

REPORT ON WATER MANAGEMENT in the Czech Republic in 2016



MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC



Report on Water Management in the Czech Republic in 2016

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

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Dear readers,

You are holding the *Report on Water Management in the Czech Republic in 2016*, an annual publication traditionally referred to as the “Blue Report”. It is one of the most important materials issued by the Ministry of Agriculture and Ministry of the Environment. The Ministry of Agriculture has been publishing it annually for more than twenty years, since 1997.

Our planet is more and more intensely affected by drought. The consequences may be very serious for our generation as well as for future generations. Droughts, unlike floods, set in very slowly and usually last for several years. Therefore, one of the purposes of the *Blue Report 2016* is to inform readers in more detail about this hydrological extreme. In the report you can read, among other things, that significant rainfall deficits, compared with the long-term average, started occurring in 2014 and that according to statistics maintained since 1961, last year was the eighth warmest year with an average air temperature of 8.7°C.

The Ministry of Agriculture, being a pivotal water management authority, is also the founder of five river boards and several state enterprises including Forests of the Czech Republic. That is why this publication offers a detailed summary of the performance of these state enterprises in 2016 as well as a comparison with previous years. It also states that the revenues of the river boards, which are state enterprises, were jeopardized due to the suspension of paying out “green bonuses”, i.e., funds for certain types of small hydroelectric power plants. Fortunately, this only led to a temporary drop in revenues from electric power generation. A significant step taken in 2016 was the approval of partial plans for the river boards; these plans contain specific measures that need to be taken in order to improve water quality. The Czech Republic was the first member state of the European Union to successfully report national plans to the European Commission.

In 2016 the water and sewerage network was extended and the number of waste water treatment plants increased. The total length of the water supply system grew by 535 km to the current 77,681 km; the sewerage system was lengthened by 1,257 km to 47,141 km. By the end of 2016, 94.4% of the population was supplied with water from the water supply system and 84.7% of the population was connected to the sewerage system. At the end of 2016 there were 2,554 waste water treatment plants in the Czech Republic.

The *Blue Report* also contains information on grants provided by the Ministry of Agriculture to water management: almost 2.7 billion CZK was allocated to 693 projects in 2016, which is 833 million CZK more than in 2015. The most significant area was the construction and technical assessment of water and sewerage system infrastructure, where the funds allocated were 1.9 billion CZK. The second most important area, which received a total of 0.5 billion CZK in grants, was flood prevention, focused on implementing measures to improve water retention.

With regard to climate development, I should also mention research and development in water management: the Ministry of Agriculture supported projects totalling a sum of 29.3 million CZK.

I believe that as you leaf through the *Blue Report 2016*, not only will you get the big picture of the activities linked to water management, but you will also find a lot of other interesting information. I would like to highlight the photographs illustrating water management as seen by river board administrators and the selected pictures painted by children for the event World Water Day, organized by the Ministry of Agriculture.

Water is tremendously important for our lives. We should protect it and ensure there is enough water for generations to come.



Marian Jurečka
Minister of Agriculture
of the Czech Republic

Dear readers,

You are about to read the 2016 issue of the annual publication *Report on Water Management in the Czech Republic*. Just as in previous years, this “Blue Report” presents a comprehensive overview of the actions taken in relation to water management and care for the quality of surface waters and groundwaters in the Czech Republic.

One of the most significant accomplishments of both ministries in 2016 was the fact that the two most important strategic documents for 2016–2021 (i.e., the National Plans for the River Boards, including the schedule of relevant measures and Plans for Coping with Flood Risks) were made binding at the beginning of 2015. The plans approved by the government in December 2015 identify the biggest problems in the field of water protection and use as well as flood protection, and they define objectives and measures that need to be taken in order to solve these problems. At the same time, the necessary prerequisites were established so that we could, through the joint efforts of state administration, local administration and citizens, meet these objectives using European and national grants as well as our own funds.

An amendment to the Water Act, the fundamental legal regulation for water management, was prepared in 2016. The amendment was adopted by the government at the end of 2016 and submitted to the Chamber of Deputies of the Parliament of the Czech Republic for discussion.

