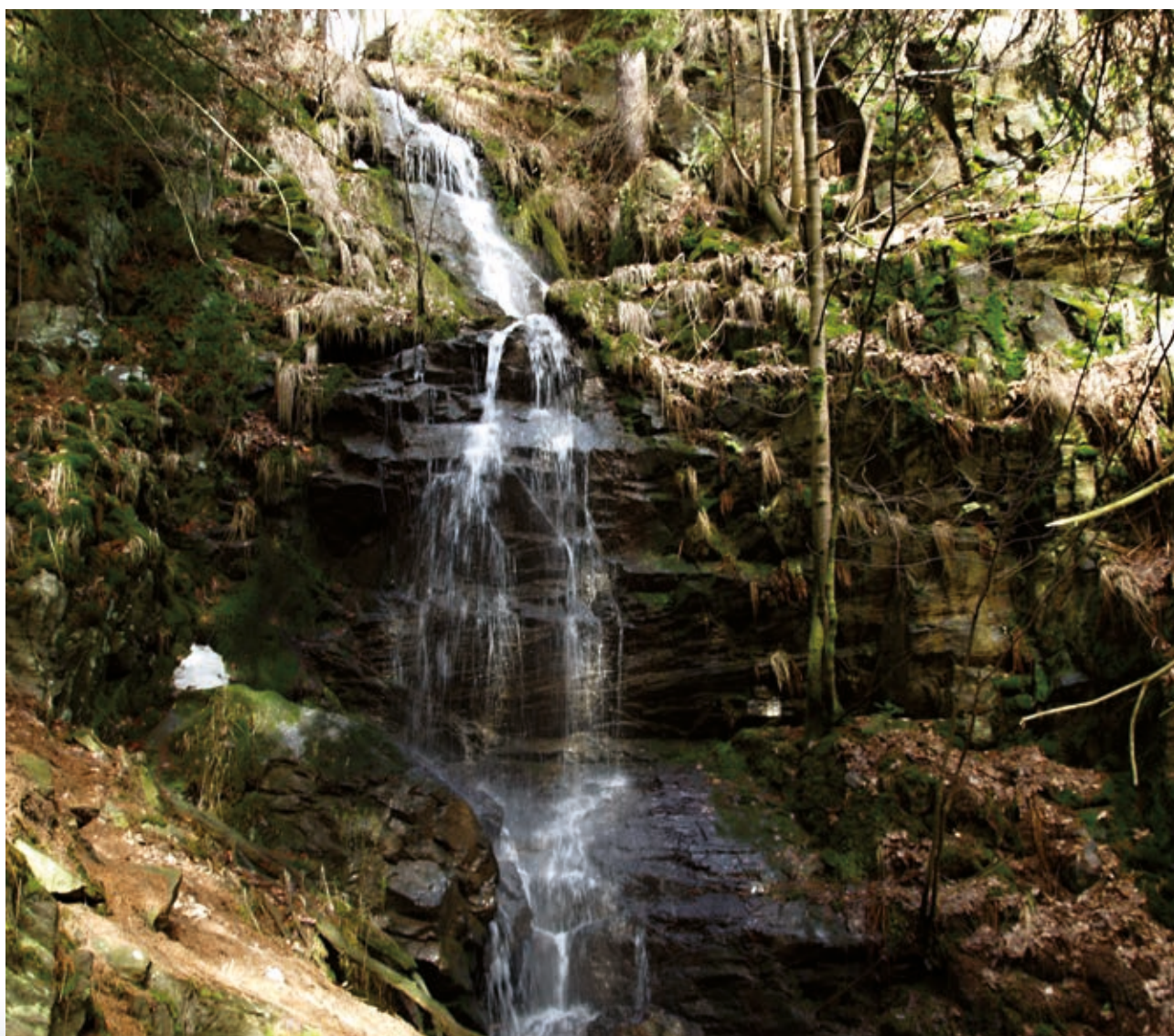
Surface water quality is affected primarily by point sources of pollution, such as municipalities, industrial plants and farms

with intensive agricultural animal production. The level of water protection against pollution is most often assessed based on the development of the produced and discharged pollution.

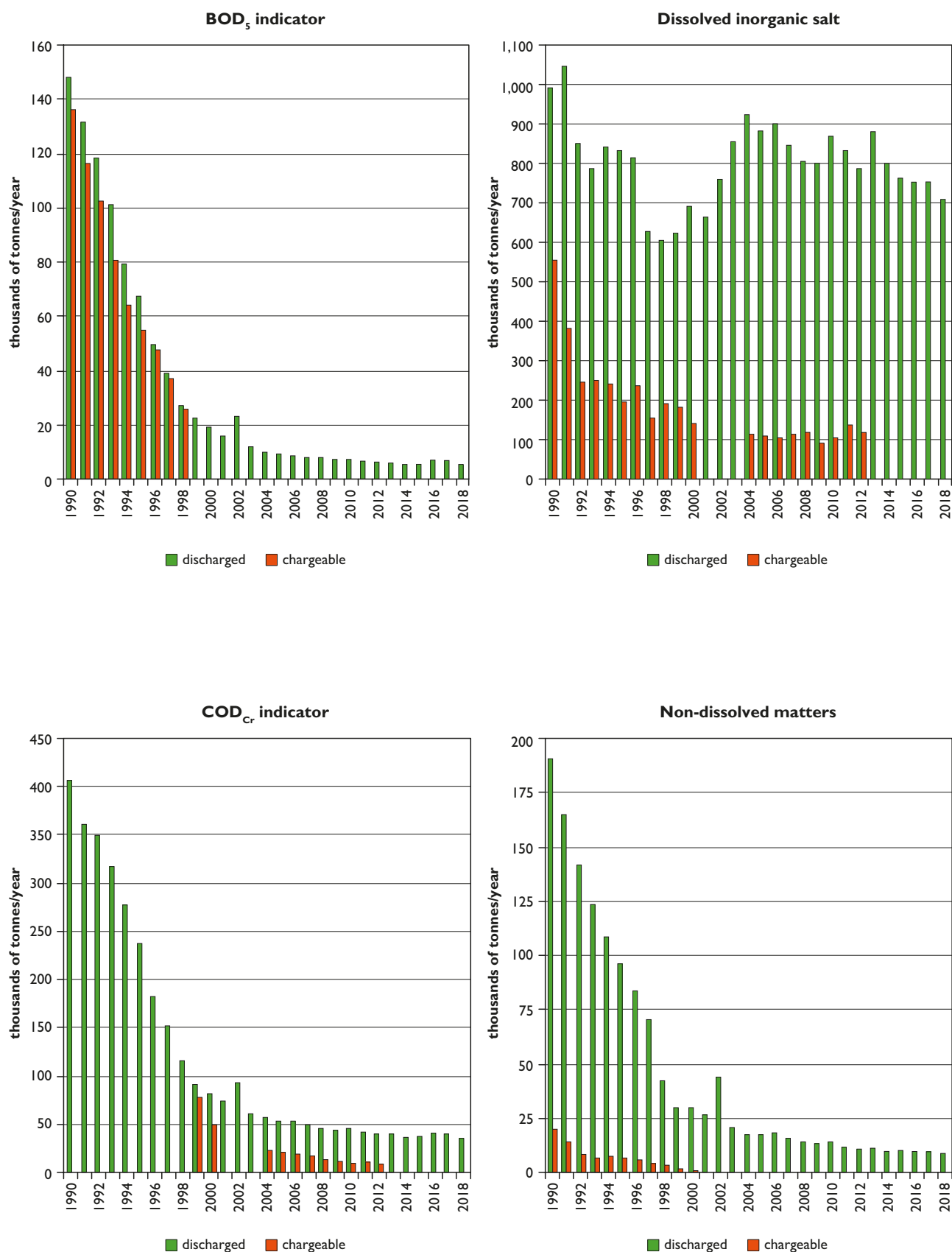
Table 5.1.1
Produced and discharged pollution in 2018

River Board, s. e.	Produced pollution in tonnes/year						Discharged pollution in tonnes/year					
	BOD ₅	COD	NM	DIS	N _{inorg}	P _{total}	BOD ₅	COD	NM	DIS	N _{inorg}	P _{total}
Elbe	54,266	134,546	55,912	195,366	7,531	1,278	1,366	10,557	2,466	191,955	2,133	199
Vltava	85,905	207,699	95,024	111,005	9,009	2,305	1,557	9,880	2,415	112,801	3,139	245
Ohře	19,021	39,380	18,096	80,384	2,378	776	426	3,378	1,225	89,769	1,321	259
Oder	30,247	60,932	23,622	158,527	3,573	559	538	4,658	1,153	180,449	1,045	123
Morava	68,296	161,905	75,770	139,242	7,674	1,634	1,187	7,268	1,506	132,505	1,992	185

Source: T. G. Masaryk Water Research Institute using data provided by the Czech Statistical Office and River Boards, s. e.



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

Chart 5.1.1**Discharged pollution and pollution on which charges were imposed in 1990–2018**

Source: T.G. Masaryk Water Research Institute using data provided by the Czech Statistical Office and River Boards, s. e.

5.2 Area sources of pollution

Surface water and groundwater quality is also significantly affected by area sources of pollution – such as pollution from atmospheric deposition, from farming, erosive runoff of the landscape and others.

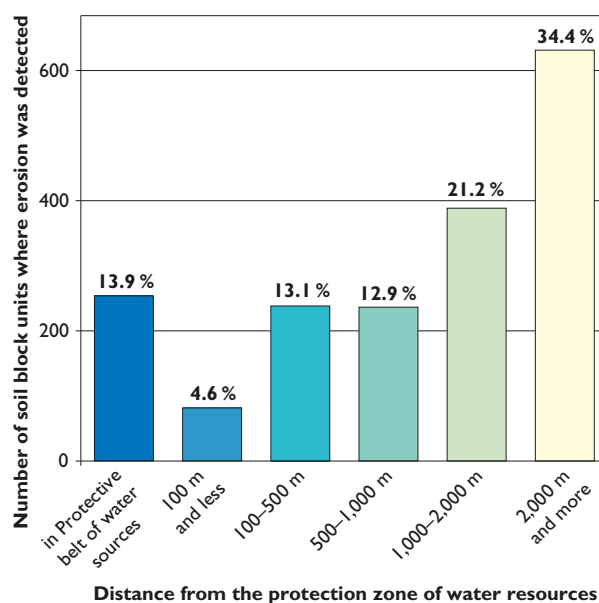
Water erosion of land

The Czech Republic, similarly to other countries, is more and more often exposed to hydrological extremes, which is due to the climate change. It can be expected that regions affected by such extremes will expand significantly in the future. One of the key tools that can mitigate the impact of the climate change is farming on agricultural land and implementation of suitable sets of water management measures in the landscape with the view of increasing retention and water accumulation.

Water erosion leads to soil loss, washing away topsoil, clogging watercourse beds and reservoirs and decreasing water accumulation in the landscape as well as to deteriorating water quality, its eutrophication and compromising the possibilities of using in during droughts. The basic tool that the MoA has at hand to curb water erosion is so-called standard of good agricultural and environmental condition No. 5 (GAEC 5) that restricts some crops to be grown on surfaces threatened by erosion.

Another tool is farmland erosion monitoring (<https://me.vumop.cz>) operated since 2012 by the Research Institute for Soil and Water Conservation, p. r. i., in cooperation with the State Land Office.

Chart 5.2.1
Recorded erosion events by distance from the protective belt of water sources in 2018



Source: Research Institute for Soil and Water Conservation

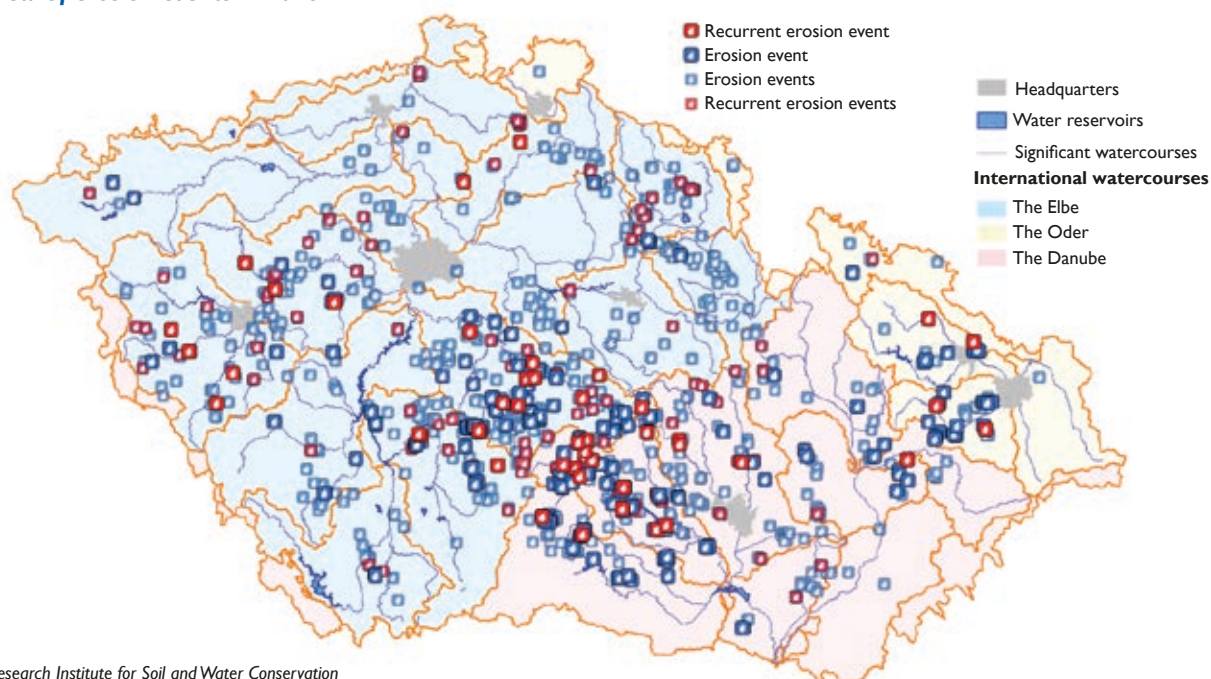
Note: Number of soil block units affected = number of soil block units where erosion was detected

At present, more than 50% of the total 4.18 million ha of farming land in the Czech Republic is threatened by water erosion. The maximum loss of soil in the Czech Republic is calculated to be approximately 21 tonnes of topsoil a year, which accounts for damage amounting to CZK 10 billion per year.



The Dalešice Dam, Pulling buoys for the winter (author: Brychta Petr)

Figure 5.2.1
Overview of erosion events in 2018



Source: Research Institute for Soil and Water Conservation



The Nechranice Dam (source: Ohře River Board, s. e.)

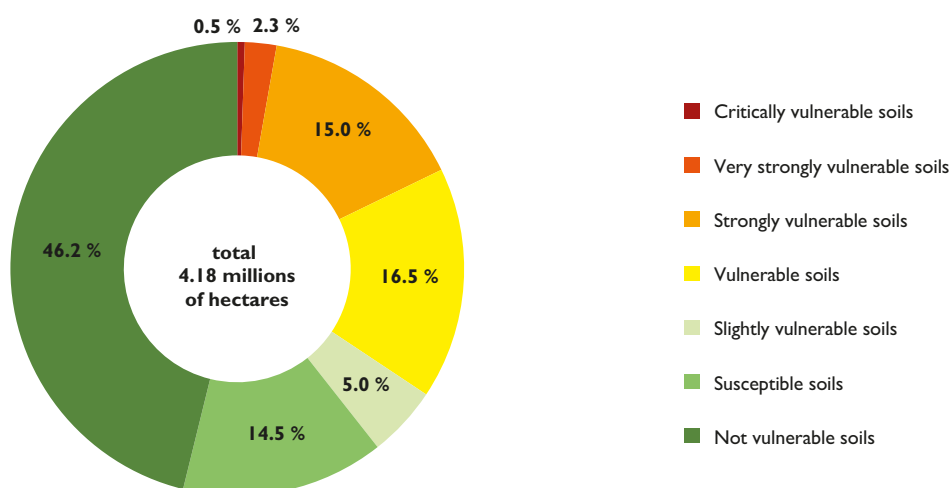
Table 5.2.1
Exposure of agricultural land to water erosion

Category $C_p \cdot P_p$	Degree of threat	Recommended general management	Agricultural land	
			Share (%)	Area (ha)
0.005 and less	Critically threatened land	protective grassing	0.53	22,241
0.006 – 0.020	Very strongly threatened land	perennial crops or protective grassing	2.25	94,070
0.021 – 0.100	Strongly threatened land	exclusion of crops dangerous in terms of erosion and higher share of perennial crops	15.02	627,329
0.101 – 0.200	Threatened land	exclusion of crops dangerous in terms of erosion and use of land protecting technology	16.53	690,039
0.201 – 0.240	Slightly threatened land	changing crops in belts or excluding crops dangerous in terms of erosion	5.05	210,728
0.241 – 0.400	Land prone to erosion	crops dangerous in terms of erosion grown with land protecting technology	14.46	603,663
0.401 and more	No threat	no limitation	46.16	1,927,167
Total			100.00	4,175,236

Source: Research Institute for Soil and Water Conservation

Note: Degree of exposure to water erosion is expressed using the maximum acceptable value of the factor of protective influence of vegetation and anti-erosion measures ($C_p \cdot P_p$) with regionalised factor of erosion effect of rain (R)

Chart 5.2.2
Erosion exposure of agricultural land



Source: Research Institute for Soil and Water Conservation

5.3 Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In 2018, the Czech

Environmental Inspection registered in total 132 cases of accidental releases into surface waters and 7 cases of accidental releases into groundwaters.



The Josefův Důl Dam (source: Elbe River Board, s. e.)



Magdaléna Petýrková – The Drop for All – Primary school Kovářov – South Bohemian Region

6. WATERCOURSE MANAGEMENT

6.1 Professional management of watercourses

The inland position of the Czech Republic in the heart of Central Europe predetermines its relation to the European river network. The basic hydrographic system is constituted by more than 100,000 km of watercourses with both natural and regulated watercourse beds. Watercourses in the Czech Republic are divided according to the Water Act into two categories: significant watercourses and minor watercourses. Professional management of watercourses is carried out in accordance with the provisions of Section 47 of the Water Act.

Table 6.1.1
Professional management of watercourses

Category	Administrator	Length of watercourses (km)	
		2017	2018
Significant watercourses	Elbe River Board, s. e.	3,589	3,589
	Vltava River Board, s. e.	5,533	5,533
	Ohře River Board, s. e.	2,377	2,377
	Oder River Board, s. e.	1,111	1,111
	Morava River Board, s. e.	3,757	3,759
	Total	16,367	16,369
Minor watercourses	Forests of the Czech Republic, s. e.	38,557	38,538
	River Boards, s. e., in total	38,829	38,839
	Other administrators ¹⁾	5,445	5,453
	Total	82,831	82,830
Watercourses in total		99,198	99,199

Source: MoA

Note: Digital lengths of watercourses from the Central Register of Watercourses are presented.

¹⁾ Including National Park Administrations, the Ministry of Defence (authorities of military districts), municipalities and other natural and legal persons.

CEVT, an online application available at the MoA website (www.eagri.cz) and at the Water Management Information Portal (www.voda.gov.cz) informs the public administration and general public about the management of each watercourse. The public administration bodies and the general public can find detailed information on the establishment of the administration of the relevant watercourse in the web application “Central Register of Watercourses”, which is available on the website of the



The Némčice (source: Forest of the Czech Republic, s. e.)

Ministry of Agriculture (www.eagri.cz) and on the Water Management Information Portal (www.voda.gov.cz).

Watercourse administrators spent on management of significant and minor watercourses under the scope of authority of the Ministry of Agriculture a total of CZK 3.1 billion a year.

Table 6.1.2
Money spent on watercourse management in 2018

Watercourse administrator	Significant watercourses	Minor watercourses	Total
	in millions of CZK		
Elbe River Board, s. e.	471.6	82.5	554.1
Vltava River Board, s. e.	434.0	112.8	546.8
Ohře River Board, s. e.	304.6	59.6	364.2
Oder River Board, s. e.	463.4	100.1	563.5
Morava River Board, s. e.	366.0	143.0	509.0
River Boards, s. e. in total	2,039.6	498.0	2,537.6
Forests of the Czech Republic, s. e. ^{*)}	-	568.5	568.5
Total	2,039.6	1,066.5	3,106.1

Source: MoA

Note: ^{*)} The item includes funds for watercourse and reservoir management.

Acquisition value of fixed assets linked with watercourses rose year-on-year by CZK 0.34 billion in 2018 (0.6%) to CZK 52.9 billion.

6.2 River Boards, state enterprises

Total revenue of River Boards, state enterprises, amounted to CZK 5.25 billion in 2018, which means a year-on-year drop of almost CZK 40 million, i.e. 0.7%. The biggest drop by almost 30% was in revenue from electric power generation and in non-investment purpose grants from the state budget.