In addition to legislation, the Ministry of the Environment primarily focuses on and supports activities aimed at improving the landscape’s ability to retain water and making the management and further use of rainfall more efficient for households, among others. The Ministry of the Environment, under the Operational Programme “Environment”, provides funds to regions, cities and municipalities to carry out these as well as other measures that shall result in more efficient use of water and ensure its quality and sufficient reserves for consumers. In 2016, a total of 906.6 million CZK was spent on water enhancement under the programme for 2007–2013 and 88.4 million CZK under the programme for 2014–2020.

Drought experienced in 2015 continued in 2016, and in some parts of the Czech Republic it continues even this year. That is why the Ministry of the Environment focused intensively on performing tasks prescribed by Government Resolution No. 620/2015 “Preparation of Implementation of Measures Aimed at Mitigating the Negative Impact of Drought and Lack of Water” and on creating the “Concept of Protection against Consequences of Drought in the Czech Republic”, completed in cooperation with the Ministry of Agriculture and tabled to the government in June 2017.

I am glad that the Blue Report deals in greater detail with identifying and fighting area sources of water pollution, which are some of the most important factors that, in addition to point sources of pollution, influence water quality and thus the condition of surface water and groundwater structures. Area sources of pollution, especially when judging by certain indicators such as nitrogen or some pesticides, are the biggest source of water pollution. The biggest burdens are agriculture (nitrogen and pesticides in particular), atmospheric deposition (polycyclic aromatic carbohydrates, heavy metals – mercury, lead, cadmium) and substances of natural origin (especially metals).

I believe that the Blue Report 2016 is a comprehensive source of information about water, a valuable component of our natural wealth and an irreplaceable resource, and also about all relevant activities aimed at its protection and management, and those that may endanger it. That is why we should value the efforts of all those who contribute to water quality protection and the sensible use of water in everyday life. After all, water is essential for life...



Richard Brabec
The First Deputy Prime Minister
Minister of the Environment



Lucie Holá – Water of life and death – 4.C, Primary school, Kpt. Jaroše 836, Třebíč, Vysočina Region

I. HYDROLOGICAL BALANCE

I.1 Temperature and precipitation

2016 was markedly above the average in the Czech Republic. The annual mean air temperature of 8.7 °C exceeded the value of the long-term average of 1961–1990 by 1.2°C, which means that 2016 was the eighth warmest year since 1961. It was the tenth year with a positive variation from the long-term average of 1961–1990 exceeding 1°C, while all of these years occurred in the past 25 years. The highest annual mean air temperature in the Czech Republic was 9.4°C in 2014 and 2015. The annual mean temperature in the vegetation period April–September 2016 was 15°C and it was 1.5°C higher than the long-term average of 1961–1990.

In terms of precipitation, 2016 in the Czech Republic was average, the mean precipitation amount was 635 mm for most of the month, which corresponds to 94% of the long-term precipitation average. The mean precipitation amount for most of the months in 2016 can be considered normal. August and December were the only months that were below average in terms of precipitation, when the monthly precipitation amount reached 53% and 56% of the average, respectively. By contrast, February (161% of the average), July (146% of the average) and October (155% of the average) were above average in terms of precipitation.

Table I.1.1
Renewable water resources in 2010–2016

Item	Annual values (millions of m ³)						
	2010	2011	2012	2013	2014	2015	2016
Rainfall	68,692	49,449	54,812	57,336	51,815	41,957	50,240
Evapotranspiration	46,824	35,511	42,239	38,296	41,542	32,165	40,223
Annual inflow ¹⁾	781	482	492	845	388	398	402
Annual runoff ²⁾	22,649	14,420	13,065	19,885	10,661	10,190	10,419
Sources of surface water ³⁾	8,788	5,770	5,195	6,626	5,273	3,591	4,421
Usable sources of groundwater ⁴⁾	1,594	1,340	1,311	1,657	1,077	939	925