Chart 6.2.1
Revenues of River Boards, state enterprises, in 2013–2018

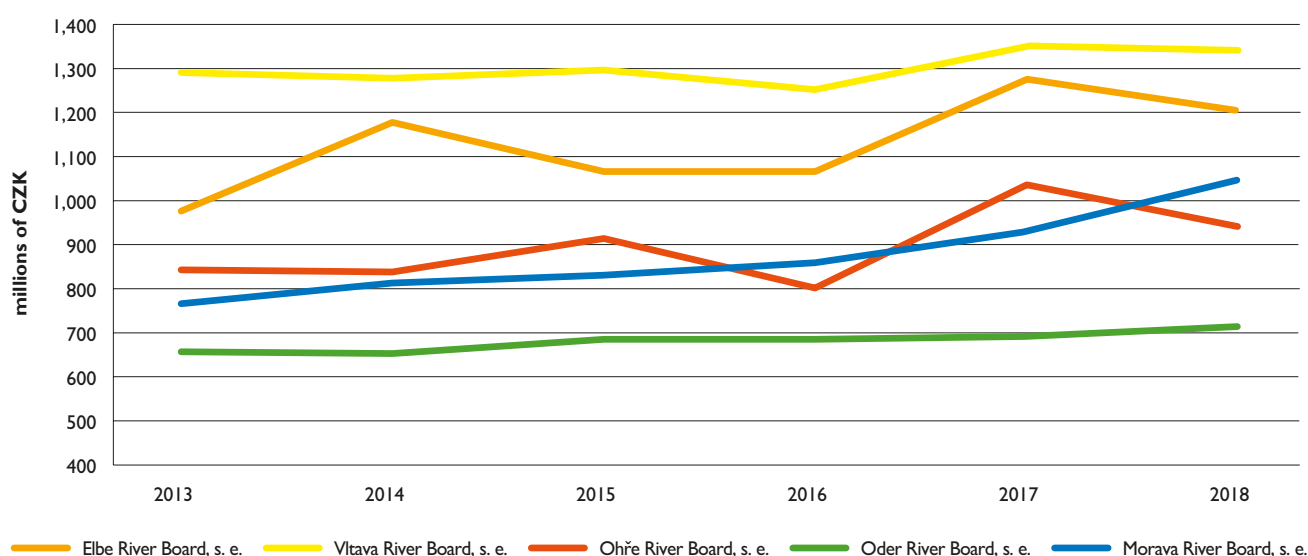


Table 6.2.1
Structure of the revenues of River Boards, state enterprises, in 2018

Indicator	River Board, state enterprise					Total
	Elbe	Vltava	Ohře	Oder	Morava	
	thousands of CZK					
Payments for surface water abstractions	1,026,581	852,458	616,550	579,250	803,667	3,878,506
Electric power generation	38,012	211,048	192,077 ^{*)}	69,487	22,279	532,903
Revenues from the use of weirs	6,900	101,453	2,424	0	4,956	115,733
Other revenues	91,122	120,231	108,496	61,595	130,084	511,528
Special-purpose non-investments grants ¹⁾	40,398	55,729	21,736,	7,794	88,680 ²⁾	214,337
River Boards, s. e., in total	1,203,013	1,340,919	941,283	718,126	1,049,666	5,253,007

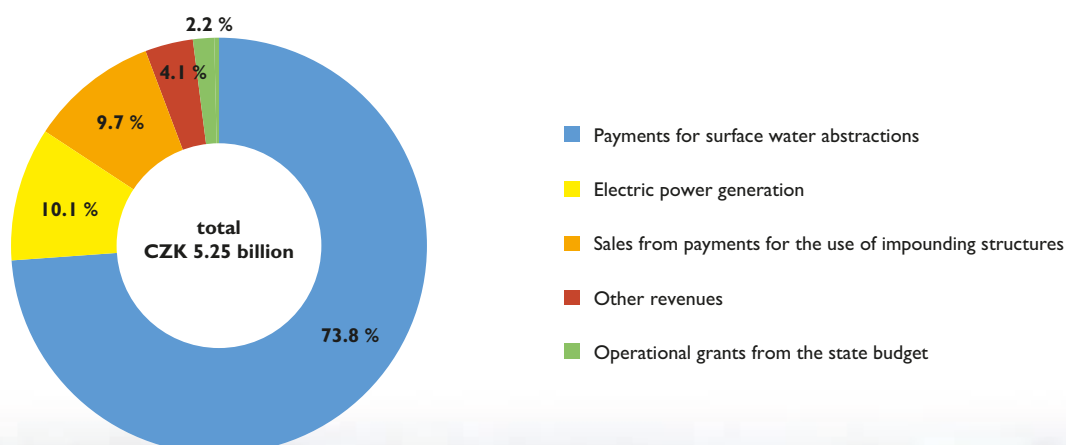
Source: River Boards, s. e.

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

¹⁾ Includes all special-purpose non-investment grants for minor watercourses, grants from the SFIT and other non-investment grants.

²⁾ Does not include revenue from grant from 2018 amounting to CZK 82 thousand that was revenue in 2017 on the basis of an accounted estimate.

Chart 6.2.2
Structure of the revenues of River Boards, state enterprises, in 2018



Source: MoA



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

Table 6.2.2

Surface water supplies charged for administered by River Boards, state enterprises, in 2012–2018

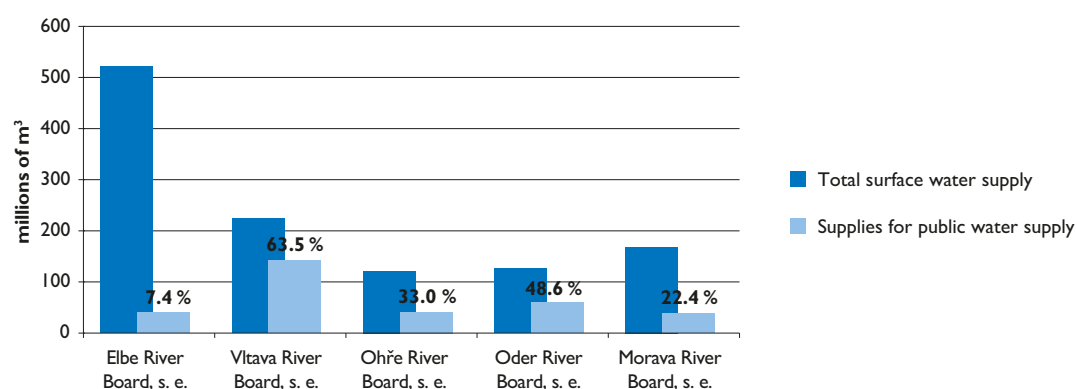
River Board, s. e.		2012	2013	2014	2015	2016	2017	2018
		thousands of m ³						
Elbe	a)	723,608	600,131	609,118	547,658	614,377	583,838	526,598
	b)	34,838	35,782	36,022	37,271	37,707	38,873	39,017
Vltava	a)	234,579	214,195	211,473	213,944	204,885	219,138	224,819
	b)	140,596	134,750	130,214	134,544	134,333	139,485	142,813
Ohře	a)	131,659	121,167	118,390	120,352	119,384	122,837	124,054
	b)	44,954	42,212	40,583	40,777	40,305	40,953	40,919
Oder	a)	139,124	136,614	135,223	136,832	127,995	124,144	125,379
	b)	67,102	65,105	64,920	65,045	62,306	60,592	60,901
Morava	a)	180,835	155,848	162,058	160,288	151,857	156,666	168,582
	b)	33,427	30,951	32,262	32,975	32,816	35,763	37,715
Total	a)	1,409,805	1,227,955	1,236,262	1,179,074	1,218,498	1,206,623	1,169,432
	b)	320,917	308,800	304,001	310,612	307,467	315,666	321,365

Source: River Boards, s. e.

Note: a) charged for in total,
b) of which for public water supply systems.

Chart 6.2.3

Surface water supplies charged for administered by River Boards, state enterprises, by purpose in 2018



Source: River Boards, s. e.



The Bat'a Canal, the Petrov Harbour (author: Kučerová Jana)

The average price of other surface water abstraction per m³ rose year-on-year in 2018 by 2.3% to CZK 4.88. This price is a “factually regulated” price, which may only include

economically justified costs, reasonable profit and the tax pursuant to the relevant tax regulations.

Table 6.2.3
Price for abstractions used for flow cooling in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	CZK/m ³						
Elbe	0.64	0.65	0.68	0.70	0.72	0.74	0.77
Vltava	1.22	1.22	1.25	1.25	1.27	1.32	1.32
Morava	0.72	0.89	1.15	1.19	1.21	1.22	1.23

Source: River Boards, s. e.

Note: The unit price per m³ does not include value added tax.

Table 6.2.4
Price for other surface water abstractions in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	CZK/m ³						
Elbe	3.97	4.09	4.29	4.39	4.49	4.58	4.72
Vltava	3.40	3.45	3.55	3.62	3.69	3.84	3.84
Ohře	3.88	4.14	4.34	4.51	4.69	4.92	4.97
Oder	3.80	3.99	4.09	4.21	4.33	4.46	4.62
Morava	5.88	6.16	6.39	6.52	6.65	6.68	6.69
Average price^{*)}	3.94	4.08	4.25	4.34	4.64	4.77	4.88

Source: River Boards, s. e.

Note: The unit price per m³ does not include value added tax.

^{*)} Calculated using weighted average.

Revenue from surface water abstraction rose year-on-year in 2018 by 4.7%, i.e. by CZK 173 million, amounting to CZK 3.9 billion.

Table 6.2.5
Payments for surface water abstractions in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	in millions of CZK						
Elbe	890	832	882	860	996	1,001	1,027
Vltava	778	725	739	759	745	832	852
Ohře	511	502	514	543	560	604	617
Oder	529	545	553	576	554	554	579
Morava	608	589	639	637	672	715	804
Total	3,316	3,193	3,327	3,375	3,527	3,706	3,879

Source: River Boards, s. e.

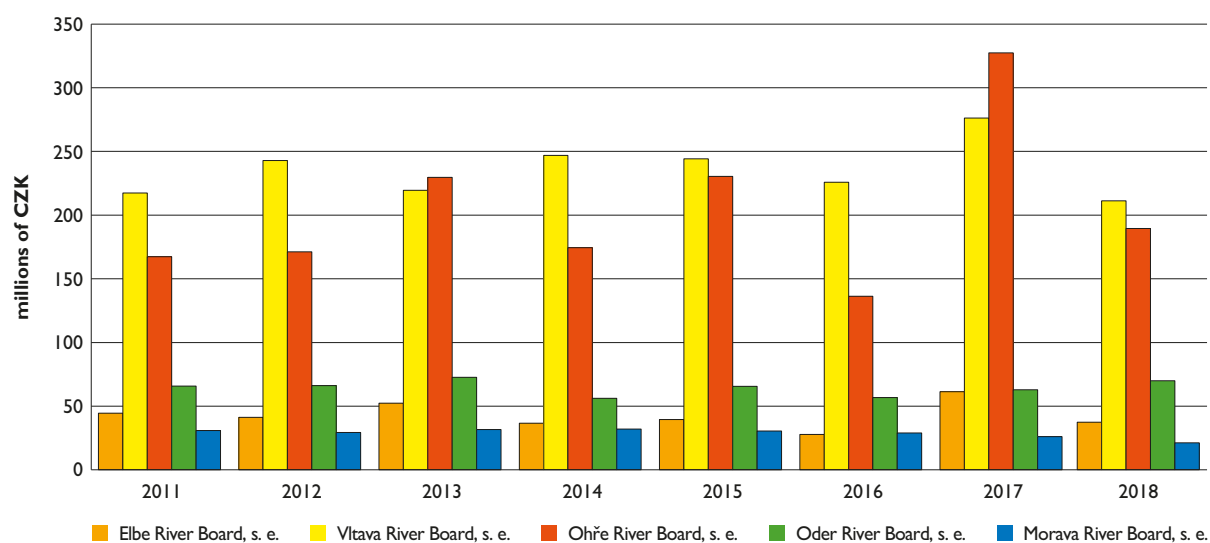
The second most significant source of income of River Boards, state enterprises, is electric power generation accounting for more than 10% of the total revenues. The number of small hydroelectric power plants rose year-on-year by four to a total of 103. The total of revenues exceeded

CZK 530 million, however, in year-on-year comparison there was a drop of 30%, which was due to less power generation and the fact that revenues in 2017 were increased by additional payment of green bonuses.

Table 6.2.6
Number of small hydroelectric power plants owned by River Boards, state enterprises, in 2012–2018

River Board, s. e.	Indicator	2012	2013	2014	2015	2016	2017	2018
Elbe	Number of small hydroelectric plants	20	20	20	20	20	20	20
	Installed capacity in kW	6,108	6,438	6,438	6,438	6,795	6,819	6,819
	Electric power generation in MWh	19,293	23,509	16,349	15,880	12,288	22,440	13,835
	Sales in thousands of CZK	41,222	52,257	36,532	39,390	27,754	61,268	38,012
Vltava	Number of small hydroelectric plants	19	19	19	19	19	19	20
	Installed capacity in kW	21,607	21,816	22,016	22,016	22,128	22,128	22,328
	Electric power generation in MWh	96,937	86,749	92,102	88,474	99,497	77,475	77,922
	Sales in thousands of CZK	242,709	219,464	246,837	244,146	225,704	276,114	211,048
Ohře	Number of small hydroelectric plants	21	21	21	21	21	22	22
	Installed capacity in kW	16,930	16,930	16,966	16,966	16,966	17,091	17,091
	Electric power generation in MWh	77,422	102,642	67,371	84,954	84,910	84,244	72,908
	Sales in thousands of CZK	171,112	229,545	174,342	230,236	136,223	327,221	189,511
Oder	Number of small hydroelectric plants	16	16	16	16	23	23	26
	Installed capacity in kW	5,809	5,809	5,809	5,809	6,236	6,236	6,352
	Electric power generation in MWh	26,068	27,201	20,656	24,535	21,569	23,181	25,073
	Sales in thousands of CZK	66,000	72,506	56,006	65,509	56,669	62,942	69,487
Morava	Number of small hydroelectric plants	15	15	15	15	15	15	15
	Installed capacity in kW	3,497	3,497	3,497	3,497	3,497	3,497	3,497
	Electric power generation in MWh	11,323	12,228	12,343	11,535	11,008	9,609	8,239
	Sales in thousands of CZK	29,331	31,592	32,014	30,432	28,812	26,039	22,279
Total	Number of small hydroelectric plants	91	91	91	91	98	99	103
	Installed capacity in kW	53,951	54,490	54,726	54,726	55,622	55,771	56,087
	Electric power generation in MWh	231,043	252,329	208,821	225,378	229,272	216,949	197,977
	Sales in thousands of CZK	550,374	605,364	545,731	609,713	475,162	753,455	530,337

Source: River Boards, s. e.

Chart 6.2.4**Development of revenues of small hydroelectric power plants owned by River Boards, state enterprises, in 2011–2018**

Source: River Boards, s. e.

*The Loděnice Dry Reservoir (source: Oder River Board, s. e.)*

In 2018, other revenues rose year-on-year by CZK 101 million, totalling to CZK 511.5 million.

Table 6.2.7**Other revenues of River Boards, state enterprises, in 2012–2018**

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	in thousands of CZK						
Elbe	98,258	83,184	147,863	86,346	73,388	149,163 ^{*)}	91,122
Vltava	109,261	144,774	92,183	93,132	71,409	78,738	120,231
Ohře	94,847	90,474	107,668	79,965	75,702	85,264	108,496
Oder	48,316	39,639	43,802	43,221	41,191	49,013	61,595
Morava	62,345	74,491	53,933	57,799	56,462	48,295	130,084
Total	413,027	432,562	445,449	360,463	318,152	410,473	511,528

Source: River Boards, s. e.

Note: ^{*)} The item includes revenue from the sale of an Oberbank AG security amounting to CZK 50 million.



The Vir Dam, Exposed Shores (source: Morava River Board, s. e.)

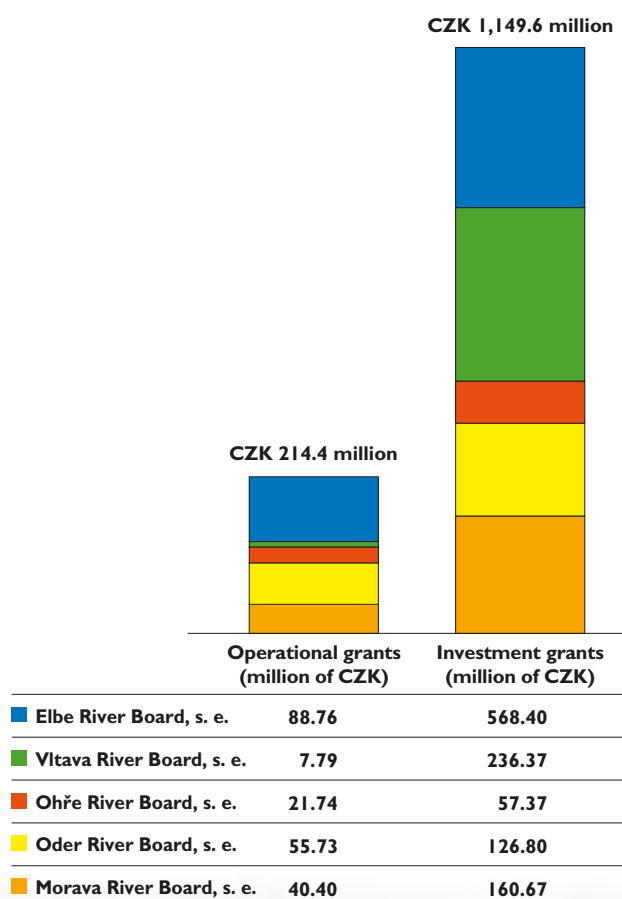
In order to ensure crucial activities of River Boards, s. e., various purpose non-investment and investment grants are used every year. The total amount of grants provided in 2018 rose by 26% to CZK 1.4 billion.

Total costs in 2018 rose year-on-year by 1.65% to CZK 5.04 billion. The greatest increase was in other costs, smaller growths in personal costs and services.



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

Chart 6.2.5
Grants used by River Boards, state enterprises, in 2018



Source: MoA, River Boards, s. e.

Table 6.2.8
Costs of River Boards, state enterprises, in 2017 and 2018

Type of cost	Year	River Board, state enterprise					Total
		Elbe	Vltava	Ohře	Oder	Morava	
		millions of CZK					
Depreciation	2017	198.8	341.3	183.7	151.9	173.5	1,049.2
	2018	202.7	346.1	183.6	156.8	168.7	1,058.0
Repairs	2017	244.7	271.4	167.6	169.1	303.4	1,156.1
	2018	210.4	271.5	170.7	118.0	312.8	1,083.4
Material	2017	41.0	28.6	16.9	33.7	45.3	1,65.5
	2018	38.0	29.5	18.1	34.0	45.2	164.8
Energy and fuel	2017	35.2	36.5	24.1	4.9	11.8	112.5
	2018	35.1	34.9	24.4	5.0	12.1	111.5
Personnel costs	2017	509.0	454.5	352.2	257.1	367.1	1,939.9
	2018	525.2	470.4	387.1	272.8	390.6	2,046.0
Services	2017	70.1	85.5	30.5	31.9	30.2	248.2
	2018	76.2	83.8	32.9	32.4	31.8	257.2
Financial costs	2017	50.0 ^{*)}	0.4	1.1	0.2	0.3	52.1
	2018	0.4	0.3	0.2	0.2	0.3	1.4
Other costs	2017	68.9	55.7	92.2	25.7	-11.4	231.2
	2018	92.2	55.2	50.8	45.8	70.2	314.2
Total costs	2017	1,217.7	1,273.9	868.4	674.4	920.2	4,954.6
	2018	1,180.1	1,291.7	867.9	665.1	1,031.8	5,036.6

Source: River Boards, s. e.

Note: ^{*)} The item includes retirement of an Oberbank AG security that was subsequently sold. Common financial costs in 2017 amounted to CZK 397 thousand.



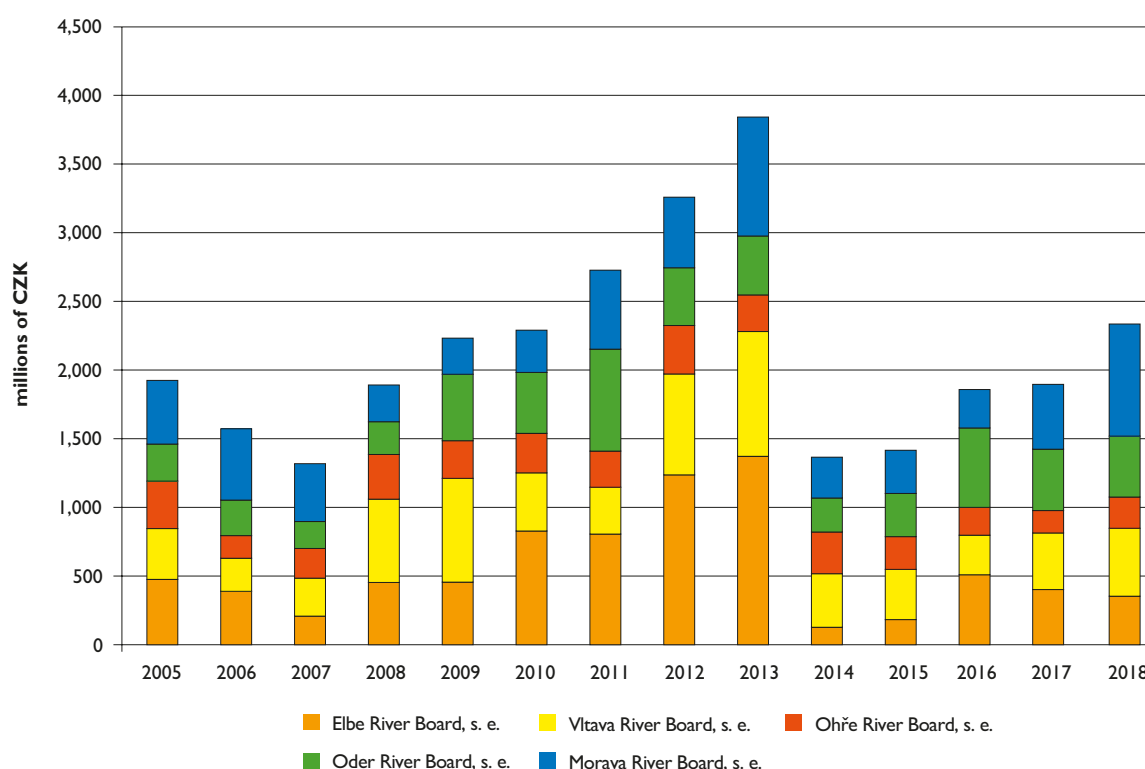
The Bušínovský Stream (source: Forest of the Czech Republic, s. e.)

In 2018, River Boards, state enterprises, spent on investment implementation CZK 2.3 billion with equal share from its own and external sources. In comparison with the previous years, there was a year-on-year increase in total investments by 23.7% to almost CZK 450 million.

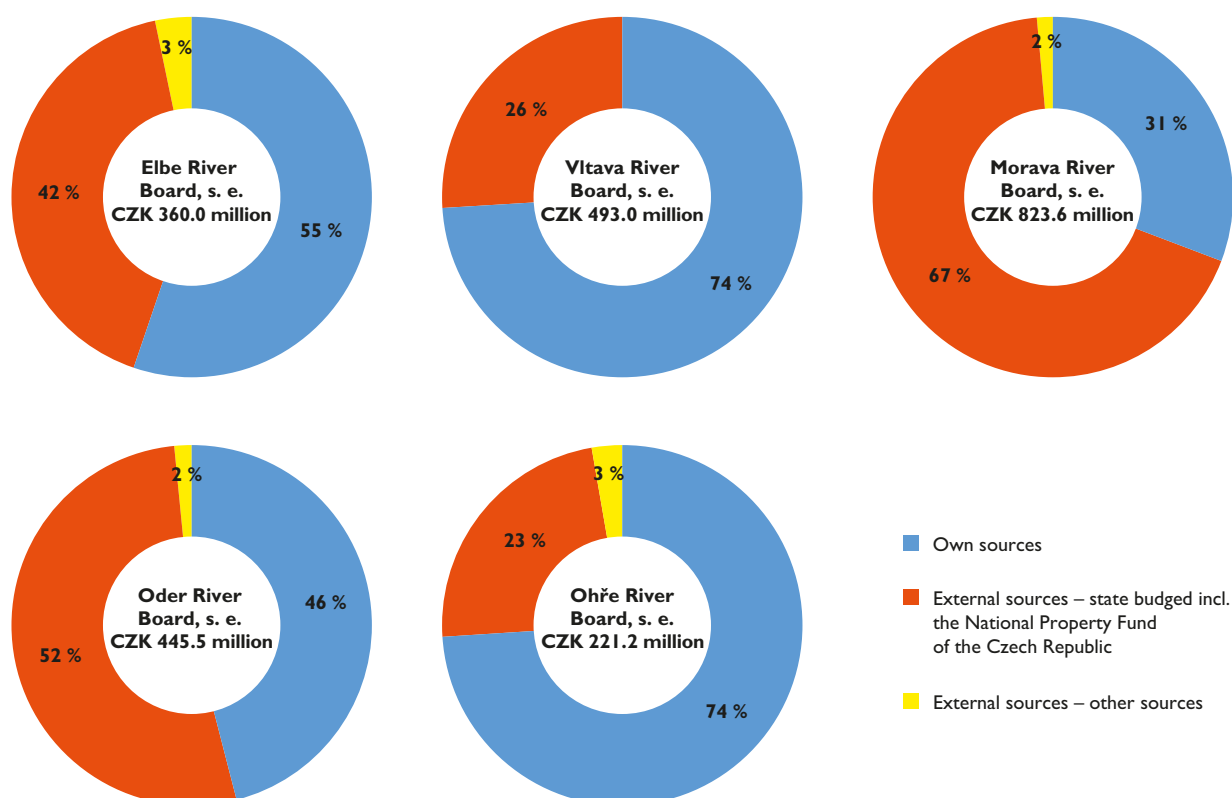
Table 6.2.9
Investments made by River Boards, state enterprises, in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	millions of CZK						
Elbe	1,240.8	1,378.3	132.6	189.9	514.6	401.2	360.0
Vltava	729.5	905.2	386.7	361.5	286.0	410.9	493.0
Ohře	357.1	262.5	306.7	242.5	210.7	161.6	221.2
Oder	419.7	435.4	248.4	313.7	568.2	453.4	445.5
Morava	512.0	856.0	290.4	314.5	283.7	468.0	823.7
Total	3,259.0	3,837.4	1,364.8	1,422.1	1,863.2	1,895.1	2,343.4

Source: River Boards, s. e.

Chart 6.2.6**Development of capital construction in River Boards, state enterprises, in 2005–2018**

Source: MoA, River Boards, s. e.

Chart 6.2.7**Structure of the use of investment funds by resource types in River Boards, state enterprises, in 2018**

Source: MoA, River Boards, s. e.

The financial results reached by all River Boards, state enterprises, showed only a profit, totalling CZK 216 million in 2018, which means a year-on-year drop by almost 36% to CZK 121 million.

Table 6.2.10

Economic results of River Boards, state enterprises, (profit, loss) in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	in thousands of CZK						
Elbe	21,488	770	12,100	16,471	22,026	60,276	22,880
Vltava	25,088	14,495	16,022	16,038	13,711	73,880	49,221
Ohře	11,284	12,624	13,008	20,300	27,422	169,652	73,346
Oder	15,247	16,603	13,718	12,495	20,845	22,291	53,053
Morava	5,114	6,200	7,786	18,830	112,916	11,721	17,875
Total	78,221	50,692	62,634	84,134	196,920	337,820	216,375

Source: River Boards, s. e.

Table 6.2.11

Allocation of profit of River Boards, state enterprises, for 2018

River Board, s. e.	Profit	Allocation of profit or loss					
		Reserve Fund	Social Welfare Fund	Investment Fund	Social Fund	Remuneration Fund	Accumulated losses from previous years
		thousands of CZK					
Elbe	22,880	830	17,000	0	50	5,000	0
Vltava	49,221	19,191	15,000	0	30	15,000	0
Ohře	73,346	60,516	12,830	0	0	0	0
Oder	53,053	19,303	16,100	0	150	17,500	0
Morava	17,875	1,788	8,507	0	0	7,580	0

Source: River Boards, s. e.

In comparison with 2017 the number of employees rose by six, meaning a total of 3,571 employees worked for River Boards in 2018. In 2018, there was a total of 96 audits. The audits have not detected any serious deficiencies.

Table 6.2.12

Average salaries in River Boards, state enterprises, in 2012–2018

River Board, s. e.	2012	2013	2014	2015	2016	2017	2018
	CZK/month						
Elbe	29,540	30,293	30,823	31,596	32,538	33,653	35,050
Vltava	29,285	29,808	29,809	30,398	31,087	31,550	32,740
Ohře	31,335	31,698	32,312	33,242	33,505	34,541	37,079
Oder	28,714	29,458	30,083	31,133	31,787	32,629	34,409
Morava	25,756	26,479	26,668	27,167	28,392	29,782	32,464
Average monthly salary in River Boards, s. e.^{*)}	28,942	29,574	29,932	30,650	31,497	32,357	34,221

Source: River Boards, s. e.

Note: ^{*)} Calculated using weighted average.

6.3 Forests of the Czech Republic, state enterprise

Forests of the Czech Republic, state enterprise, carries out the management of specified minor watercourses and torrents as one of non-production forest functions. In 2018, it administered more than 38.5 thousand km of watercourses and 905 small water reservoirs.

Watercourse management carried out by Forests of the Czech Republic, s. e. includes the management of non-current assets relating to watercourses, with an acquisition value of CZK 6.037 billion. Watercourse management was performed by seven watercourse administrators with territorial responsibility according to the respective river basin districts. The watercourse management is carried out by seven Watercourse Administrations, with territorial responsibility according to the respective river basin districts. Forests of the Czech Republic expended 568.5 million CZK in connection with watercourse management and water reservoirs in 2018, of which investment costs accounted for CZK 222.2 million, CZK 346.3 million was expended on management of preselected small watercourses and repairs and maintenance of the relevant property.

Revenues from surface water abstractions intended to watercourse management costs amounted to CZK 15.5 million in 2018.



Construction of a Small Hydroelectric Power Plant Veletov (source: Elbe River Board, s. e.)

Table 6.3.1

Revenues of Forests of the Czech Republic, state enterprises, from surface water in 2008–2018

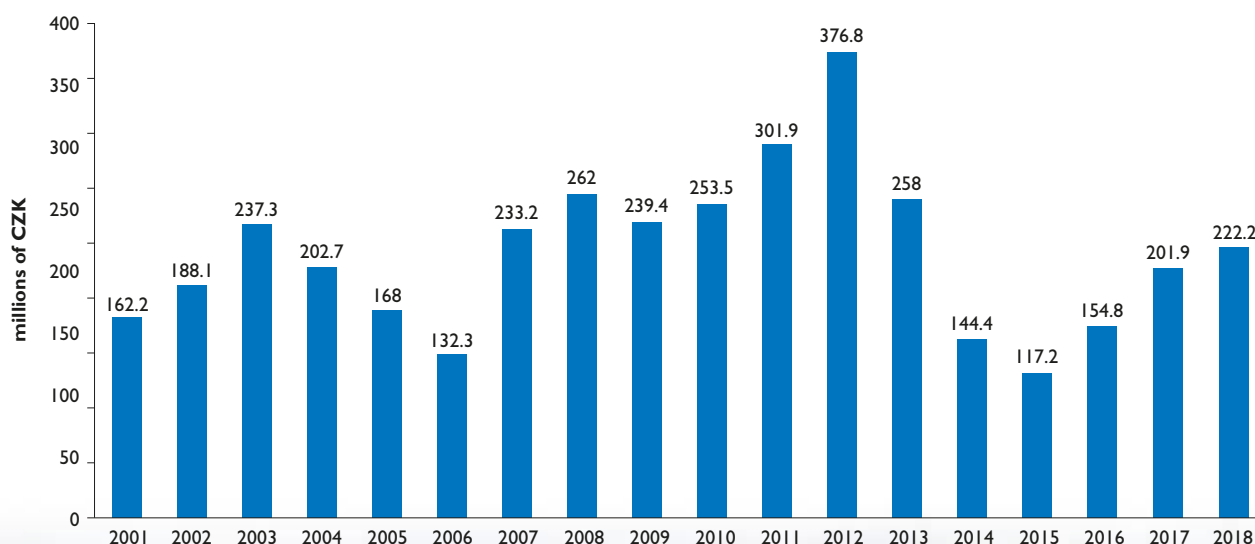
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	thousands of CZK										
Revenues	10,380	10,542	11,239	12,969	13,679	12,211	11,544	10,682	13,192	15,106	15,481
Price per m ³ *)	1,50	1,55	1,6	1,9	1,96	2,00	2,05	2,06	2,26	2,52	2,65

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

Note: *) Unit price per m³ excluding VAT.

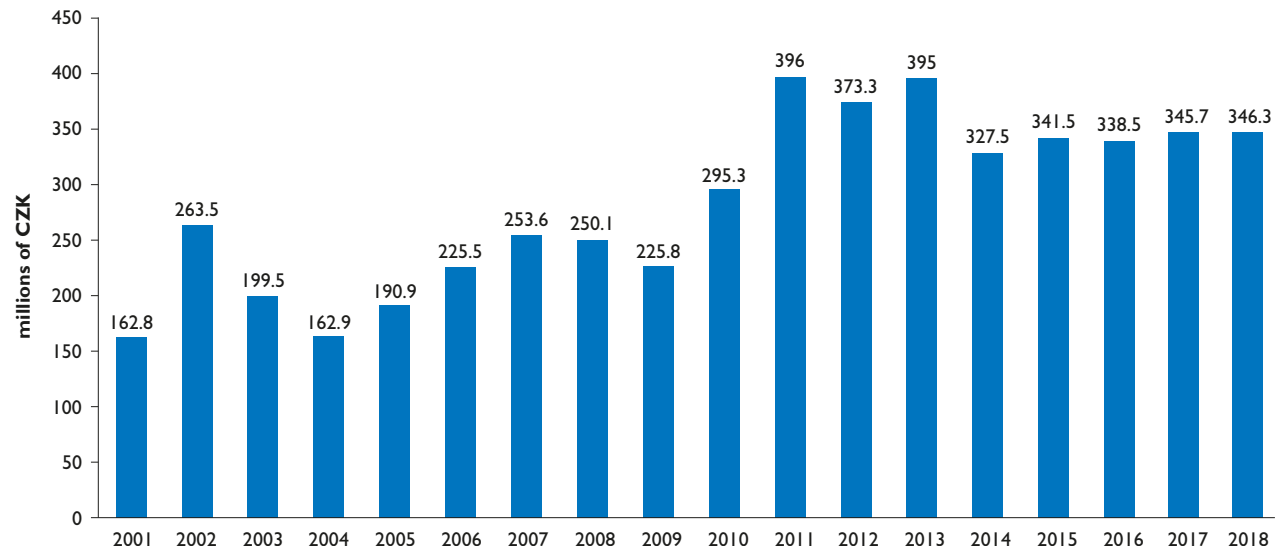
Chart 6.3.1

Investment costs of Forests of the Czech Republic, s. e., in 2001–2018 – water management



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

Chart 6.3.2
Expenses of Forests of the Czech Republic, s. e., in 2001–2018 – repairing and maintenance of watercourses and water reservoirs (full costs)



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



The Revitalization of the Všetatský Stream (source: Forest of the Czech Republic, s. e.)

6.4 Land consolidation, structures used for amelioration

Land consolidation

Long-term retention of water in the landscape and anti-erosion protection (building ponds, small water reservoirs, marshes and elements ensuring anti-erosion protection) is currently the main priority of land consolidation. Land consolidation since 1991 encompassed implementation of water management measures on an area of almost 565 ha and anti-erosion measures on an area of approximately 793 ha. Water management measures for approximately CZK 201 million and anti-erosion measures for more than CZK 58 million were implemented as part of land consolidation in 2018.



The Nechanice Dam, the drought (source: Ohře River Board, s. e.)

Table 6.4.1
Use of funds for land consolidation measures in 2018

Non-investment activities		Implementation						Non-investment activities and implementation in total
Total	of which	Total	of which					
	land consolidation proposals		roads	erosion control measures	water management measures	ecological measures	other*)	
thousands of CZK								
502,377	443,941	1,559,475	1,176,818	58,388	200,975	53,333	69,961	2,061,852

Source: State Land Office

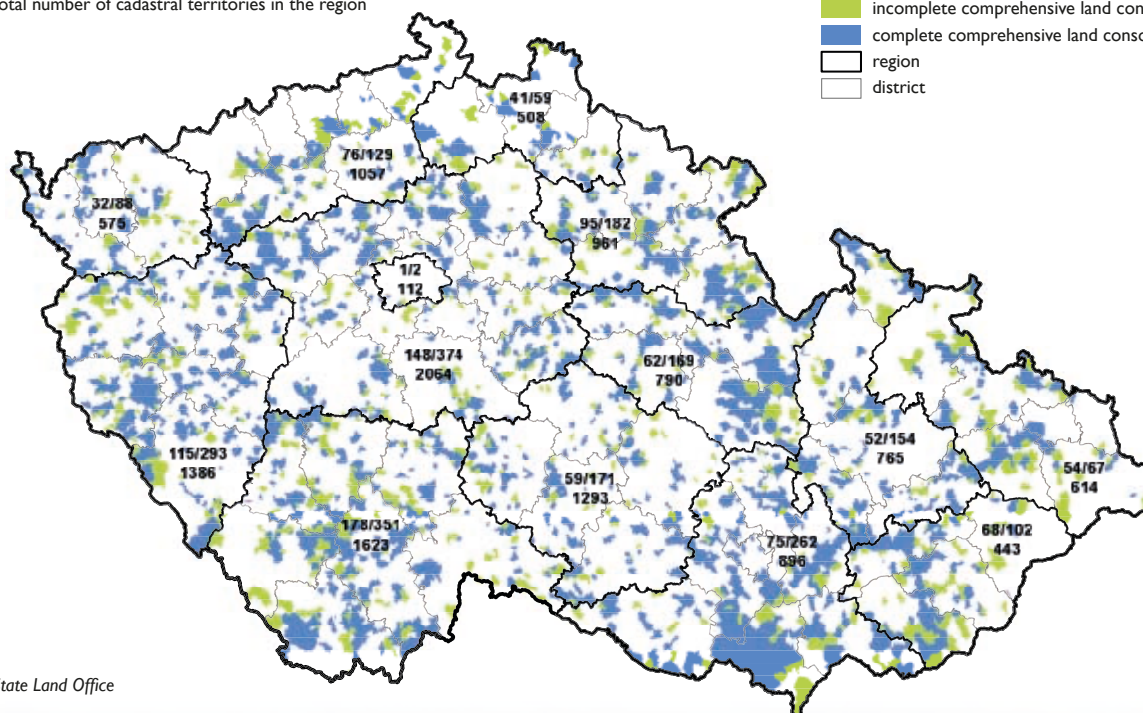
Note: *) Operational and technical activities.

Figure 6.4.1
Overview of comprehensive land consolidation measures by region as at 31 December 2018

32/88 Number of cadastral territories with incomplete/comprehensive land consolidation in the region
575 Total number of cadastral territories in the region

Status of Land Consolidation

- incomplete comprehensive land consolidations
- complete comprehensive land consolidations
- region
- district

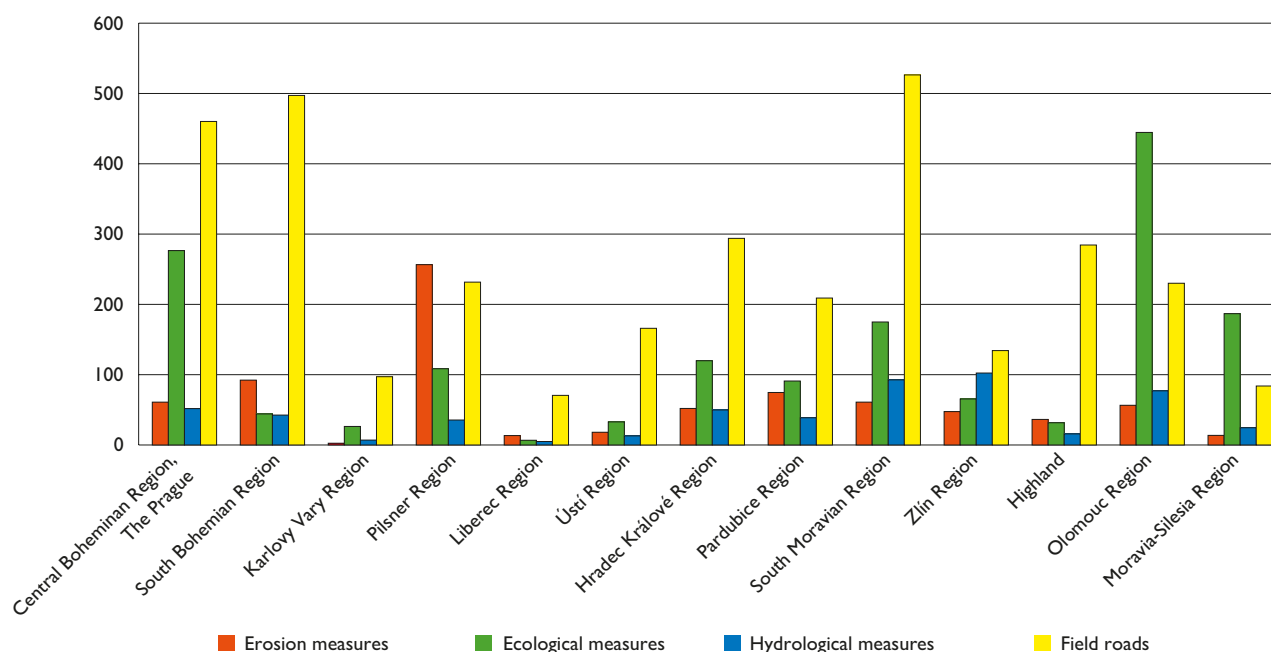


Source: State Land Office

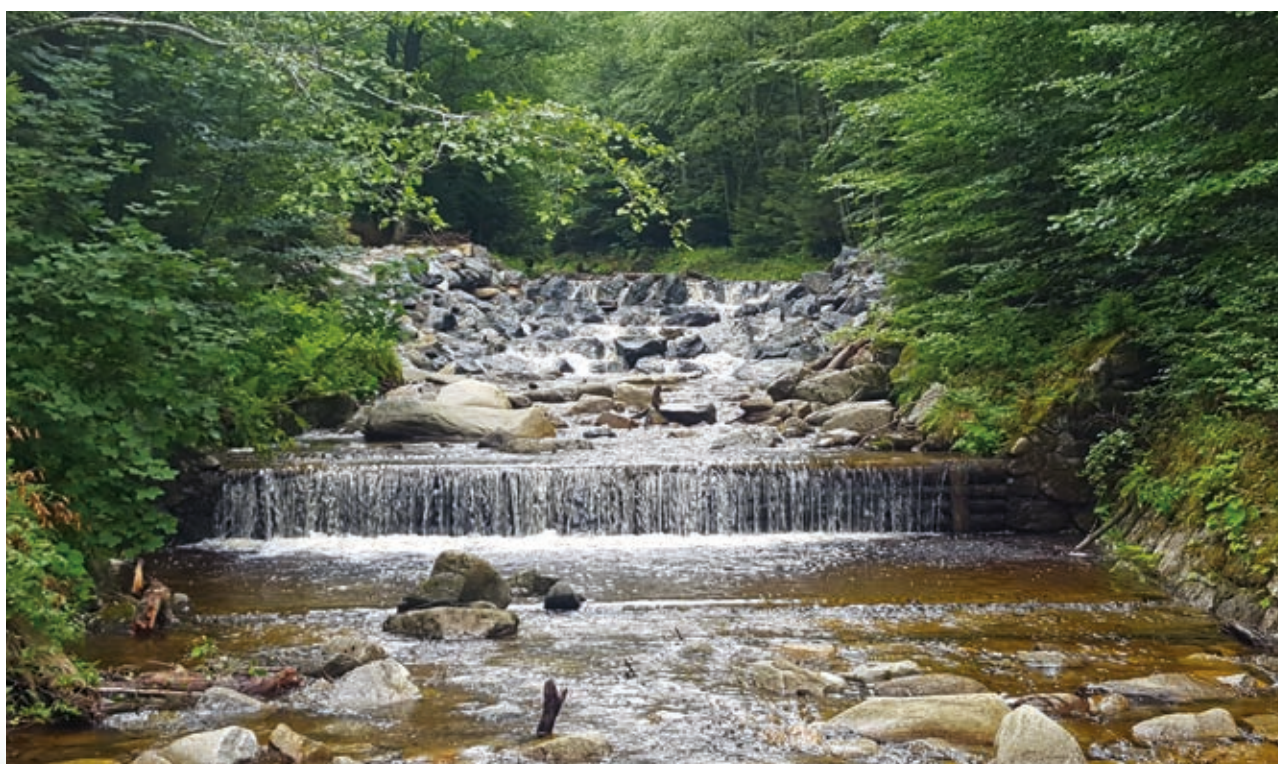
Table 6.4.2**Implemented joint measures in total – in the Czech Republic by 31 December 2018**

Measure	Anti-erosion measures	Environmental measures	Water management measures	Length
	(ha)			(km)
Total	793.05	1,622.91	564.62	3,300.76

Source: State Land Office

Chart 6.4.1**Implemented joint measures in land adjustment by regions by 31 December 2018**

Source: State Land Office



The Hučivá Desná River (source: Forest of the Czech Republic, s. e.)