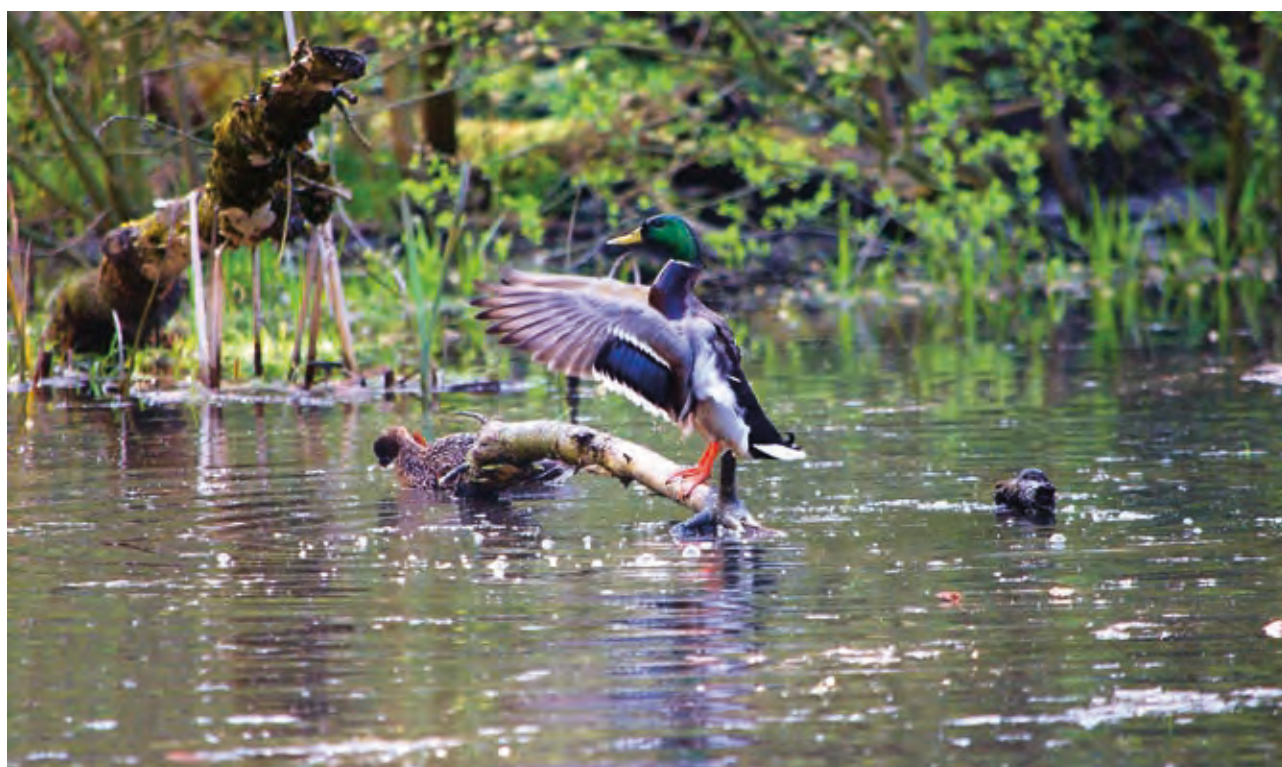
Source: Czech Hydrometeorological Institute

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.

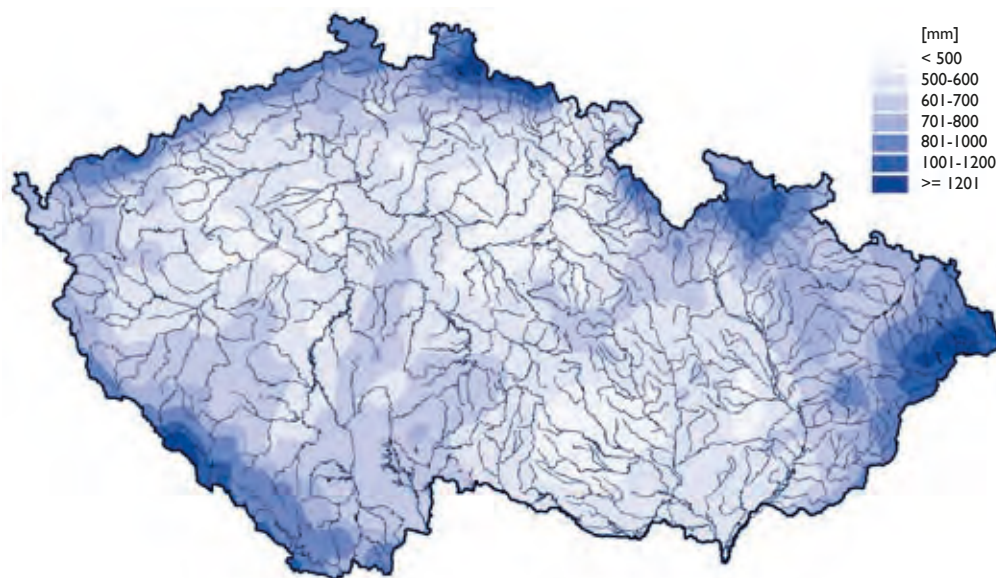
³⁾ Determined as the flow in the main catchment areas with 95% probability.