Lock and Dam, Nymburk (source: Elbe River, s. e.)

Structures used for amelioration

In 2018, the State Land Office expended CZK 53.6 million from the MoA state budget section on management, maintenance and operation of amelioration structures on state-owned land and the authority to carry out the management. Maintenance and repair costs reached a total of CZK 33.6 million, costs for ensuring the operation of pumping (drainage and irrigation) stations including the consumption of electric power were CZK 20 million.

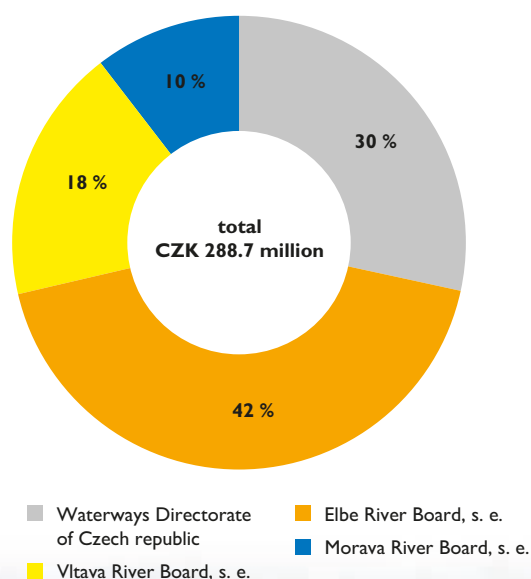


The Vrané na Vltavě Dam - Large Lock Chamber, the View of the Upper Gate (author: Březina Karel)

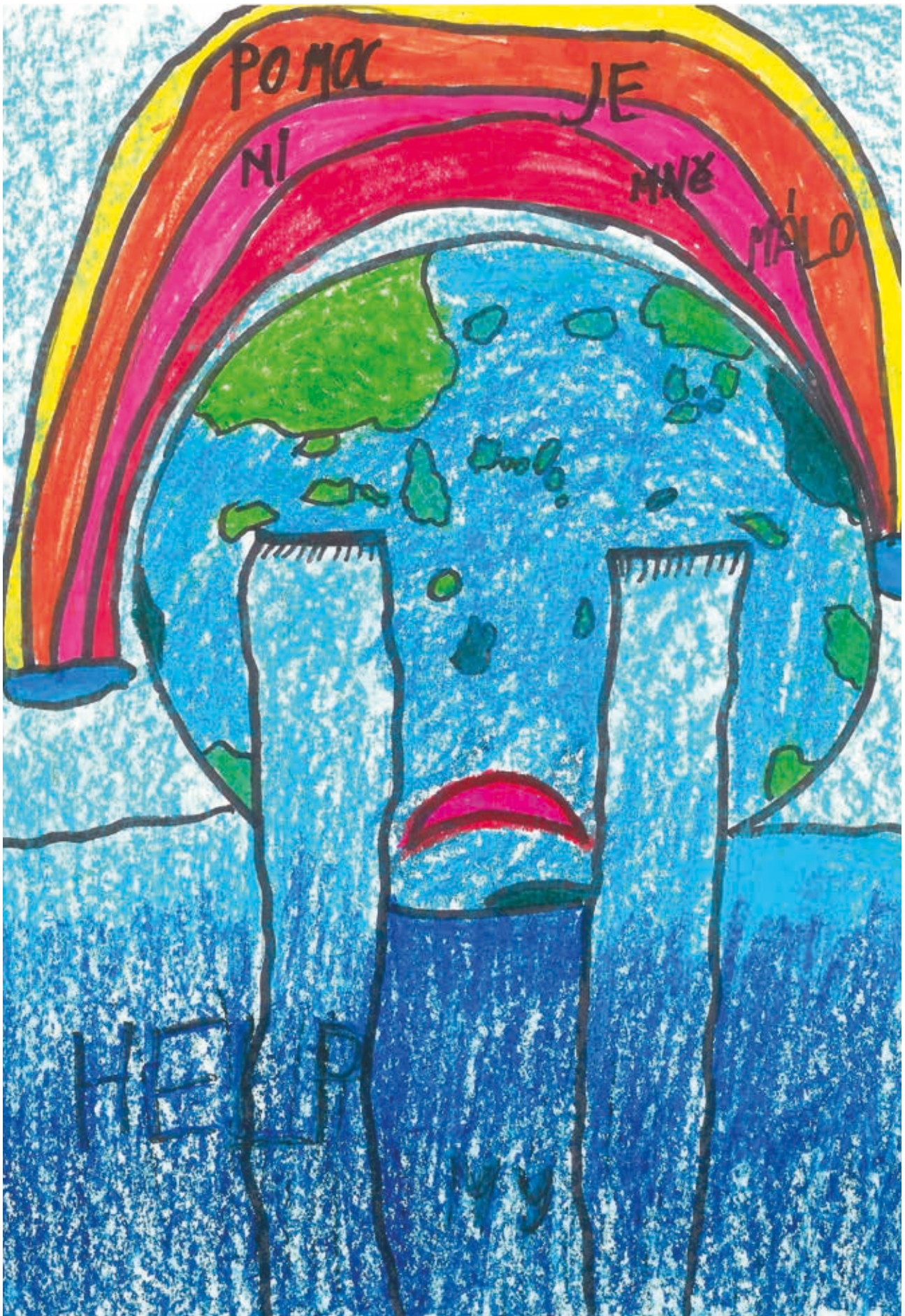
6.5 Waterways

Pursuant to Act No. 114/1995 Coll., on Inland Navigation, as amended, the management of the development and modernization of waterways of importance to shipping is in the competence of the Ministry of Transport. This activity concerns, in particular, the management of the development of the Elbe-Vltava waterway, which is the most important waterway system in the Czech Republic and is the only navigable connection between the Czech Republic and the West European waterway system.

Chart 6.5.1
Funds expended on significant waterways in 2018



Source: MoA using data provided by River Boards, s. e., and the Ministry of Transport



Marie Michalíková – Help, I'm Scarce for Everyone. Save! – Primary school Šímanovská – City of Prague

7. PUBLIC WATER SUPPLY AND SEWERAGE SYSTEMS

7.1 Drinking water supply

In 2018, water supply systems supplied water to 10.064 million inhabitants in the Czech Republic, i. e. 94.7% of the total population.

In 2018, water consumption increased. Specific quantity of water invoiced in total increased by 1.8 l/person/day to 133.2 l/person/day, whereas water invoiced to households increased by 0.5 l/person/day to 89.2 l/person/day.

Table 7.1.1
Water supply from water supply systems in 1989 and 2013–2018

Indicator	Measurement unit	1989	2013	2014	2015	2016	2017	2018
Inhabitants (mean)	thousand inhabitants	10,364	10,511	10,525	10,543	10,565	10,584	10,626
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537.0	9,854.4	9,917.2	9,929.7	9,972.5	10,027.4	10,064.1
	%	82.4	93.8	94.2	94.2	94.4	94.7	94.7
Water produced by water supply systems	million m ³ /year	1,251.0	600.2	575.4	599.6	593.3	603.8	609.7
	% as of 1989	100.0	48.0	46.0	47.9	47.4	48.3	48.7
Water invoiced in total	million m ³ /year	929.4	471.8	468.7	476.8	478.9	482.0	490.4
	% as of 1989	100.0	50.8	50.4	51.3	51.5	51.9	52.8
Specific consumptive use of water produced	l/person/day	401.0	166.8	158.9	165.4	162.5	164.9	165.9
	% as of 1989	100.0	41.6	39.6	41.2	40.5	41.1	41.4
Specific quantity of water invoiced in total	l/person/day	298.0	131.1	129.4	131.5	131.2	131.7	133.5
	% as of 1989	100.0	44.0	43.4	44.1	44.0	44.2	44.7
Specific quantity of water invoiced for households	l/person/day	171.0	87.1	87.3	87.9	88.3	88.7	89.2
	% as of 1989	100.0	50.9	51.0	51.4	51.6	51.8	52.2
Water losses per 1 km of water mains	l/km/day	16,842.0 ^{*)}	3,856.9	3,417.2	3,519.3	3,167.9	3,409.4	3,303.5
Water losses per 1 inhabitant supplied	l/person/day	90.0 ^{*)}	29.5	26.5	27.3	24.7	26.7	25.8

Source: Czech Statistical Office

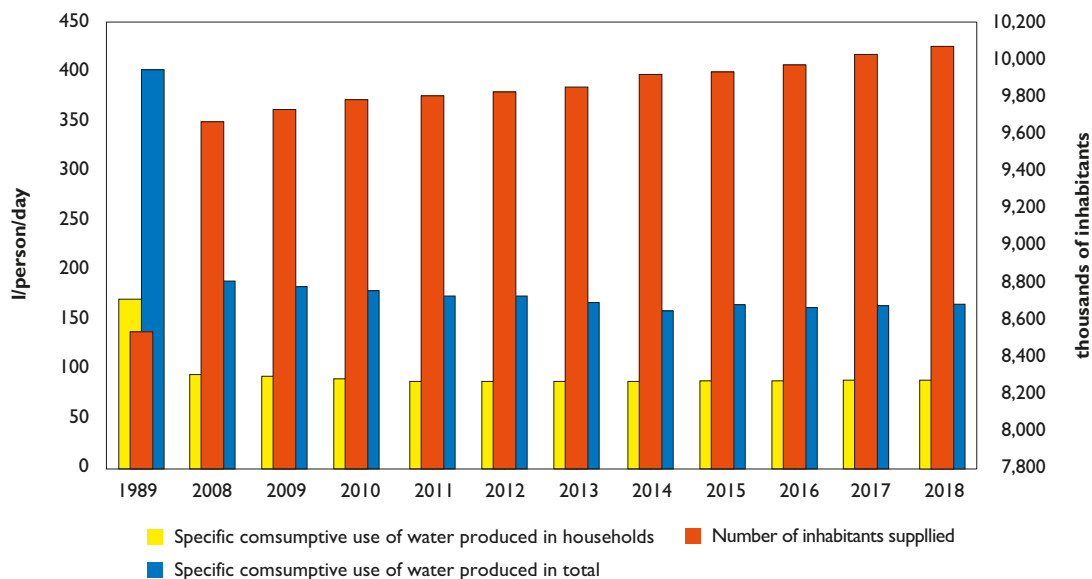
Note: ^{*)} Data for water supply systems run by the main operators.



The Pearl (author: Soukup Petr)

Chart 7.1.1

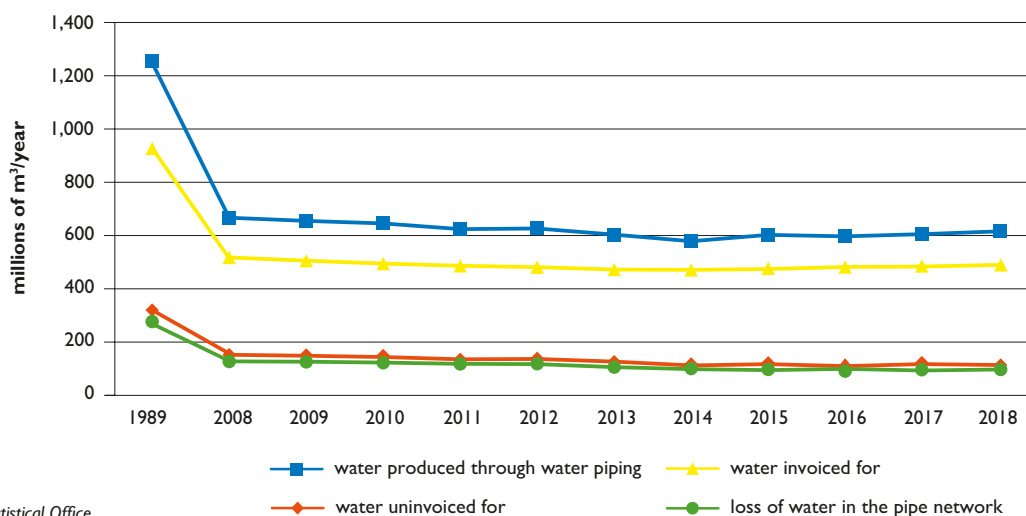
Development in the number of population supplied with water, specific needs for water produced and specific amount of water invoiced to households in 1989 and 2008–2018



Source: Czech Statistical Office

Chart 7.1.2

Development in the quantity of water produced in water supply systems and water invoiced in total in 1989 and 2008–2018



Source: Czech Statistical Office



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

Table 7.1.2**Population supplied, production and supply of water from the water supply system in 2018**

Region	Population		Water from water supply system	Water invoiced for	
	supplied with water from water supply system	share of population supplied with water		total	of which for households
	(number)	(%)		(thousands of m ³)	
City of Prague	1,301,135	100.0	105,897	82,653	51,077
Central Bohemia	1,175,961	86.4	60,700	53,984	37,855
South Bohemia	577,793	90.2	33,694	26,117	17,746
Pilsen	502,709	86.3	31,529	25,344	16,224
Karlovy Vary	295,285	100.0	19,483	14,525	9,340
Ústí	801,619	97.7	50,348	37,926	26,803
Liberec	408,256	92.4	25,673	18,654	13,044
Hradec Králové	524,177	95.2	31,370	23,763	15,396
Pardubice	505,508	97.4	27,847	22,805	14,699
Vysočina	487,517	95.8	24,448	21,842	14,449
South Moravia	1,126,858	95.1	64,160	56,255	38,195
Olomouc	587,068	92.8	28,892	25,882	17,819
Zlín	566,821	97.2	29,816	23,708	15,667
Moravia-Silesia	1,203,424	99.9	75,836	56,989	39,473
Czech Republic	10,064,131	94.7	609,692	490,447	327,787

Source: Czech Statistical Office

In 2018, the length of water supply network was extended by 166 km and reached the total length of 78,750 km. New construction of new water supply systems and completion of the existing ones thus resulted in 2018 in an increase in the number of inhabitants supplied by water by 36,754. The length of water supply network per one inhabitant supplied was 7.82 m.

7.2 Discharge and treatment of municipal wastewaters

In 2018, a total of 9,090 million people in the Czech Republic lived in buildings connected to sewerage systems, i.e. 85.5 % of the total population. In total, 457.3 million m³ of wastewaters (excluding rainwater charged for) were discharged into sewerage systems. Out of this quantity, 97.6% of wastewaters were treated (excluding rainwater), which amounts to 446.3 million m³.

Table 7.2.1**Discharge and treatment of wastewaters from sewerage systems in 1989 and 2013–2018**

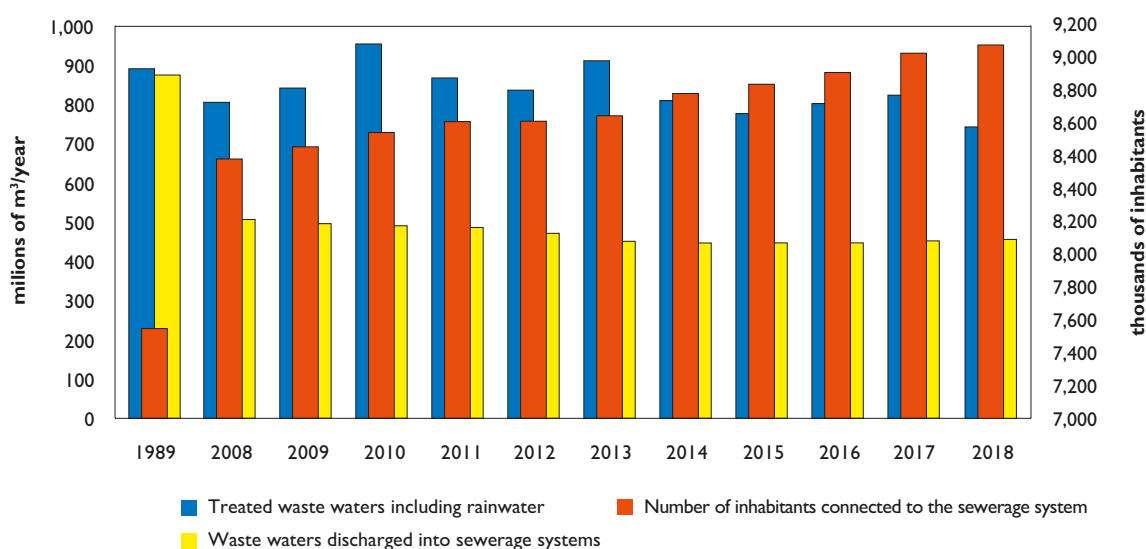
Indicator	Measurement unit	1989	2013	2014	2015	2016	2017	2018
Inhabitants (mean)	thousands of inhabitants	10,364	10,511	10,525	10,543	10,565	10,584	10,626
Inhabitants living in buildings connected to sewerage systems	thousands of inhabitants	7,501	8,705	8,828	8,882	8,944	9,052	9,090
	%	72.4	82.8	83.9	84.2	84.7	85.5	85.5
Wastewaters discharged to sewerage systems (excluding rainwater charged for) in total	million m ³	877.8	455.3	446.1	445.5	446.9	453.3	457.3
	% as of 1989	100.0	51.9	50.8	50.8	50.9	51.6	52.1
Treated wastewaters including rainwater ¹⁾	million m ³	897.4	912.3	812.2	779.0	803.4	826.2	743.6
Treated wastewaters in total excluding rainwater	million m ³	627.6	443.4	432.3	432.0	434.9	442.2	446.3
	% as of 1989	100.0	70.6	68.9	68.8	69.3	70.5	71.1
Percentage of treated wastewaters excluding rainwater ²⁾	%	71.5	97.4	96.9	97.0	97.3	97.5	97.6

Source: Czech Statistical Office

Note: ¹⁾ In 1989, the data related to sewerage systems run by the main operators.²⁾ This percentage relates to waters discharged to sewerage systems (excluding rainwater charged for).

Chart 7.2.1

Development in the number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated wastewaters in 1989 and 2008–2018



Source: Czech Statistical Office

Table 7.2.2

Inhabitants living in houses connected to the sewerage systems and volume of treated wastewater by regions in 2018

Region	Population residing in houses connected to sewerage system		Wastewaters discharged in sewerage system (without rainwater charged for)	Treated wastewaters excluding rainwater	
	Total	Share of total population	Total	Total	Share
	(number)	(%)	(thousands of m³)	(thousands of m³)	(%)
City of Prague	1,288,421	99.0	81,053	81,053	100.0
Central Bohemia	1,011,970	74.4	50,289	50,100	99.6
South Bohemia	557,797	87.0	27,319	26,278	96.2
Pilsen	502,686	86.3	29,048	27,807	95.7
Karlovy Vary	295,285	100.0	13,349	13,338	99.9
Ústí	686,997	83.7	29,838	29,537	99.0
Liberec	307,532	69.6	14,411	14,202	98.5
Hradec Králové	434,712	78.9	20,836	20,134	96.6
Pardubice	387,245	74.6	18,087	17,914	99.0
Vysočina	445,683	87.6	18,965	17,093	90.1
South Moravia	1,064,552	89.9	52,827	52,171	98.8
Olomouc	539,395	85.3	27,199	26,571	97.7
Zlín	566,648	97.2	26,455	24,475	92.5
Moravia-Silesia	1,001,076	83.1	47,646	45,632	95.8
Czech Republic	9,089,999	85.5	457,320	446,306	97.6

Source: Czech Statistical Office

7.3 Development of water and sewerage charges

Based on the survey carried out by the Czech Statistical Office, the average price of water charge excluding VAT amounted to 38.10 CZK/m³ and the average price of sewerage charge amounted to 33.40 CZK/m³ in 2018.



On the run (author: Soukup Petr)

Table 7.3.1
Strike prices of water and sewerage charges in 2017 and 2018

Indicator	Measurement unit	2017	2018	Index 2018/2017
Water rates in total	millions of CZK	17,948	18,692	1.04
Water invoiced in total	millions of m ³ /year	482.0	490.4	1.02
Average price of water rate	CZK/m ³ excl.VAT	37.2	38.1	1.02
Sewerage charges in total	millions of CZK	17,192	17,676	1.03
Wastewaters discharged to sewerage systems*	millions of m ³ /year	524.2	529.1	1.01
Average price of sewerage rate	CZK/m ³ excl.VAT	32.8	33.4	1.02

Source: Czech Statistical Office

Note: *) from 2013 including rainwater charged for.

Table 7.3.2
Water consumption, average prices of water and sewerage charges excluding VAT in 2018

Region	Specific quantity of water invoiced in total	Specific quantity of water invoiced to households	Average price of water rate	Average price of sewerage charge
	l/person/day		CZK/m ³ excl.VAT	
City of Prague	174.0	107.5	42.0	34.0
Central Bohemia	125.8	88.2	40.9	33.1
South Bohemia	123.8	84.1	37.0	29.4
Pilsen	138.1	88.4	39.2	27.8
Karlovy Vary	134.8	86.7	38.2	35.6
Ústí	129.6	91.6	43.4	41.7
Liberec	125.2	87.5	44.2	42.5
Hradec Králové	124.2	80.5	34.9	34.2
Pardubice	123.6	79.7	34.1	36.2
Vysočina	122.7	81.2	37.1	28.3
South Moravia	136.8	92.9	34.5	34.5
Olomouc	120.8	83.2	33.1	32.1
Zlín	114.6	75.7	35.8	30.8
Moravia-Silesia	129.7	89.9	34.4	31.5
Czech Republic	133.5	89.2	38.1	33.4

Source: Czech Statistical Office

7.4 Regulation in water supply and sewerage systems

Auditing activity of the Ministry of Agriculture ensured by the department of water management supervision and regulation focused in 2018 on performing duties of owners and operators of water supply and sewerage systems arising from Act No. 274/2001 Coll., on public water supply and sewerage systems, as amended, and Decree No. 428/2001 Coll. A total of 42 audits were performed in 2018.

Table 7.4.1
Number of audits carried out at W&S owners and operators in 2018

Entities audited	No. of audits
Water supply and sewerage system owners	11
– of which towns and municipalities	6
Water supply and sewerage system owners the are also operators	19
– of which towns and municipalities in the mode of independent operation	10
Water supply and sewerage system operators	12
– of which towns and municipalities in the mode of independent operation	3
Total	42

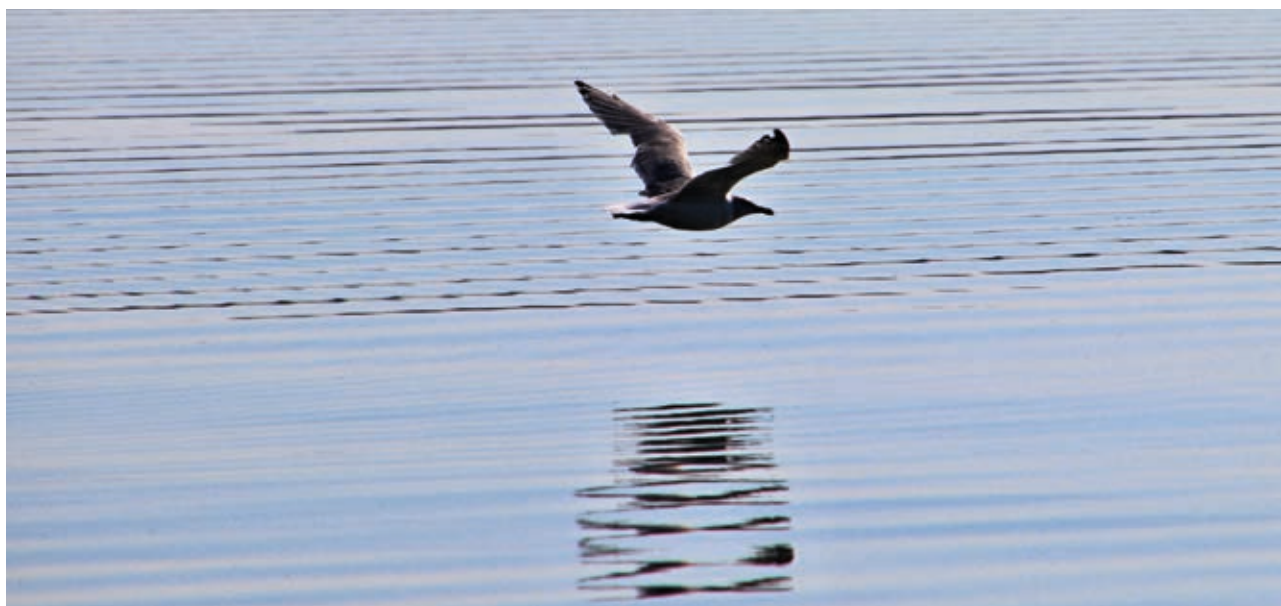
Source: MoA



The Baška Dam (source: Oder River Board, s. e.)



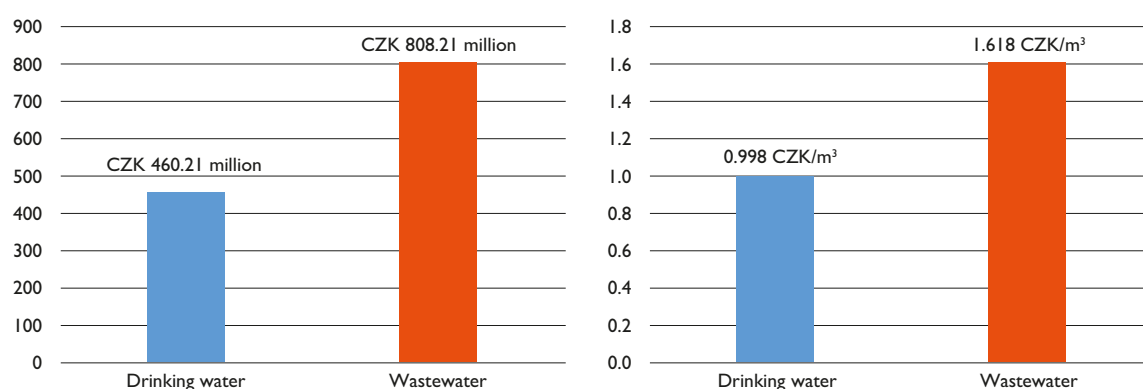
The Kružberk Dam (source: Oder River Board, s. e.)



Flight over the Nechranice Dam (source: Ohře River Board, s. e.)

Chart 7.4.1

Total of missing funds for restoration in 2018 (in millions of CZK), recalculated per 1 m³ of invoiced water (CZK/m³)



Source: MoA

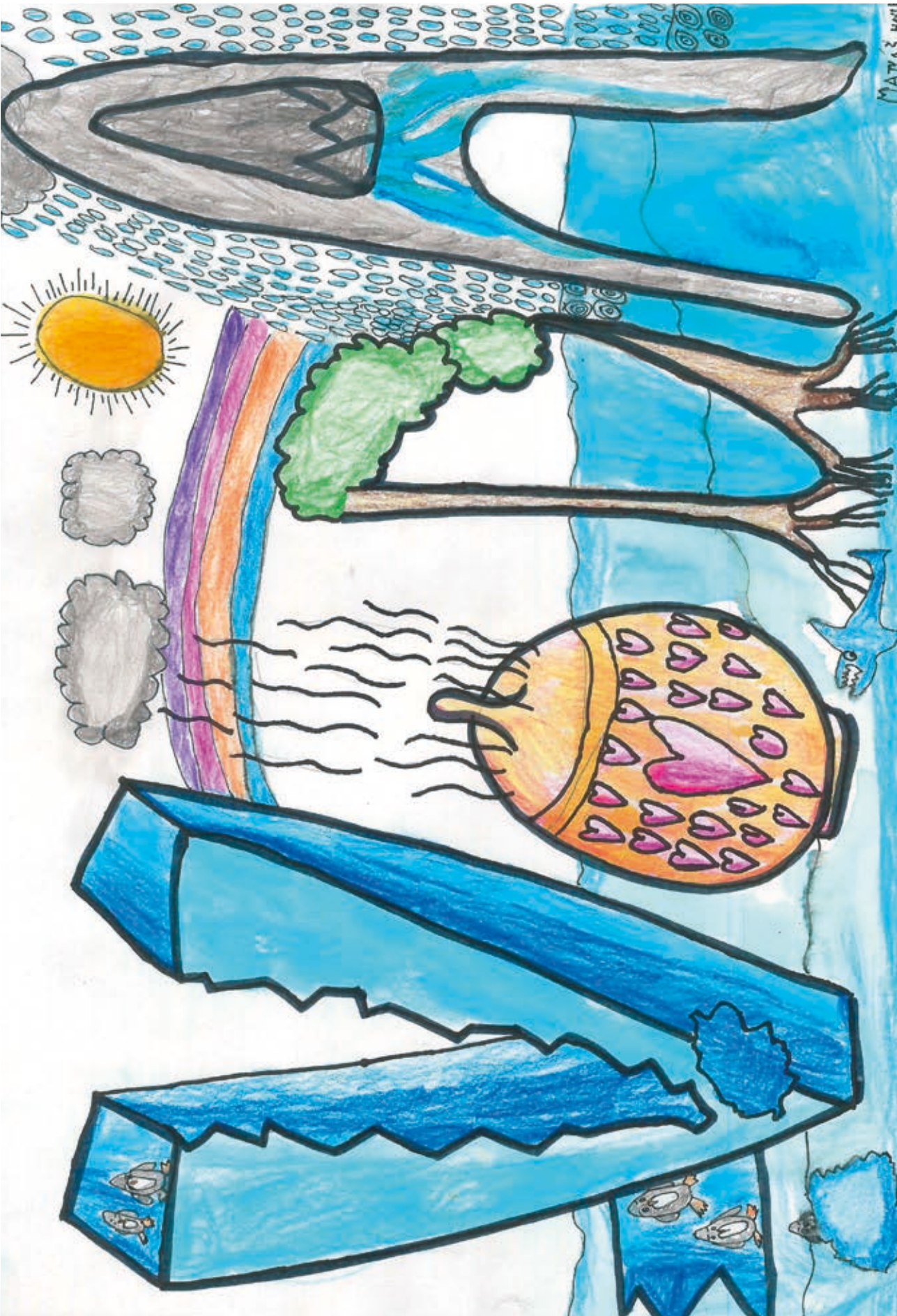
Note: Data from the analysed section of the market (drinkable water 461.355 million m³; wastewater 499.502 million m³ of invoiced water)

Table 7.4.2

Overview of the most significant anomalies in the analysed data from 2018

Anomaly (data, relation, state that differs significantly from mean or average value, state, relation and/or signals a breach of valid legislation and prevents regulation objectives from being achieved)	Share of analysed market (% of the total amount of invoiced water)	
	Drinkable water (461.355 million m ³)	Wastewater (499.502 million m ³)
Benchmarking of owners		
High number of failures per km of distribution/sewerage network	43.68	42.77
Insufficient creation of funds for restoration	11.48	13.94
Not reporting values in line. 20	6.24	6.93
Benchmarking of operators		
High degree of calculation profit to be distributed at ÚVN	23.43	17.50
Negative calculation profit	6.24	7.36
High losses of drinkable water per km of recalculated length of the distribution network	23.28	-
Erroneous reporting of inhabitants connected to WWTP	-	2.87

Source: MoE



Matyáš Havlena – How the Water spins – Primary school and Nursery school Bystřec – Pardubice Region

8. FISHERIES AND FISHPOND MANAGEMENT

At present, there are approximately 24 thousand fishponds and water reservoirs with total surface area of approximately 52 thousand ha in the Czech Republic. 21,751 tonnes of marketable fish were caught in the Czech Republic in 2018.



Fish Harvest of the Podhradský Pond (author: Chmelař Petr)



Fight for Time with the Sun, The Měřovice nad Hanou Pond (author: Jurek Lukáš)

Table 8.1.2

Use of marketable fish produced by fish farming in the Czech Republic in 2010-2018

Year	Total production	of which ^{*)}		
		sale of live fish in the Czech market	processed fish (live weight)	export of live fish
		thousands of tonnes		
2010	20.4	9.5	1.8	9.1
2011	21.0	9.7	2.1	8.8
2012	20.8	9.5	2.3	8.6
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

Source: MoA and Czech Fish Farmers Association

Note: ^{*)} Including inventory at the beginning and at the end of the year, losses and import of live freshwater fish.

Table 8.1.3

Fish consumption in the Czech Republic in 2010-2018

Species	2010	2011	2012	2013	2014	2015	2016	2017	2018
	kg/person/year								
Fish in total	5.6	5.4	5.7	5.3	5.4	5.5	5.1	5.4	^{*)}
of which freshwater fish produced and caught in the Czech Republic	1.4	1.5	1.5	1.4	1.3	1.4	1.3	1.3	1.3

Source: Czech Statistical Office and Czech Fish Farmers Association

Note: ^{*)} Data for 2017 are not available.



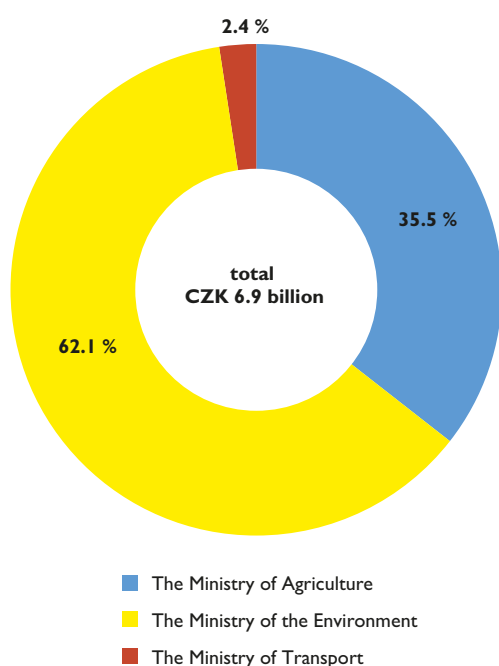
Nela Vrabcová – Water for All – Primary school Údlice – Ústí Region

9. FINANCIAL SUPPORT FOR WATER MANAGEMENT

9.1 Financial support

Financial support for water management includes selected national and transnational grant programmes linked with water management. In 2018, this support amounted to CZK 6.9 billion with the Ministry of Agriculture contributing to the sum with almost 35% (subsidies amounting almost to CZK 2.5 billion), the Ministry of the Environment with 62% (i.e. almost CZK 4.3 billion) and the Ministry of Transport with 2.4% (CZK 0.165 billion).

Chart 9.1.1
Financial support for water management by ministries in 2018

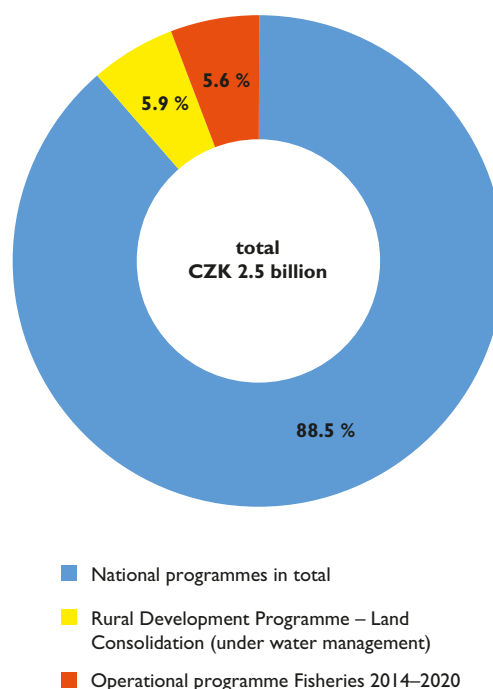


Source: MZe using the data provided by MoE, State Environmental Fund, State Fund for Transport Infrastructure

9.1.1 Financial support provided by the Ministry of Agriculture

The Ministry of Agriculture administered nine grant programmes focused on water management in 2018. Seven programmes were national and two were funded from national and transnational funds. The funds used amounted to a total of CZK 2.45 billion.

Chart 9.1.1.1
Use of funds under the Ministry of Agriculture in 2018



Source: MoA



The right bank tributary of the Holoubkovský stream (source: Forest of the Czech Republic, s. e.)

Table 9.1.1.1**State funds provided by the Ministry of Agriculture in 2018 under programme support**

Programme No.	Name of the programme	Programme expenditures in millions of CZK
129 250	Support of Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure	596.8
129 300	Support of Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure II	
129 260	Flood prevention III	818.0
129 290	Support for Measures at Fishponds and Small Water Reservoirs	479.7
129 280	Support of Water Retention in the Landscape – Fishponds and Water Reservoirs	185.3
129 310	Support of Competitiveness of Agriculture and Food Processing – Irrigations – Stage II	77.5
17	Support of Extra-production Functions of Fishing Grounds	15
	National programmes in total	2,172.3
	Rural Development Programme – Land Consolidation (under water management)	143.7
	Operational programme Fisheries 2014–2020	137.3
Total		2,453.3

Source: MoA

Water supply and sewerage systems

In 2018, investors received support in the form of grants as well as “subsidised loans”. Under programmes of the Ministry of Agriculture 129 250 “Support for Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure” and 129 300 “Support for Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure II” aimed at implementation of measures to meet the directives of the EU in the field of water supply and sewerage systems and at the development of this sector; the Ministry of Agriculture provided grants amounting to CZK 0.6 billion. Grant programme 129 250 approved for 2013–2018 was terminated on 30 June 2018, follow-up programme 129 300 was approved for 2017–2022.

*The Jahodnice Safety Spillway (source: Elbe River Board, s. e.)***Table 9.1.1.2****State budget funds provided in 2018 under programme 129 250, 129 300 of the Ministry of Agriculture, including subsidy for a part of interest on commercial loans**

Form of support	Water supply systems and water treatment plants	Sewerage systems and wastewater treatment plants	Renovation of water supply systems and sewerage systems after floods	Total
	millions of CZK			
Subsidies under MoA programmes	156.665	430.208	0	586.863
Subsidies for a part of interest on commercial loans	2.571	7.404	0	9.975
Subsidies in total	159.226	437.611		596.837
Refundable financial assistance	0	0	0	0
Total	159.226	437.611		596.837

Source: MoA

Table 9.1.1.3

Development of the state support for construction of water supply systems, water treatment plants, sewerage systems and wastewater treatment plants in 2014–2018 provided by the Ministry of Agriculture

Financial source	2014	2015	2016	2017	2018
	millions of CZK				
Refundable financial assistance	0	0	0	0	0
State budget subsidies	1,448	1,170	1,883	1,683	597
Support from the state budget	1,448	1,170	1,883	1,683	597
Subsidised loan (EIB and CEB)	0	0	0	0	0
Total support	1,448	1,170	1,883	1,683	597

Source: MoA

Flood control

In 2018, programme 129 260 “Support for Flood Prevention III” continued to be implemented. The programme follows the previous stage, while its emphasis is on the implementation of measures with retentive effects. In 2018, 38 projects were funded under this programme with the total funds expended amounting to CZK 818 million.

Remedying flood damage

In the sphere of remedying flood damage, the Ministry of Agriculture registers programme 129 270 “Remedying Flood Damage to State-owned Water Management Property II”, sub-programme 129 272 “Remedying the Impacts of Floods in 2013” that was implemented in 2013–2017. Further use of this programme depends on occurrence of any flood damage to watercourse beds including relevant facilities, water structures and bank vegetation owned by the state. The grant applicants may be River Boards and Forests of the Czech Republic, s. e.

Table 9.1.1.4

Use of funds of the state budget in 2018 under program 129 260 by watercourse administrators

Owners and administrators	Investments	Non-investments
	millions of CZK	
Elbe River Board, s. e.	120.734	0
Vltava River Board, s. e.	76.803	0
Ohře River Board, s. e.	36.550	0
Oder River Board, s. e.	224.912	0
Morava River Board, s. e.	340.695	0
Forests of the Czech Republic, s. e.	14.684	0
Municipalities	3.599	0
Total	817.977	0

Source: MoA



The Vranov Dam, the End of Backwater (author: Hirsch Petr)

Table 9.1.1.5**Use of state budget funds and number of projects funded under programme 129 290 in 2018**

Owners and administrators	Use of funds			No. of funded projects
	Investment	Non-investment	Total	
	in millions of CZK			
Ohře River Board	11.063	21.736	32.798	16
Forests of the Czech Rep.	42.658	18.333	60.991	50
Morava River Board	22.951	58.307	81.258	34
Vltava River Board	34.459	24.130	58.589	46
Oder River Board	6.747	7.794	14.541	10
Elbe River Board	19.860	18.716	38.577	24
129 292 total	137.738	149.016	286.754	180
129 293 total – Municipalities	154.356	38.598	192.954	173
129 290 total	292.094	187.614	479.708	353

Source: MoA

Minor watercourses and small water reservoirs

In 2018, programme 129 290 “Support for Measures at Fishponds and Small Water Reservoirs” continued to be implemented. It is divided in two sub-programmes: 129 292 and 129 293. A total of 353 projects were supported with funds amounting to a total of CZK 480 million.