⁴⁾ A qualified estimate, more detailed specifications are published by the Czech Hydrometeorological Institute in the second half of 2017.



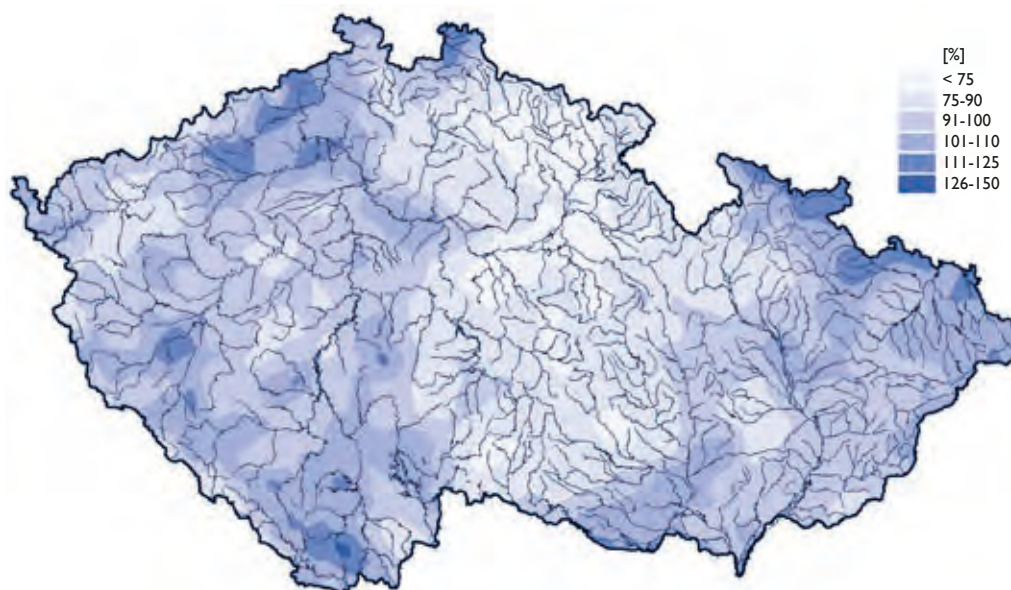
Soběšické ponds (source: Morava River Board, s. e.)

Figure 1.1.1
Total precipitation amount in the Czech Republic in 2016 in mm



Source: Czech Hydrometeorological Institute

Figure 1.1.2
Total precipitation amount in the Czech Republic in 2016 by % of the average of 1961–1990



Source: Czech Hydrometeorological Institute

1.2 Runoff

In terms of runoff, 2016 was rather below-average in most parts of the Czech Republic. The watercourses that were closest to the average runoff values throughout the year were the ones in the Oder River Basin, particularly watercourses in the Olše River Basin. With respect to long-term average, runoff was typically between 55 and 75% Q_a . The highest runoff, when compared with long-term average, was after February melting of snow cover (90 to 150% Q_a). In comparison with long-term monthly runoff, above-

average values were reached at the end of the year, particularly in October and November, in the Oder River Basin (up to 200% Q_m). Below-average runoff in all of the river basins monitored was particularly in January (40 to 60% Q_a) and September (20–45 % Q_a). More significant runoff events occurred during the spring melting at the end of February and after torrential rainfall in June and at the end of July/beginning of August, when runoff reached Q_{2-5} at the most.