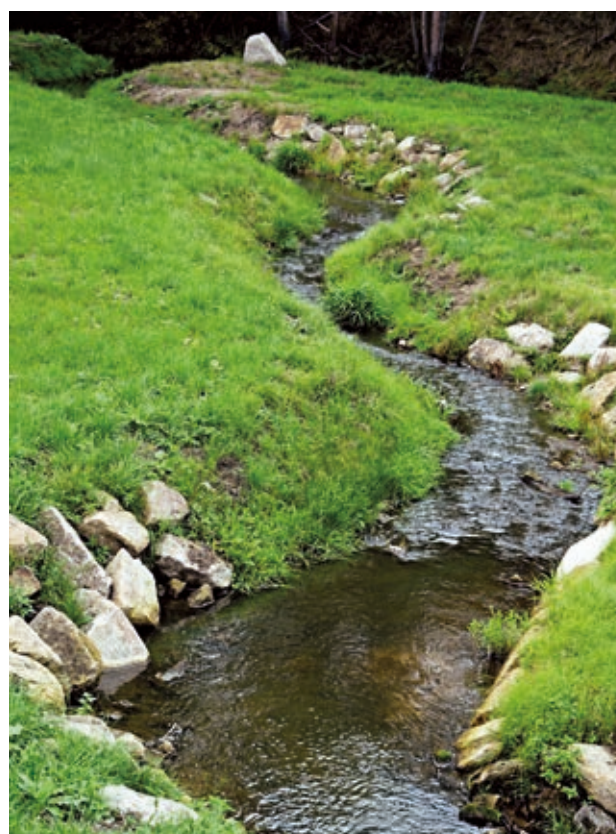
Water in the landscape

In 2018, the Ministry of Agriculture continued to implement programme 129 280 “Support for Water Retention in the Landscape – Fishponds and Water Reservoirs” funded between 2016 and 2021. The funds expended in 2018 supported 27 projects totalling to CZK 185 million.

Table 9.1.1.6**Use of state budget funds under programme 129 280 in 2018**

Sub-programme	No. of projects	Funds
		in millions of CZK
129 282	25	172.340
129 283	2	12.922
129 284	0	0
Total	27	185.262

Source: MoA



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

Table 9.1.1.7**Use of state budget funds under programme 129 310 in 2018**

Sub-programme	No. of projects funded	Funds
		in millions of CZK
129 312	59	77.489
129 313	0	0
Total	59	77.489

Source: MoA

Fisheries

In the sphere of fisheries, the Ministry of Agriculture administers national grant programme DT17 "Support of extra-production functions of fishing districts". In 2018, funds amounting to CZK 15 million supported 37 applications.

Operational programme Fisheries 2014–2020

The Ministry of Agriculture paid from the Operational programme 2014–2020 grants to 149 projects totalling to approx. CZK 137 million in 2018.

Table 9.1.1.8
Operational programme Fisheries 2014–2020

EU priority 2 – Support of environmentally sustainable, innovative and competitive aquaculture based on knowledge and effectively using resources	
Measure No.	Measure
Measure 2.1	Innovation
Measure 2.2	Productive investment in aquaculture
Measure 2.3	Support of new breeders
Measure 2.4	Recirculation devices and flow systems with additional purification
Measure 2.5.	Aquaculture providing environmental services
EU priority 3 – Support for implementing joint fishing policy	
Measure No.	Measure
Measure 3.1	Data gathering
Measure 3.2	Monitoring of products
EU priority 5 – Support for introducing products to the market and processing	
Measure No.	Measure
Measure 5.1	Production plans
Measure 5.2	Introducing products to the market
Measure 5.3	Investment in product processing

Source: MoA

Rural Development Programme

The Rural Development Programme of the Czech Republic for 2014–2020 is based on the Joint Strategic Plan, Partnership Agreement and other strategic documents and it was designed in accordance with Regulation of the European Parliament and of the Council No. 1305/2013. Water managements is partially concerned by this programme by Land consolidation. In 2018, funds amounting to almost CZK 144 million were expended under Operation 4.3.1 Land consolidation.



The Těrlicko (source: Oder River Board, s. e.)

Table 9.1.1.9
Use of funds under Operational Programme Fisheries 2014–2020 in 2018

Measure No.	Measure	No. of projects	Funds paid in millions of CZK
2.1	Innovation	2	1.10
2.2	Productive investment in aquaculture	101	82.19
2.3.	Support of new breeders	2	1.23
2.4	Recirculation devices and flow systems with additional purification	8	29.16
2.5	Aquaculture providing environmental services	2	2.26
3.1.	Data gathering	4	2.14
5.2.	Introducing products to the market	1	0.34
5.3	Investment in product processing	15	15.85
	Technical support	14	3.06
Total		149	137.33

Source: MoA

Table 9.1.1.10**Use of funds under Operation 4.3.1 Land consolidation in 2018**

Operation 4.3.1 Land consolidation	Unit	Intent a) Geodetic work	Intent b) implementing plans of joint facilities	Total	Of which in water management
No. of projects registered	pcs	2	89	91	22
Amount for projects registered	millions of CZK	2.7	1,060	1,063	133
No. of approved projects	pcs	0	107	107	16
Amount for projects approved	millions of CZK	-	1,197	1,197	86
Funded projects	pcs	2	96	98	30
Funded	millions of CZK	5.2	818	823	144

Source: MoA

9.1.2 Financial support provided by the Ministry of the Environment

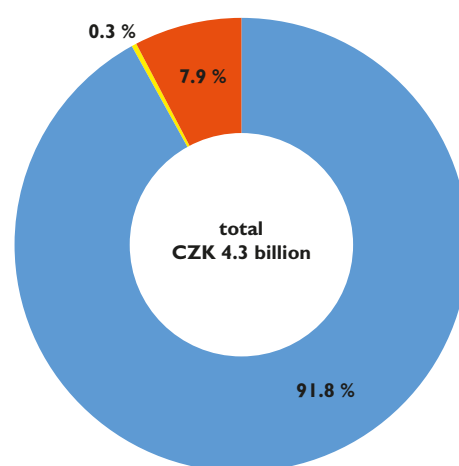
The Ministry of the Environment provided financial support under transnational and national grants in 2018. Financial support from the state budget amounted to CZK 3.96 billion, funds from the State Environmental Fund of the Czech Republic was CZK 0.34 billion. Funds provided under the Ministry of the Environment for water management totalled to CZK 4.3 billion.

Operational Programme Environment 2014–2020

The Ministry of the Environment provides financial support under programmes co-funded from the European Union grants through the Operational Programme Environment. In 2018, funds from the Cohesion Fund and European Regional Development Fund were provided for priority axes I and 4 for water management, totalling to CZK 3.94 billion.

Programme 115 270 “MoE Remedying Damage Caused by Natural Disasters” – funds from the state budget

Under programme 115 270, the State Environmental Fund administers two sub-programmes: 115 272 “MoE Floods 2013” and 115 273 “Remedying Damage Caused by Natural Disasters in 2014”. In sub-programme 115 272 the State Environmental Fund administers 65 applications (external applicants) requesting grants totalling to CZK 148.09 million.

*The Opatovice Dam, after the Reconstruction (source: Morava River Board, s. e.)***Chart 9.1.2.1****Use of funds under the Ministry of the Environment in 2018**

- Operational programme Environment 2014–2020
- Programme 115 270 “MoE Remedying Flood Damage”
- State Environmental Fund of the Czech Republic – total funds provided

Source: MoE, State Environmental Fund

The MoE administers in the sub-programme 21 applications (departmental applicants) requesting grants totalling to CZK 80.52 million. 8 projects were successfully completed in 2018.

In 2018, applications for grants from the Operational Programme “Environment 2014–2020” for water management and protection and care of landscape were received under 14 calls (of which 7 under specific objectives 1.1 to 1.4 and 7 calls under specific objective 4.3 and 4.4). A total of 31 calls were opened in 2018.

The State Environmental Fund of the Czech Republic

The State Environmental Fund (SEF) of the Czech Republic established by Act No. 388/1991 Coll., is a specifically oriented institution which is an important financial resource for support of implementation of measures to protect and improve the status of the environment in its respective compartments. On 31 December 2018 the revenue part of its budget amounted to CZK 2.0 billion.

Table 9.1.2.1**Funds provided for water management by the Ministry of the Environment in 2018**

Name of the programme	Programme expenditures in millions of CZK
Operational programme Environment 2014–2020	3,944.79
Programme I 15 270 “MoE Remedying Flood Damage”	12.53
Ministry of the Environment – total	3,957.32
Programme No. 1.5 “Extension of sewerage systems”	4.34
National programme Environment	160.7
Call No. 2/2016 PU in accordance with Directive of the MoE No. 8/2017 – loans from the State Environmental Fund	173.0
State Environmental Fund of the Czech Republic – total funds provided	338.04
Total funds provided by the two authorities	4,295.36

Source: MoE, State Environmental Fund

Table 9.1.2.2**Projects approved to receive funds under the Operational Programme “Environment 2014–2020” in 2018**

Priority Axis	Area of support	Number	Total costs	Total eligible costs	EU grant
			millions of CZK		
I	I.1	188	12,242.16	10,183.30	6,491.85
	I.2	53	3,859.56	3,190.51	2,033.95
	I.3	54	413.41	337.78	281.30
	I.4	87	460.37	432.42	334.58
Priority Axis I in total		382	16,975.50	14,144.02	9,141.69
4	4.3	124	1,726.24	1,539.79	1,503.06
	4.4	42	83.35	68.86	41.31
Priority Axis 4 in total	166	1,809.59	1,608.65	1,544.37	1,544.37
Total		548	18,785.09	15,752.66	10,686.06

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

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

Table 9.1.2.3**Projects with an issued legal act on providing support from the Operational Programme “Environment 2014–2020” in Water Management in 2018**

Priority Axis	Area of support	Number	Total costs	Total eligible costs	EU Grant
			millions of CZK		
I	I.1	126	8,765.99	7,190.80	4,584.14
	I.2	51	2,350.99	1,986.26	1,266.24
	I.3	49	371.78	297.66	247.48
	I.4	90	397.07	371.46	281.53
Priority Axis I in total		316	11,885.83	9,846.17	6,379.38
4	4.3	224	2,093.73	1,872.37	1,807.35
	4.4	100	200.65	156.39	93.83
Priority Axis 4 in total	324	2,294.38	2,028.76	1,901.18	1,901.18
Total		640	14,180.22	11,874.93	8,280.56

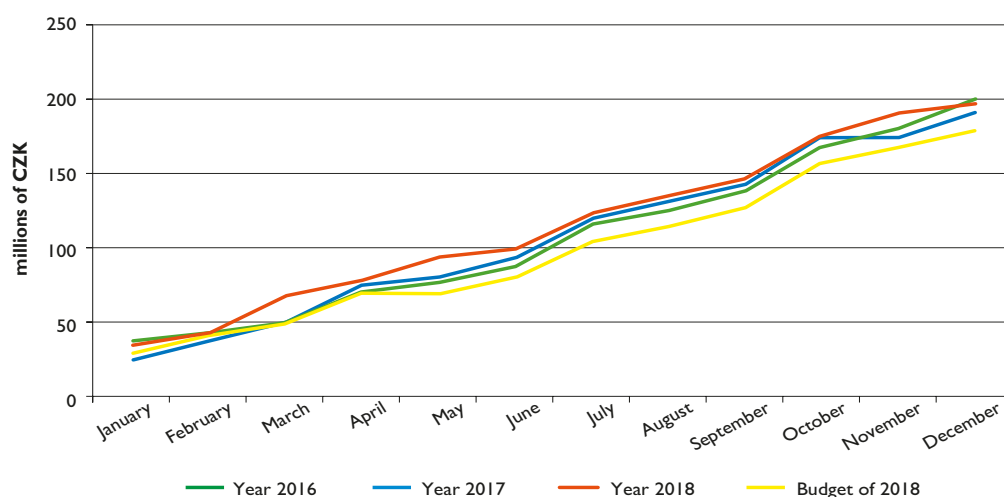
Source: Monitoring System of European Structural and Investment Funds for 2014–2020

Note: Project with an issued permit is a project with a Project registration and Decision on Grant Provision.

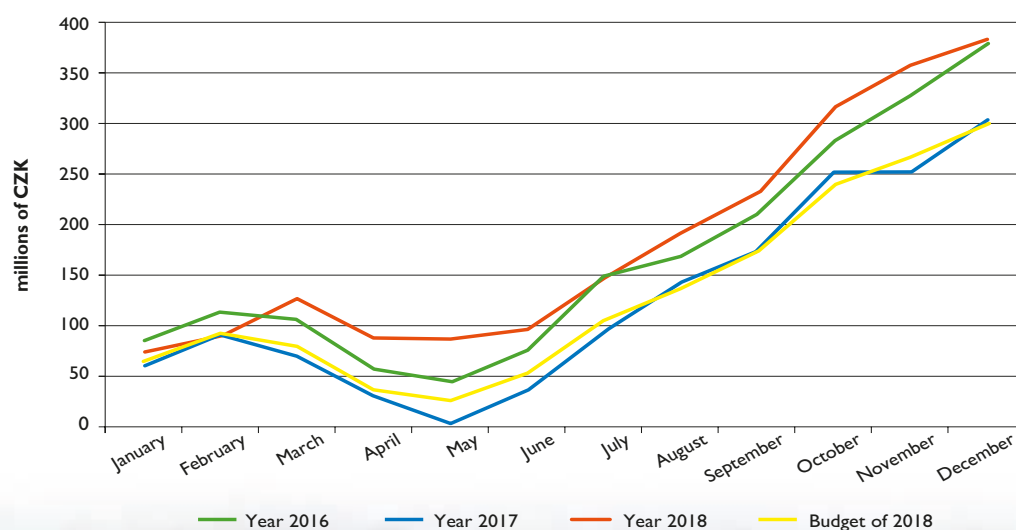
Table 9.1.2.4**Use of funds from the Operational Programme “Environment 2014–2020” in 2018**

Area of support	EU grants millions of CZK
I.1 – To reduce the amount of pollution discharged into surface and ground water from municipal sources and the input of pollutants into surface and groundwater	2,303.43
I.2 – To ensure the supply of drinking water of an adequate quality and quantity	552.65
I.3 – To ensure flood protection of urban areas	169.19
I.4 – Promote flood prevention measures	350.99
Priority Axis I in total	3,376.27
4.3 – To strengthen natural landscape functions	497.60
4.4 – To improve quality of the environment in residential areas	70.92
Priority Axis 4 in total (4.3, 4.4)	568.52
Total	3,944.79

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

Chart 9.1.2.2**Development of revenues from charges for wastewater in 2016–2018**

Source: State Environmental Fund

Chart 9.1.2.3**Development of revenues from charges for groundwater in 2016–2018**

Source: State Environmental Fund

Table 9.1.2.5
Structure of the revenue part of the budget (only water-related)

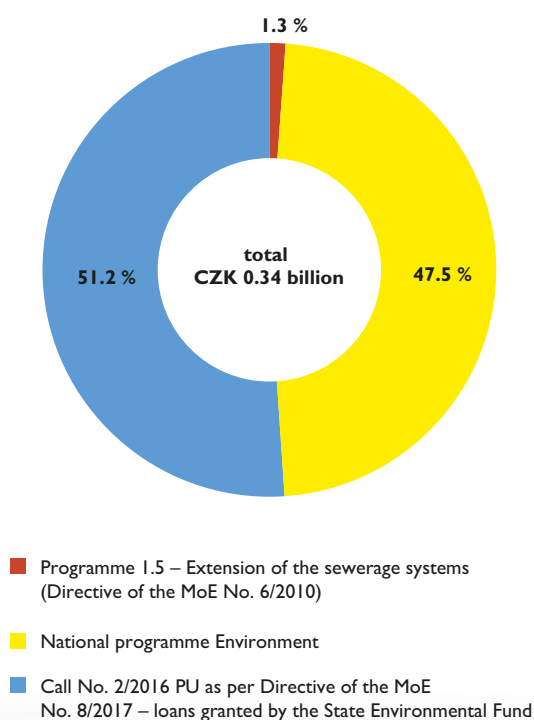
Item (water protection)	Budget for 2018	Revenue as of 31/12 2018	Payments	Difference
	millions of CZK		%	millions of CZK
Wastewater	180.0	198.5	110.3	18.5
Groundwater	300.0	385.3	128.4	85.3

Source: State Environmental Fund

National programmes administered by the State Environmental Fund of the Czech Republic

The State Environmental Fund of the Czech Republic provided from its beginning funds from national sources supporting a wide range of measures to be taken in the environment of the Czech Republic. These funds were offered through so-called national programmes, their focus being grounded in priorities of the current State Environmental Policy and the Strategy of the State Environmental Fund of the Czech Republic. After European funds were made accessible in 2004, they obtained a complementary function to European union grants. The abovementioned programmes were substituted by the National Programme Environment in 2015. The State Environmental Fund of the Czech Republic administered in 2018 the following programmes under which approximately CZK 338.04 million was paid.

Chart 9.1.2.4
Use of funds under national programmes for water management administered by the State Environmental Fund of the Czech Republic in 2018



Source: State Environmental Fund



The Fojtka Dam, Reconstruction (source: Elbe River Board, s. e.)

Programme 1.5 – Extension of the sewerage systems (Directive of the MoE No. 6/2010)

One application for grant amounting to CZK 4.3 million was paid in 2018.

By 31 December 2018, CZK 6.19 million was paid. Three grant applications requesting CZK 16.4 million were administered under sub-programme I 15 273 in 2018. By 31 December 2018 CZK 6.34 million was paid to projects of two applicants.

National programme Environment

The National Programme Environment supports projects aimed at protecting and improving the environment in the



The Mohelnice, Grade no. 5 (source: Oder River Board, s. e.)

Czech Republic using national funds. It is intended particularly for towns and smaller municipalities. It uses funds of the State Environmental Fund obtained from environmental fees and it complements other grants, particularly OPE and the New Green Savings programme.

The State Environmental Fund administered under this programme 13 applications in 2018 and paid under the calls 1,094 applications for grants totalling to CZK 160.7 million.

Call No. 2/2016 PU as per Directive of the MoE No. 8/2017 – loans granted by the State Environmental Fund

The call was made in 2016 with the objective of supporting own sources expended on implementing projects supported under OPE 2014–2020, priority axis I, specific objectives 1.1 and 1.2 with the intent of improving quality of drinkable water for the population. Applications were received from 17 October 2016 until 31 December 2018 or until the allocation of CZK 690 million was used up. In 2018, almost CZK 173 million was paid.

Norwegian funds – the Programme Environment, Ecosystems and Climate Change

The programme is funded from the Norwegian Financial Mechanism for 2014–2021, the State Environmental Fund co-funds the programme with 15%. The programme is focused on improving the state of ecosystems, decreasing air and water pollution including monitoring and on adoption and mitigation measures linked with the climate change.

In the field of waters, the programme focuses on enhancing substance monitoring in accordance with the Water Framework Directive (list of priority substances and list of monitored substances – “watchlist”) and on implementing projects aimed at reducing pharmaceutical pollution in surface waters. In 2018, the programme was in its preliminary stage and being signed on 20 February 2019 the Programme Agreement entered the implementation stage and calls for projects in the field of water protection are expected for the first half of 2020. Total allocation for water management amounts to approximately CZK 170 million.

Table 9.1.2.6

Overview of terminated call No. 2/2016 PU for loans for implementors of water management projects under the Operational Programme Environment on 31 December 2018

Interest rate in % p. a.	Maturity in years	Allocation	Applications filed	Applications being administered	Applications with issued Decision of the Minister	Contracts concluded with receivers	Paid to receivers
millions of CZK							
0.45	max. 10	690	797.558	72.884	724.673	442.231	195.420

Source: State Environmental Fund

9.1.3 Financial support of the Ministry of Transport

State Fund for Transport Infrastructure

The State Transport Infrastructure Fund was established with Act No. 104/2000 Coll., on the State Transport Infrastructure Fund of 4 April 2000 with effect as of 1 July 2000. Representatives of the Ministry of Transport are members of the commission of the State Transport Infrastructure Fund. The fund is a legal entity under the Ministry of Transport. The purpose of the fund is to fund building, modernization, repairs and maintenance of roads and motorways, national and regional railways and waterways with significance to transport in the extent defined by the abovementioned act.

In 2018, funds from the State Transport Infrastructure Fund were expended on development, modernization and maintenance of waterways significant in terms of transport through subordinated organization of the Ministry of Transport (Waterways Directorate of the Czech Republic) amounting to CZK 79.8 million and through River Boards, state enterprises, amounting to CZK 85.6 million. Waterways significant in terms of transport were supported with funds from the State Fund for Transport Infrastructure totalling to more than CZK 165 million. In addition to the funds from the State Fund for

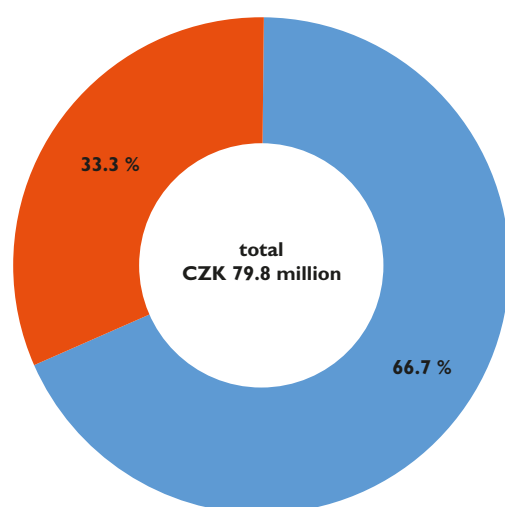
Transport Infrastructure, the Waterways Directorate of the Czech Republic took advantage of financial participation and used funds from the programme Connecting Europe Facility. The funds provided under the participation amounted to CZK 6.75 million.



Right Bank Tributary of Kudlovický Stream (source: Forest of the Czech Republic, s. e.)