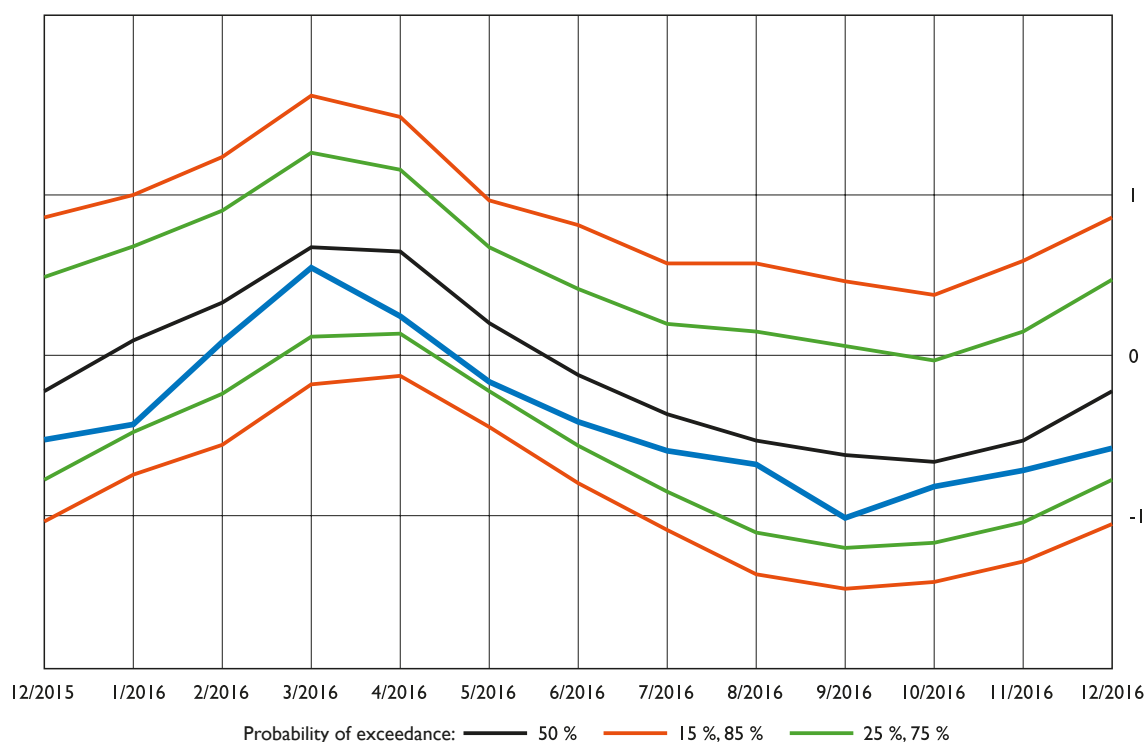
1.3 Groundwater regime

In 2016 there was a significant deficit of shallow wells and yield of springs in spring and their insufficient replenishment at the end of the year. There was again a significant deficit of groundwater in the north of Bohemia and south-west

Moravia in the Oder River Basin. Water levels and yields were at lower values than usual throughout the entire. On the whole, the water levels and yield of springs stated in the annual assessment for 2016 are similar to 2015.

Chart 1.3.1

The course of the evaluation of the average standardized water levels of shallow wells in the monitoring network (blue) in 2016 compared with the long-term values in 1981–2010



Source: Czech Hydrometeorological Institute



The Červený Stream, a retention basin (source: Forests of the Czech republic, s. e.)

Table 1.3.1**Probability of exceeding levels in shallow wells with respect to the monthly curves for river basins in 2016**

River 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	77	67	56	78	78	76	79	79	86	84	83	86
Upper Vltava	73	60	61	79	77	58	39	44	59	55	55	62
Lower Vltava	68	53	48	80	76	59	56	50	65	53	60	68
Berounka	53	47	51	70	79	57	37	38	50	35	38	51
Lower Elbe	63	52	61	70	75	59	53	50	64	47	52	57
Oder	93	79	63	67	75	79	74	60	73	38	41	52
Morava	78	60	56	66	66	67	67	52	63	58	60	67
Dyje	64	59	46	57	57	62	60	52	59	59	59	62

Source: Czech Hydrometeorological Institute

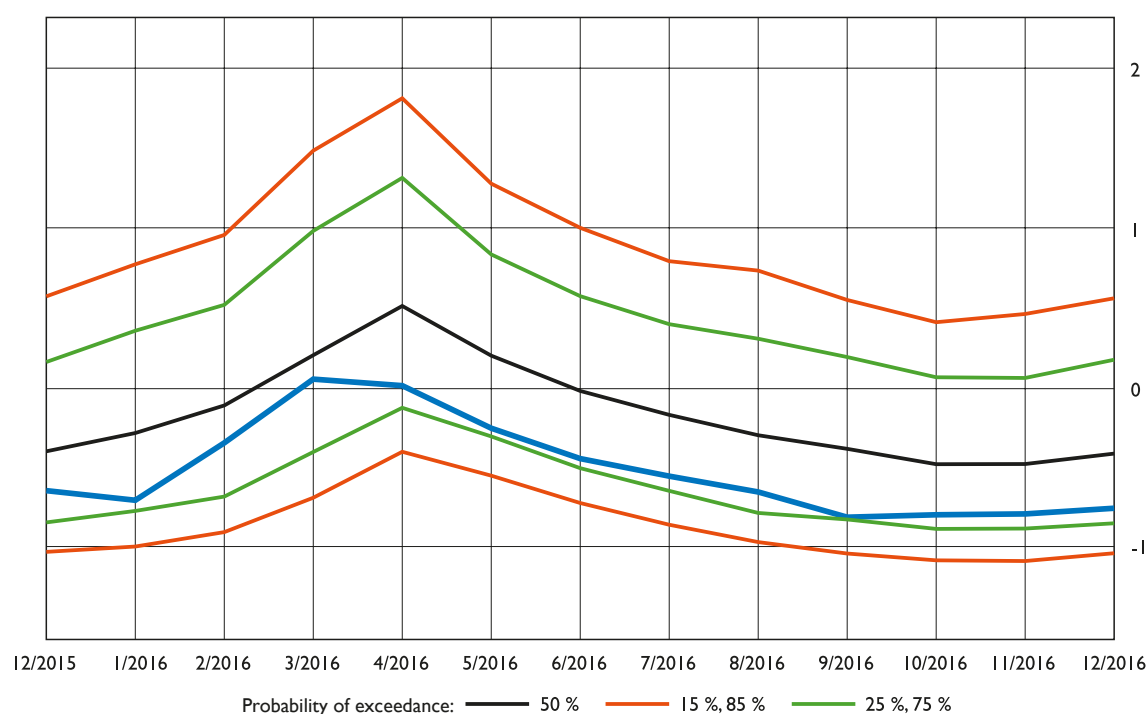
Note: Low levels of 75–84% MCFC are highlighted in bright, very low levels below the limit for drought – 85% MCFC are in dark.



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

Chart I.3.2

The course of the evaluation of the average standardized spring yield of the monitoring network in 2016 (blue) compared with long-term values 1981–2010