Chart 9.1.3.1

Waterways Directorate of the Czech Republic – Use of funds from the State Fund for Transport Infrastructure on the waterways in 2018

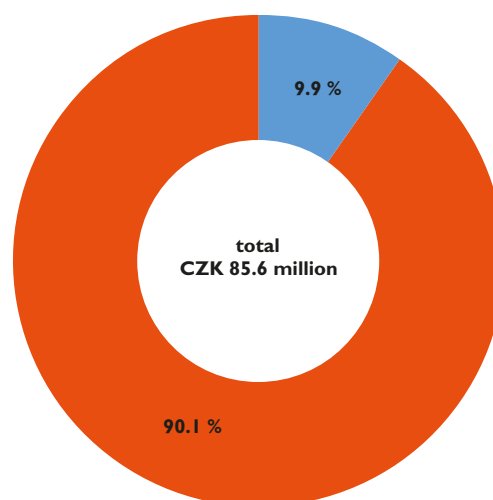


■ Investment costs ■ Non-investment costs

Source: Ministry of Transport

Chart 9.1.3.2

River Boards, state enterprises – Use of funds from the State Fund for Transport Infrastructure on the waterways in 2018



■ Investment costs ■ Non-investment costs

Source: MoA

Table 9.1.3.1

Financial funds expended by River Boards, state enterprises, on repair, maintenance, building, reconstruction and modernization and waterways administered in 2018

River Board, s. e.	Own sources	Purpose non-investment grants ¹⁾	Investment grants		Grants in total	Own sources and grants in total	
			total	of which			
	thousands of CZK				provider	thousands of CZK	
Elbe	100,611	20,659	255	255	SFIT	20,914	121,525
Vltava	13,970	30,989	6,207	6,207	SFIT	37,196	51,166
Morava	1,600	25,514	2,327	2,009 318	SFIT South Moravian Region	27,841	29,441
Total	116,181	77,162	8,789			85,951	202,132

Source: River Boards, s. e.

Note: ¹⁾ Grant provider – the State Fund for Transport Infrastructure.

9.2 Financial support from international cooperation and the EU

Projects focused on the area of water management in 2014–2020

The programme period 2007–2013 ended and it is followed by a new period for 2014–2020. It consists of the following nine independent programmes:

Cross-border cooperation

- Interreg IVC Czech Republic - Poland

- Interreg IVC Slovak Republic - Czech Republic
- Interreg IVC Austria - Czech Republic
- Programme of transboundary cooperation Czech Republic - Free State of Bavaria (under the Objective of European Territorial Cooperation 2014-2020)
- Programme of cooperation Free State of Saxony - Czech Republic 2014–2020

National and inter-regional cooperation

- Interreg EUROPE
- Interreg DANUBE
- Interreg CENTRAL EUROPE



Nikola Nguyen – Water from the Pure Sky – Primary school and Nursery school Milotice – South Moravian Region

10. LEGISLATIVE MEASURES

10.1 Water Act and implementing regulations

There was one amendment to the Water Act in 2018:

By Act No. 113/2018 Coll., amending Act No. 254/2001 Coll., on Waters and amendments to certain acts (the Water Act) as amended, and Act No. 388/1991 Coll., on the State Environmental Fund of the Czech Republic, as amended.

The following amendments were made: fee shall be now administered by the State Environmental Fund, payers are no longer obliged to file fee report and send advance payments, they shall pay for the actual volume of groundwater abstracted and/or wastewater discharged and for the degree of its pollution. Changes were also made to the field of wastewater discharging, they are now subject to a permit (with the exception of wastewater discharged from discharge chambers protecting sewers of the uniform sewerage system from hydraulic overload). Purified wastewater can now be discharged in groundwaters, even from several territorially linked buildings (e.g. parts of a municipality). Additionally, Government Resolution No. 57/2016 Coll. made the requirements concerning the quality of wastewater discharged from sources exceeding 50 EO stricter – the maximum volume of wastewater discharged from a single source is 15 m³/day (approx. 150 EO).

Furthermore, requirements concerning the use of no-discharge reservoirs serving for wastewater accumulation and requirements concerning elimination of the reservoir content were made more precise. Survey hydrogeologic wells are no subject to a permit issued by the relevant water authority pursuant to Art. 17(1)(i) of the Water Act. Small polluters (e.g. municipalities or owners of domestic water treatment plants) need no longer report their data via the ISPOP system. Compensations for documented restriction of land and building use in a protective belt was extended and now concern also lessors and lessees.

The interpretation commission for the Water Act reviewed the current interpretation in 2018 amending three interpretations and made one new interpretation.

New Decree No. 79/2019 Coll., on the manner and extent or processing the draft and defining flood areas and their documentation, was issued replacing Decree No. 236/2002 Coll.



The Brno Dam, Another View (author: Kučerová Jana)

10.2 Act on Public Water Supply and Sewerage Systems

In 2018, there was no direct amendment to Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to certain relevant acts, as amended.

Decree No. 448/2017 Coll., amending Decree No. 428/2001 Coll., implementing the Act on water supply and sewerage systems, entered into force on 1 September 2018, while Annexes No. 18 and 20 to this decree enter into force on 1 January 2020.

The interpretation commission for the Act on water supply and sewerage systems for public use reviewed the current interpretation in 2018 approving four interpretations.

10.3 Audits of the execution of public administration in the field of water management

Audits of Regional Authorities were carried out in 2018 pursuant to Government Resolution No. 689, on the planning, evaluation and coordination of auditing of the execution of the delegated and separate powers of local governments carried out by the central administrative authorities, regional authorities, the Capital City of Prague and municipal authorities of territorially divided statutory cities, of 11 September 2013. The plan of audits of regions and the Capital City of Prague within the set three-year auditing period, i.e. for 2017–2019 (general monthly schedule) was prepared by the Ministry of the Interior of the Czech Republic.

Ministry of Agriculture

Auditing of the execution of the delegated powers in water management sector is carried out within the organizational structure of the Ministry of Agriculture by the Department for State Administration in the Water Management Sector and for River Basin Administration as the central water authority. In 2018, the MoA conducted an audit of performance of delegated powers at five regional offices performing the function of a water authority and 18 audits of performance under the agenda of water authorities of municipalities with extended powers.

Ministry of the Environment

Supervision of the execution of the delegated powers in water management sector is annually carried out within the supreme water management supervision by the Ministry of the Environment as the central water authority through the Departments for Execution of State Administration. This body carried out 12 audits in 2018, of which 5 audits at regional and water authorities and two at the Czech Environmental Inspection.



Renata Balousová – Message in the Water – Primary school and Nursery school – Hradec Králové Region

II. PRIORITY TASKS, PROGRAMMES AND KEY DOCUMENTS IN WATER MANAGEMENT

II.1 Planning in the field of waters

Preparations of the third stage of planning for 2021–2027 continued in 2018 with current plans of the river board were reviewed and updated and a report on advancement achieved in implementing programmes with measures approved by river board plans for the second stage of planning was sent to the European Commission in 2018. Update of preliminary assessment of flood risk was completed in the second planning cycle under Directive 2007/60/EC. Measures arising from approved plans for coping with flood risks were further implemented.



The Ivanské Lake (source: Elbe River Board, s. e.)

Plans for coping with flood risks

Update of preliminary flood risk assessment was completed in 2018 in accordance with deadlines arising from the relevant European and national legislation. Proposal of the update of the preliminary assessment to be commented by the general public was published on 22 November 2017 in accordance with the provision of Art. 25 (1)(a)(1) of the Water Act – update of defining areas with significant flood risk for 6 months.

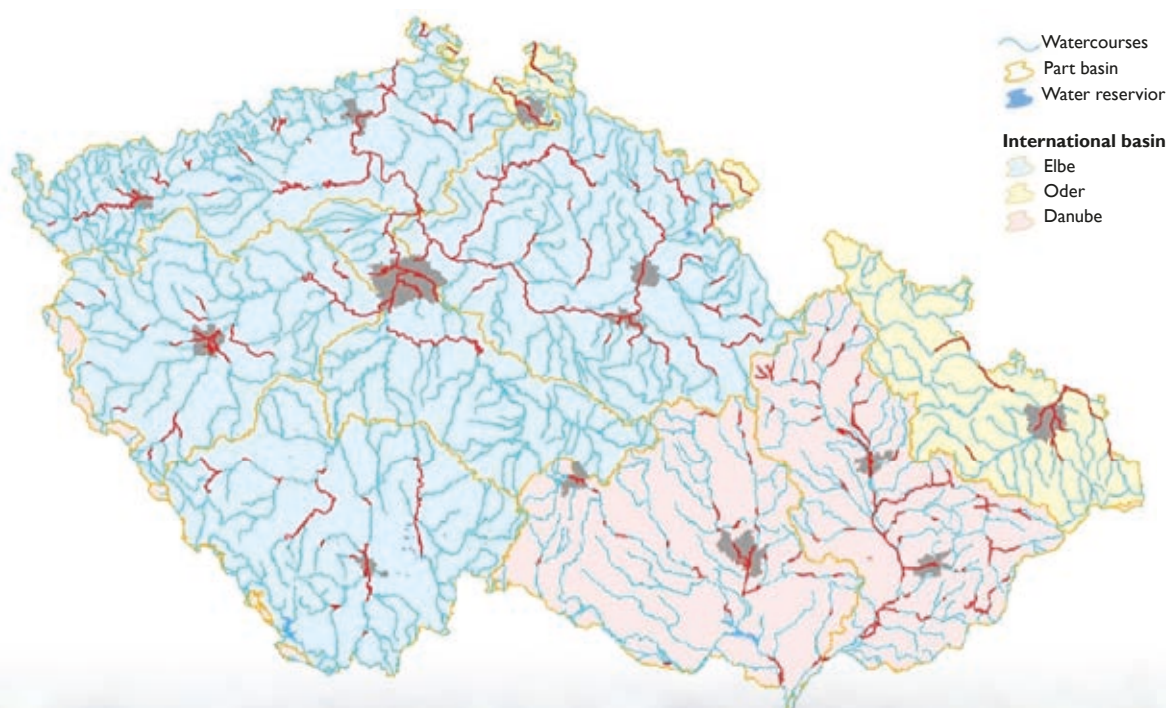
II.2 Development plans for water supply and sewerage systems

The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic, prepared pursuant to Section 29(1)(b) of Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to certain related laws, as amended, is placed on the website of the Ministry of Agriculture.

The Regional Development Plans for Water Supply and Sewerage Systems are the basis for the use of the European Community funds and national financial resources for the construction and renewal of water supply and sewerage system infrastructure. The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic is based on a synthesis of information from the Regional

Figure II.1.1

Defining areas with significant flood risk for the 2nd planning cycle under the Flood Directive



Source: T. G. Masaryk Water Research Institute

Development Plans for Water Supply and Sewerage Systems, including their updates, which were prepared, discussed and approved by the councils of regional authorities. The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic also defines general objectives and main principles of government policy for ensuring long-term public interest in the field of water supply and sewerage system in the Czech Republic, i.e. sustainable use of water resources and water management while adhering to requirements for water management service (drinkable water supply, sewerage and cleaning of wastewater).

In 2018, 1,534 statements were issued. In total for the period 2006–2018, the Ministry of Agriculture issued 7,741 statements, which is approximately 45% of municipalities and localities in municipalities of the Czech Republic out of 17,166 addressed by the National Development Plan for Water Supply and Sewerage Systems in the Czech Republic



On the Hunt (source: Ohře River Board, s. e.)

and the Regional Development Plans for Water Supply and Sewerage Systems.

In 2018, the Regional Development Plans for Water Supply and Sewerage Systems and National Development Plan for Water Supply and Sewerage Systems in the Czech Republic were further updated: these focused primarily on addressing the drought issue and that shall contain particular technical measure being implemented in the current waterworks systems (especially review of the current capacity of the facilities, proposal of new ones or extending the facilities, new interconnection of the current and/or new facilities, proposal of optimizing drinkable water distribution) including estimate of costs needed for such measures.

11.3 Programmes and measures aimed at reducing surface water pollution

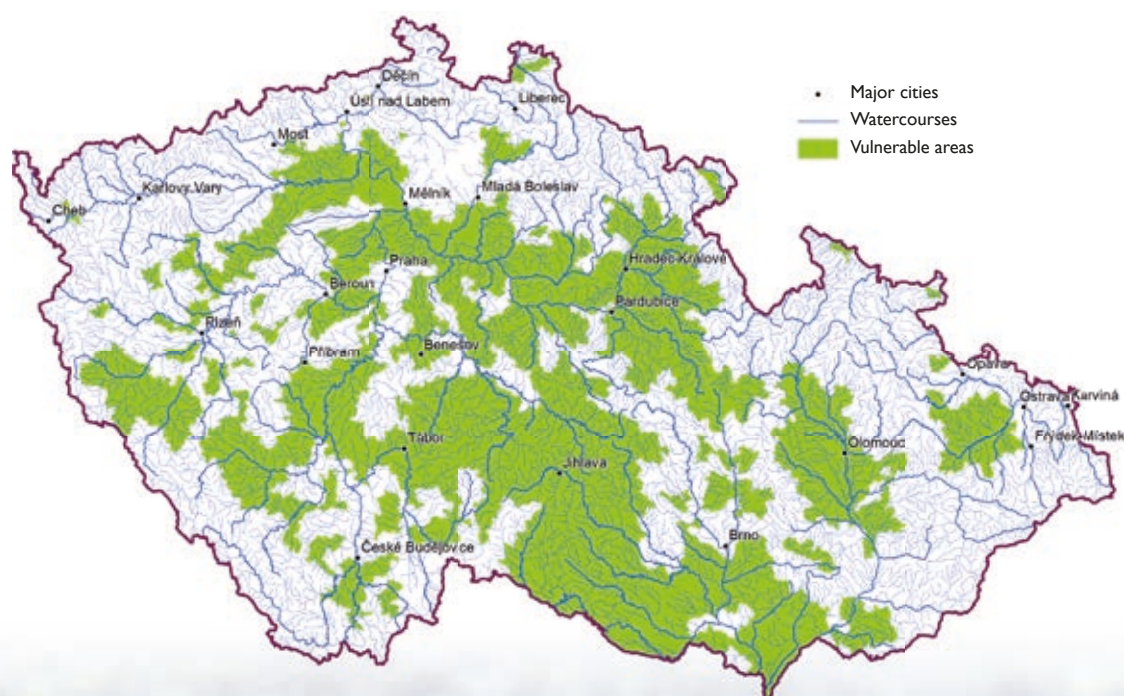
Construction projects for water quality protection completed in 2018

The most significant projects concerning sources of pollution above 2,000 EO included reconstruction of 18 wastewater treatment plans in 2018.

Action Programme under Directive of the Council 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. In the Czech Republic, this directive is implemented in the act on fertilizers, the water act and Government Resolution No. 262/2012

Figure 11.3.1
Map of vulnerable areas as per Government Resolution No. 235/2016 Coll.



Source: T. G. Masaryk Water Research Institute

Coll., on defining vulnerable areas and action programme. Vulnerable areas are locations where contamination of underground waters and surface waters with nitrates exceeded or could exceed the defined threshold of nitrate concentration of 50 mg/l: such locations, as specified in the Nitrates Directive, are subject to review at least each fourth year since they were declared vulnerable locations.

The action programme is updated each fourth year and it sets forth obligatory ways of management in defined vulnerable areas with the objective of reducing the risk of discharging nitrogen in surface waters and underground waters and it is the most efficient system of measures when implementing the Nitrates Directive.

11.4 Accompanying strategic documents

Strategy of the Ministry of Agriculture of the Czech Republic with the outlook until 2030

It is a fundamental strategic document of the Ministry of Agriculture that was approved by Government Resolution No. 392 of 2 May 2016. In order to ensure transparent and effective management of its strategy, the Government subsequently approved in 2017 the Implementation Plan of the Strategy of the Ministry of Agriculture for 2017–2020, that contains a list of specific activities of the MoA for implementing the measures in order to achieve the objectives of the Strategy in 2017–2020. 7 indicators were determined and they will be annually assessed by the MoA in this annual publication in Chapters 7, 9.1 and 14.

Analysis of threats for the Czech Republic

In 2018, situational plans for critical situations started to be incorporated in critical documentation of the regions and municipalities with extended powers in accordance with tasks defined in the Analysis of threats in the Czech Republic. When updating the critical documentation, regions and the municipalities base their changes on the Analysis of threats for the particular territory. From the perspective of water management, the following situational plans are crucial: Flood, Torrential flood, Heavy rainfall, Long-term drought, special flood and Large-scale failure of drinkable water supply.

11.5 Czech Republic's reporting to the EU

Reporting under No. 15 Water Framework Directive 2000/60/EC

The MoE ensures submitting obligatory reports describing the progress in implementing the planned programmes of measures to the European Commission through T. G. Masaryk Water Research Institute. The reports were submitted to the EC on 21 and 22 December 2018, for detailed information see Chapter 14.



When Sunrise Paints, Pohořelice-Vřkoč Pond (author: Šimečková Veronika)

Reporting under Directive of the Council No. 91/271/EEC of 21 May 1991 on municipal wastewater treatment

The member states reporting to the European Commission once in two years. The previous reporting for 2016 shows that limits of discharge concentrations of wastewater treated were not met at two wastewater treatment plants (WWTP Kladno – Vrapice and Central WWTP Prague), which was the reason for their renovation and modernization.

Reporting under Directive No. 2013/39/EU concerning so-called new priority substances

Reporting in 2018 was made on the basis of assessment of the chemical state of surface waters for newly determined substances approved by the General monitoring programme for the period from 2019 and on the basis of partial monitoring programmes of individual River Boards and their comments to the relevant substances. The information required was reported on the level of partial river boards of the Czech Republic: in vast majority of the substances the chemical state detected was good, in some cases unknown.

Plans with measures for achieving good chemical state of surface water bodies in relation to new priority substances will constitute part of 3rd river board plans for 2022–2027.

Reporting as per Directive of the European Parliament and of the Council 2006/7/EC of 15 February 2006 on quality management of bathing waters and on abolishing directive 76/160/EEC

Before the start of the 2018 bathing season, a list of bathing waters for the 2018 recreational season was submitted to the EC. The most frequent problems with water quality in the Czech Republic are linked with mass algae development that led in the 2018 bathing season to forbidding bathing at 23 locations. Out of the total of 150 water reported for bathing, two locations were classified under requirements of Directive No. 2006/7/EC as unsuitable (the Staňkovský pond and Mělice borrow pit).



Táňa Havlíčková – Animal Watering System – Pirmay school of Antonín Bratršovský – Liberec Region

12. INTERNATIONAL RELATIONS

International cooperation of the Czech Republic in the sphere of water protection is based on the principles arising from the UN/ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which the Czech Republic is a party to. At present, the Czech Republic is a contractual partner in nine international agreements in the field of water protection.

12.1 Cooperation within the UN/ECE



The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) is intended to strengthen national measures for the protection

and ecologically sound management of transboundary surface waters and groundwaters.

In 2018, 8th congress of contracting parties to the Convention was held. Its resolutions include, in particular, introduction of the reporting duty and approval of the programme for another three-year period. First two states outside the UN/ECE, Chad and Senegal, joined the Convention on waters. The protocol on water and health deals with the relation between water and human health. Preparations for 5th meeting of contracting parties were made in 2018.

More information about the Convention and the Protocol can be found at: www.unece.org/env/water.

12.2 International cooperation of the Czech Republic in the integrated Elbe, Danube and Oder River Basins

Modern water protection principles, based on the hydrological basins of large transboundary rivers, started to be applied in the Czech Republic in 1990 through launching cooperation in protection of the Elbe according to the Agreement on the International Commission for Protection of the Elbe. At that time, also the Agreement on the International Commission for Protection of the Oder River against Pollution started to be prepared, later followed by a preparation of the Convention on Cooperation for Protection and Sustainable Use of the Danube River.

The International Commission for Protection of the Elbe (ICPER) is the most significant board of Czech-German cooperation in the field of water protection in the entire international Elbe River Basin. 31st ICPER meeting took place in Prague in October 2018 during which the Strategy to



decrease nutrient content in waters in the international Elbe River Basin District and new Strategy of ICPER measurements was approved. Detailed information about the ICPER activities can be found at: www.ikse-mkol.org.

The International Commission for the Protection of the Danube River (ICPDR) ensures sustainable use of water in the Danube river



basin. It consists of 15 contracting parties. On the level of heads of delegations of the contracting parties two meetings were held in 2018, a strategic document concerning sturgeon protection was approved together with the Strategy of accommodating to the climate change. For more information about the ICPD activities see www.icpdr.org.

Meeting of the International Commission for the Protection of the Oder River against Pollution (ICPO) was held in November 2018. Work plans for the Managing work groups and their work sub-groups for 2019 were approved. For more detailed information about the ICPO activities see www.mkoo.pl.



12.3 International cooperation of the Czech Republic on transboundary waters

The total length of the state border of the Czech Republic with neighbouring states is 2,290 km, of which approximately a third is known as the "wet line", which means that 740 km of the state border are constituted by watercourses and water surfaces. Under international cooperation on transboundary waters, the Czech Republic has international agreements with all neighbouring countries and it implements them through relevant commissions for transboundary waters. The agreements are as follows:

- Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Transboundary Waters in the Field of Water Management
- Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters
- Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters
- Convention between the Government of the Czech Republic and the Government of the Republic of Poland on Water Management on Transboundary Waters



Tereza Jupová – Water-Drop of Life – Primary school and Nursery school Vinařice – Central Bohemian Region

13. RESEARCH AND DEVELOPMENT CONCERNING WATERS

A series of researches are being carried out in the field of waters under the Ministry of Agriculture and the Ministry of the Environment that fund the central bodies either directly or in the form of institutional support. Publicly accessible data on R&D projects and granted institutional support are available on the website of the Information System R&D&I at www.rvvi.cz (Central Register of R&D projects, Central Register of Activities). The information on the results obtained from research activities is available on the same website in the Information Register of R&D results.