Source: Czech Hydrometeorological Institute

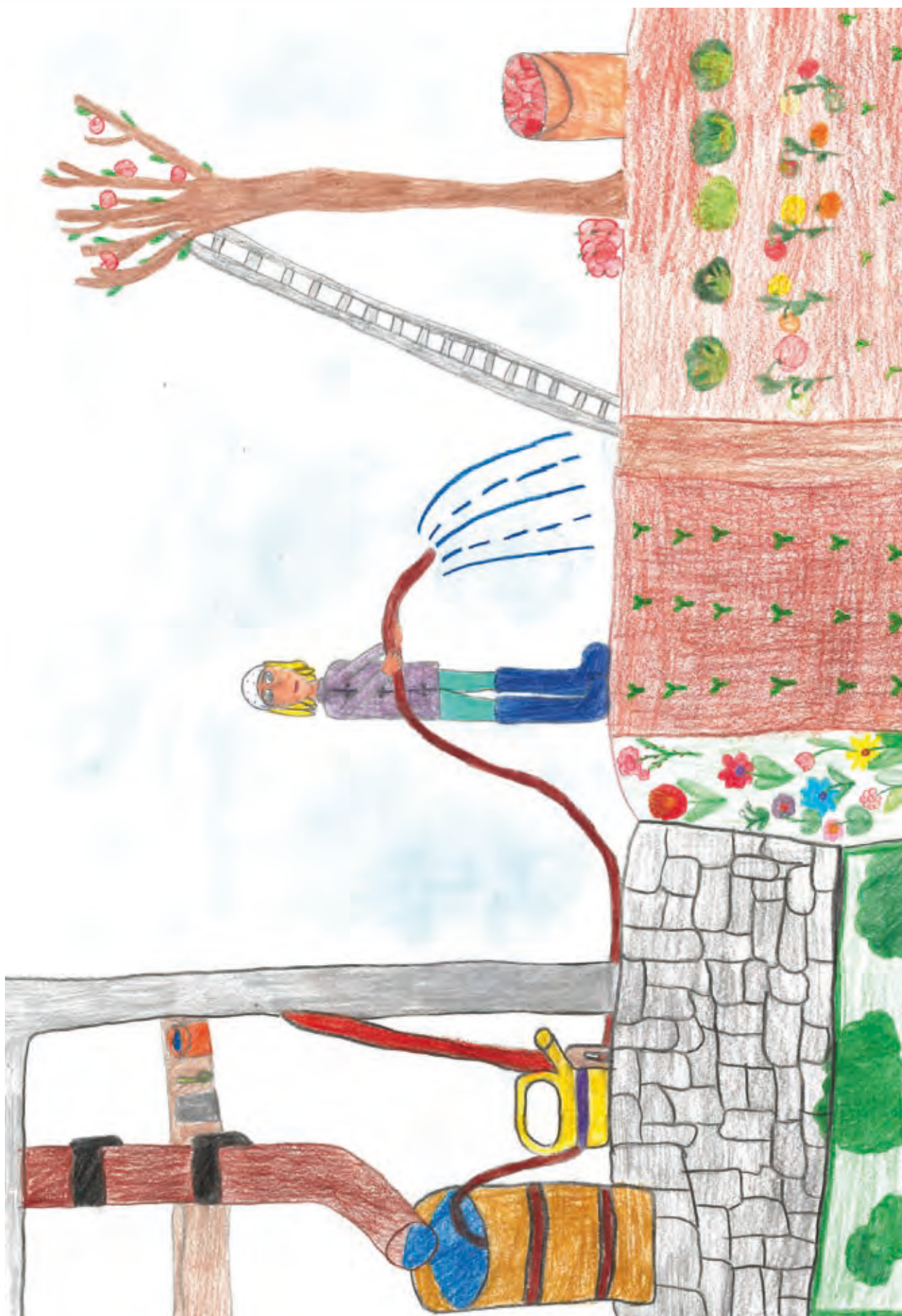
Table I.3.2

Probability of exceeding levels in shallow wells with respect to monthly curves for individual river basins in 2016

River 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	78	66	66	82	82	85	86	88	90	89	89	86
Upper Vltava	77	59	57	80	83	66	62	56	67	58	61	63
Lower Vltava	72	71	65	75	76	73	74	73	77	81	82	84
Berounka	51	45	38	51	62	52	43	50	50	47	49	50
Lower Elbe	63	52	54	59	64	69	68	69	71	65	62	59
Oder	89	71	65	63	71	76	81	70	75	53	44	44
Morava	81	64	55	65	72	75	74	70	79	62	66	66
Dyje	63	52	49	73	74	75	75	74	79	76	77	78

Source: Czech Hydrometeorological Institute

Note: Values for low yields in the range 75–84% are highlighted in bright and very low yields (below the limit for drought – 85% MCFC) are in dark.



Pavlína Tománková – Rainwater from the roof – 4.B, Masarykova Primary school and Nursery school Nezamyslice, Olomouc Region

2. HYDROLOGICAL EXTREMES

2.1 Flood situations

Major floods in 2016 occurred between May and September, mainly in connection with intense rain showers and local strong storms. Their runoff varied significantly depending on the locality and the situations affected primarily small areas of river boards and smaller watercourses.