13.1 Research and development within the scope of the Ministry of Agriculture

In 2018, the Ministry of Agriculture provided special-purpose and institutional funding to address research and development projects and long-term conceptual development of research organizations in the field of water management in the amount of CZK 40 million. It supported projects focused on soil and water protection while maintaining sustainable development of the agricultural sector, creation, revitalization and protection of cultural landscape, forests and water bodies and rationalization of water management including impacts of the climate change.



The Autumn (author: Vicenda Petr)

13.2 Research and development within the scope of the Ministry of the Environment

The Ministry of the Environment encompasses two research organizations in the field of waters: T. G. Masaryk Water Research Institute and Czech Hydrometeorological Institute that were provided institutional support totalling CZK 84.7 million in 2018.



The Úterský Stream, the Drought (author: Vicenda Petr)



Denisa Boučková – Water for Life – Primary school of Jan Kubelík – Central Bohemian Region

14. IMPLEMENTING PROGRAMMES OF MEASURES ADOPTED IN RIVER BASIN PLANS IN 2015

The Ministry of Agriculture in cooperation with the Ministry of the Environment and regional offices submits to the government every third year a comprehensive report on implementing programmes of measures and on the state of surface waters and underground waters and water management in the individual river boards in accordance with the provision of Art. 26(7) of the Water Act under this chapter. The programme with measures contains measures that are the most efficient combination of measures (in terms of costs) as a tool for achieving good conditions of waters. Monitoring and assessment of the measure efficiency is a source of important information necessary for linking follow-up planning cycles.

14.1 Description of approved river board plans

With Water Framework Directive 2000/60/EU, the EU introduced in 2000 new objectives for the protection and restoration of water ecosystems that are to serve as a basis of long-term and sustainable water use. Requirements of the Water Framework Directive were incorporated in the Water Act and plans for river boards and the relevant programmes of measures for each partial river basin district were defined to be the main tool for implementing the Directive.

The main river basin management plan for the Czech Republic, river basin district management plans and international river basin district management plans were prepared and subsequently approved in the process of planning in the field of waters by 2009. For the second cycle that is currently being implemented, the following documents were prepared and approved:

- National plans for river basin districts (hereinafter the “NPRB”, i.e. Elbe NPRB, Oder NPRB and Danube NPRB, represent long-term concept and strategy in the field of water protection and use.
- Plans for partial river boards (hereinafter “PPRB”), i.e. Upper and Middle Elbe PPRB, Upper Vltava PPRB, Berounka PPRB, Lower Vltava PPRB, Ohře PPRB, Lower Elbe and other Elbe tributaries PPRB Morava and Váh tributaries PPRB, Dyje PPRB, other Danube tributaries PPRB, Upper Oder PPRB, Lusatian Neisse and other Oder tributaries PPRB are conceptual documents summarizing information on the current state of water bodies in partial river boards and defining specific objectives focused on achieving and maintaining good condition, preventing water environment deterioration, support of sustainable use of water, decreasing impacts of extreme flow situations (floods and droughts) and proposed measures to be taken in order to achieve the objectives by 2021.
- Plans of international river basin districts, i.e. Plan for the international Elbe river basin district, Plan for the international Oder river basin district and Plan for the international Danube river basin district were prepared in accordance with Art. 13.2 General Directive on Waters: on the basis of this article, the member states sharing the international river basins prepared an international plan for each river basin district. The Czech Republic participated actively in preparation of these plans, also through its representatives and experts in international commissions (ICPER, ICPO and ICPDR). Plans for international river basin districts were updated on 2 December 2015.



The Confluence of the Ohře River and the Blšanka River (source: Ohře River Board, s. e.)

The approved plans for the river basin districts, including the regulations through which they were declared and information from the process of making the plans, are published on the website of the MoA at www.eagri.cz and of the MoE at www.mzp.cz.

Summary of the programme of measures contains binding measures (required for implementing EU regulations) and other, additional and complementary measures. The measures aimed at achieving the objectives are activities encompassing investment projects of construction nature, monitoring and organizational measures at the local and/or regional level as well as necessary legislation changes at the national level.

In general, the measures can be divided in three groups and they can be characterized with the extent of their scope:

- **Measures, type A** are proposals of a specific activity aimed at reducing or eliminating a significant impact (measures at sewerage networks and WWTPs, watercourse revitalization, removal of causes/obstacles, remediation of old environmental burdens and flood measures).
- **Measures, type B** propose a general process for reducing or eliminating a certain impact.
- **Measures, type C** are proposals with national impact (changes in legislative regulations, creation of strategic documents, databases, etc.).

14.2 Progress of measure implementation

Data on the progress of measure implementation were summarized and assessed. Besides the progress in implementation, data on belonging to the key type of the measure, classification in programmes of measures and focus on anthropogenic influences and water bodies where measures are being implemented were taken into account. All data about the progress of measure implementation are based on the report of the European Commission on plans for river basin districts discussed in Chapter 11.6.

14.2.1 Implementing measures adopted by the national plans for river basin districts

National plans for the Elbe, Oder and Danube river basin districts were approved by Government Resolution No. 1083 of 21 December 2015. Subsequently, the Ministry of Agriculture, in accordance with the provision of Art. 25(4) of the Water Act issued on 1 January 2016 Chapters IV.1, IV.2, IV.3, IV.4, IV.5 and V. Under the National plans for river basin districts a total of 11 additional measures (including 63 partial measures) of type C were adopted, most of the measures being of administrative or conceptual nature.

Table 14.2.1

Overall state of implementation of all proposed measures in plans for river basin districts (lists with measures A, B, C)

List of measure	In programme of measures	State or measure implementation			
		completed	underway	not initiated	abolished
A	yes	152	392	225	7
A	no	190	374	371	12
B	yes	3	110	10	-
B	no	1	46	12	1
C	yes	7	40	16	-
Total		353	962	634	20

Source: MoA using data provided by MoE



The Lišný Dam (source: The Forest of the Czech Republic, s. e.)



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

Table 14.2.1.1

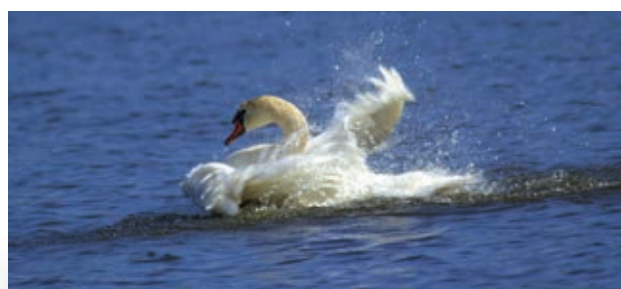
State of implementing proposed measures in plans for national basin districts (sheets C)

Measure	State of partial measure implementation		
	completed	underway	not initiated
Fishpond management	-	1	1
Protected areas (areas reserved for habitats and/or species protection and marshes)	-	1	1
Renovation of natural beds of watercourses	-	3	-
Restriction of negative impact of pesticides on surface waters and underground waters	2	3	2
Decreasing pollution in atmospheric deposition	-	1	1
Decreasing pollution from agriculture and protection of the water environment	-	10	2
Determining natural sources of underground waters for underground water bodies	1	1	7
Strategy for gradual limitation or total stoppage of hazardous substance intake in surface waters	2	2	-
Drought and lack of water sources	1	14	-
Territories reserved for abstractions for human consumption	1	1	1
Making river network passable	-	3	1
Total	7	40	16

Source: MoA using data provided by MoE

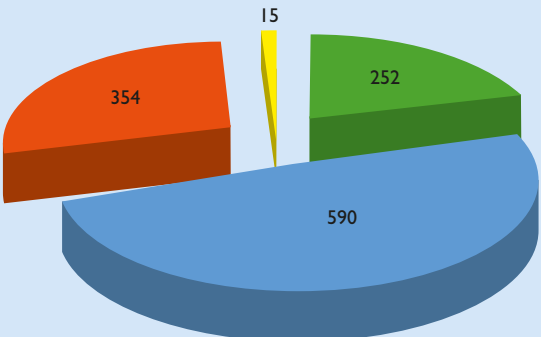
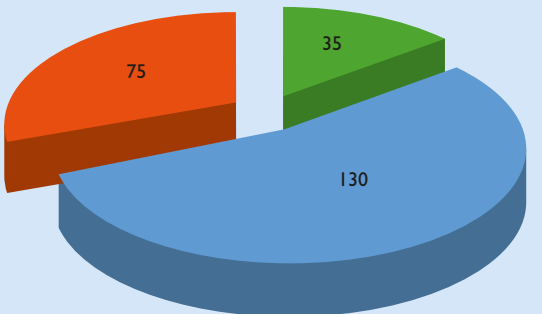
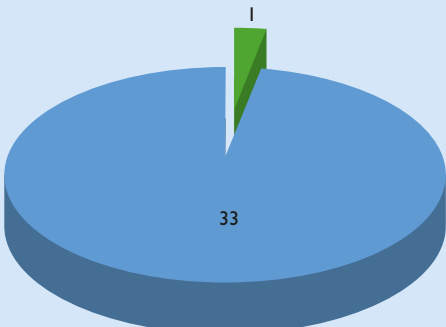
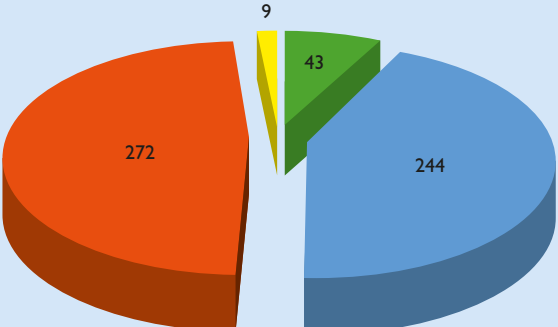
14.2.2 Implementing programmes of measures adopted in plans for partial river basin districts

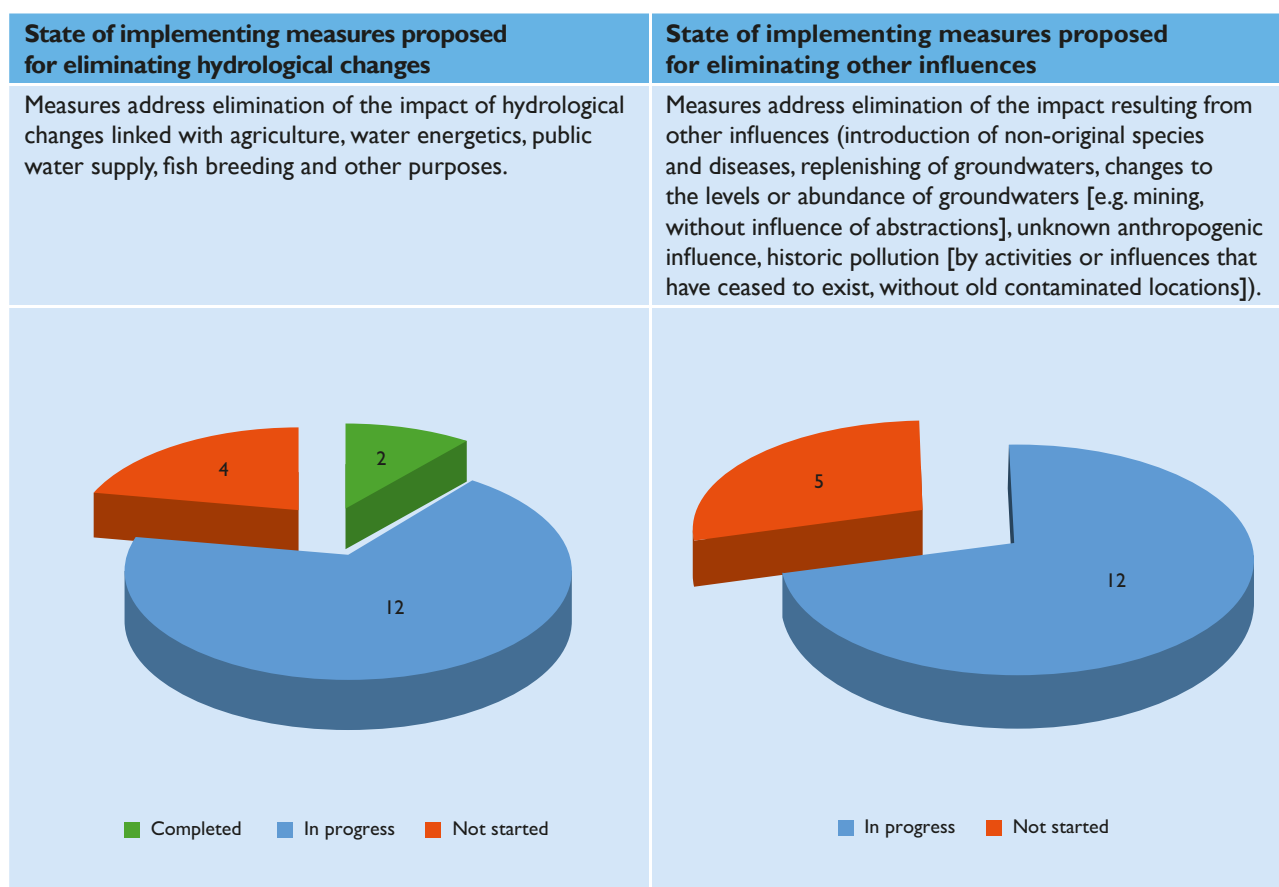
All ten plans for partial river basin districts that was approved by municipality board of the relevant regions by 30 June 2016 under Art. 3(2) of Decree No. 24/2011 Coll., on plans for river basin districts and plans for coping with flood risks, as amended, amending the National plans for river basin districts with details and proposals of measures.



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

Table 14.2.2.1**Overview of implementing programmes of measures in adopted plans for partial river basin districts for selected impacts**

State of implementing measures proposed with the view of eliminating point sources of pollution	State of implementing measures proposed with the view of eliminating areal sources of pollution
Measures address pollution resulting from discharge of: – communal wastewaters (from communal WWTP or direct discharge), – from discharge chambers, – industrial wastewaters (from independent WWTP or direct discharge registered in the Integrated Register of Pollution IRP [IRZ]), – industrial wastewaters (from independent industrial WWTP or direct discharge in surface waters) – not registered in the IRZ, – mine waters, pollution from old contaminated locations including old landfills, fish breeding.	Measures address pollution resulting from discharge from urbanized areas, agriculture, forestry, transport, contaminated localities, inhabitants not connected to the sewerage system, atmospheric deposition, mining (min activities, without discharge of mine waters).
 Legend: Completed (green), In progress (blue), Not started (orange), Canceled (yellow)	 Legend: Completed (green), In progress (blue), Not started (orange)
State of implementing measures proposed for eliminating influence of water abstraction or transfers	State of implementing measures proposed for eliminating influence of morphologic changes
Measures address elimination of the impact resulting from abstraction or transfers of water for agriculture, public water supply, industry (with no cooling), water energetics, fish breeding and other purposes.	Measures address elimination of the impact resulting from morphological changes - longitudinal adjustments of watercourses, transverse obstacles, passability of migration ways, drainage and drying of marsh locations, piped tributaries, straightened and sunk watercourses etc.
 Legend: Completed (green), In progress (blue)	 Legend: Completed (green), In progress (blue), Not started (orange), Canceled (yellow)



Source: MoA using data provided by MoE

Note: One measure may address more influences. One influence may be addressed by several measures.



Charming and Breathtaking Pálava, Pohořelice-Vrkoč (author: Šimečková Veronika)

Interesting numbers from 2018

- Basic hydrological network: 99,199 km of watercourses
- Purchase value of fixed assets related to watercourses: CZK 52.9 billion (year-on-year increase by CZK 0.34 billion)
- Decrease in the revenue of the River Boards by CZK 40 million
- Average price for 1 m³ of surface water – CZK 4.88 (year-on-year increase by 2.4%)
- Investments of River Boards, state enterprises: CZK 2.343 billion
- Land consolidation: CZK 2.062 billion, of which CZK 0.2 billion for water management measures and CZK 0.58 billion for anti-erosion measures
- Population supplied with drinkable water: 10.064 million (94.7%) – most in Prague, the Karlovy Vary Region (100%) and the Moravia-Silesia Region (99.9%), least in the Central Bohemian Region (86.4%) and in the Pilsen Region (86.3%)
- Water consumption (invoiced to households): 89.2 l/person/day (year-on-year increase by 0.5 l/person/day)
- Population connected to sewerage system: 9.1 million (85.5%) – most in the Karlovy Vary Region (100%) and Prague (99.0%), least in the Central Bohemian Region (74.4%) and the Liberec Region (69.6%)
- 1,540.8 million m³ of wastewaters and mine waters discharged into watercourses (year-on-year increase by 9.5%)
- Total length of the water supply system: 78,750 km (extended by 166 km)
- Total length of the sewerage system: 48,756 km (extended by 265 km)
- Number of wastewater treatment plants: 2,677 (increased by 65)
- Water rate: average price: CZK 38.10 per m³, highest in the Liberec Region (CZK 44.20 per m³), lowest in the Olomouc Region (CZK 33.10 per m³)
- Sewerage charge: average price: CZK 33.40 per m³, highest in the Liberec Region (CZK 42.50 per m³), lowest in the Pilsen Region (CZK 27.80 per m³)
- Production of marketable fish: 21,751 tonnes (20,478 tonnes from ponds)
- State financial support in water management – CZK 6.8 billion
 - Programmes of the Ministry of Agriculture – CZK 2.5 billion
 - Programmes of the Ministry of the Environment – CZK 4.3 billion
 - State Fund for Transport Infrastructure – CZK 0.08 million



The Všechná Dam, the Drought (source: Ohře River Board, s. e.)

List of acronyms in text

BOD ₅	biochemical five-day oxygen demand
COD _{Cr}	chemical oxygen demand
CSN	Czech State Standard
DIS	dissolved inorganic salts
EC	European Commission
EU	European Union
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
N _{inorg}	inorganic nitrogen
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (sectoral classification of economic activities according to Eurostat)
NM	non-dissolved matters
P _{total}	total phosphorus
s. e.	state enterprise
VAT	value added tax



The Solar River, The Jihlava River – Lhánice (author: Komzák Petr)



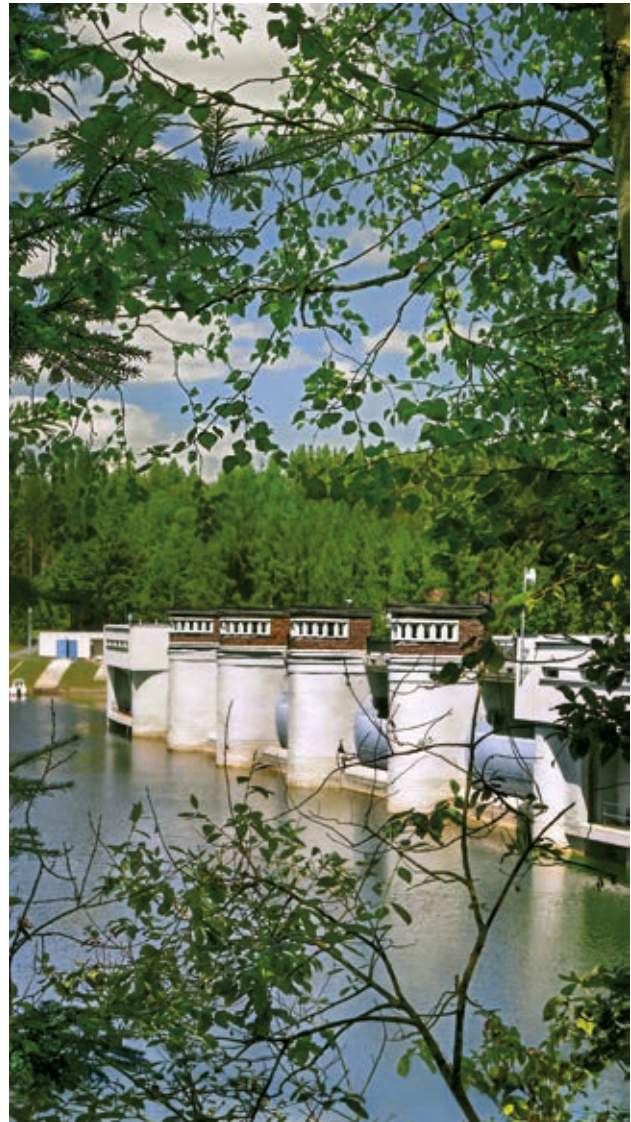
Sun rays dissolve snow, The Moravia, Kralický Sněžník (author: Vampolová Jana)



The Ploučnice River (source: Povodí Ohře, s. e.)

Important contacts in water management

Ministry of Agriculture of the Czech Republic
Těšnov 65/17, Prague 1, 110 00, www.eagri.cz
Ministry of the Environment of the Czech Republic
Vršovická 1442/65, Prague 10, 100 10, www.mzp.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
Forest of the Czech Republic, s. e.
Přemyslova 1106/19, Hradec Králové, 500 08, www.lesycr.cz
Czech Hydrometeorological Institute
Na Šabatce 2050/17, Prague 412 – Komořany, 143 06, www.chmi.cz
T. G. Masaryk Water Management Research Institute, public research institution
Podbabská 2582/30, Prague 6, 160 00, www.vuv.cz
State Land Office
Husinecká 1042/11a, Prague 3 – Žižkov, 130 00, www.spucr.cz
Research Institute for Amelioration and Soil Protection, public research institution
Žabovřeská 250, Prague 5 – Zbraslav, 156 27, www.vumop.cz



The Kružberk Dam (source: Oder River Board, s. e.)



The Kadaň City, The Ohře River (source: Ohře River Board, s. e.)

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As of 31 December 2018

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Ministry of Agriculture of the Czech Republic

Department of Water Protection
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