The first wave of intense storms occurred on 23 and 24 May and the highest totals per day were recorded at Hvozdec - Mrtník in Central Bohemia (90 mm). The most significant event in terms of the extent of flood damage, size of the area affected and extremity of the culmination flow was definitely the one caused by torrential rainfall on 25 June in the Pilsen Region. The belt of intense rainfalls caused interim but fast rise of water levels in smaller watercourses above FAD III at local profiles of Merklín in the Merklínka River and at Poleň in the Poleňka River. Culmination flows even exceeded the theoretic value of Q_{100} at several profiles.

The most significant rises of water levels in June occurred between 13 July and 15 July on watercourses draining the Jizera Mountains, the Krkonoše Mountains, the Šumava Mountains and the Beskydy Mountains. A more noticeable runoff episode occurred also in mid- September 2016 with the most abundant rainfall in South and Central Bohemia.



Water (source: Ohře River Board, s. e.)

2.2 Remediating flood damaged

In 2016, the Ministry of Agriculture's programme of remediating flood damage to state-owned water management property II as well as the programme of remediating flood damage to infrastructure of water supply systems and sewerage systems continued.

The Ministry of the Environment continued in 2016 administering the grant programme "MoE Clean-up after natural disasters".



Spring at the Ohře River (source: Ohře River Board, s. e.)



Drought (source: Morava River Board, s. e.)

2.3 Drought situation

Drought becomes more and more intense in the Czech Republic. A noticeable rainfall deficit, in comparison with long-term average, has been obvious since 2014. 2016 was a below-average year in terms of precipitation, the deficits were bigger in Bohemia than in Moravia.

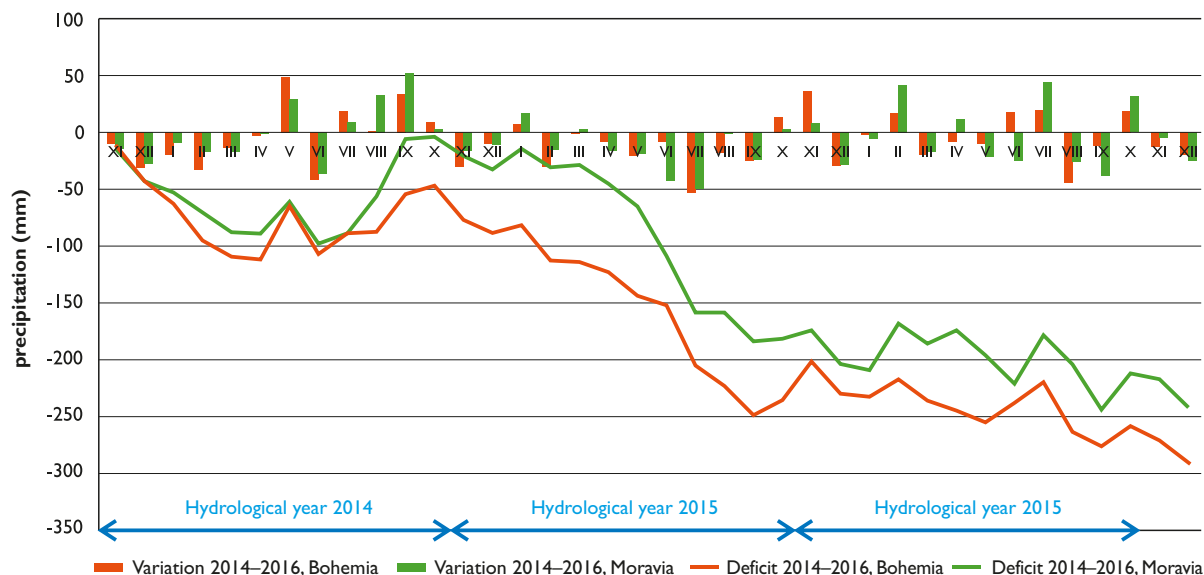
Comparison of the dry episode 2014–2016 with other periods of drought in the Czech Republic showed interesting results. Graph 2.3.2 shows that 2015 was the poorest year in

terms of precipitation when compared with other monitored years. The biggest difference of drought when compared with floods lies in the fact that its onset is very slow, but it may last for up to several years, when three consecutive dry years are no exception.

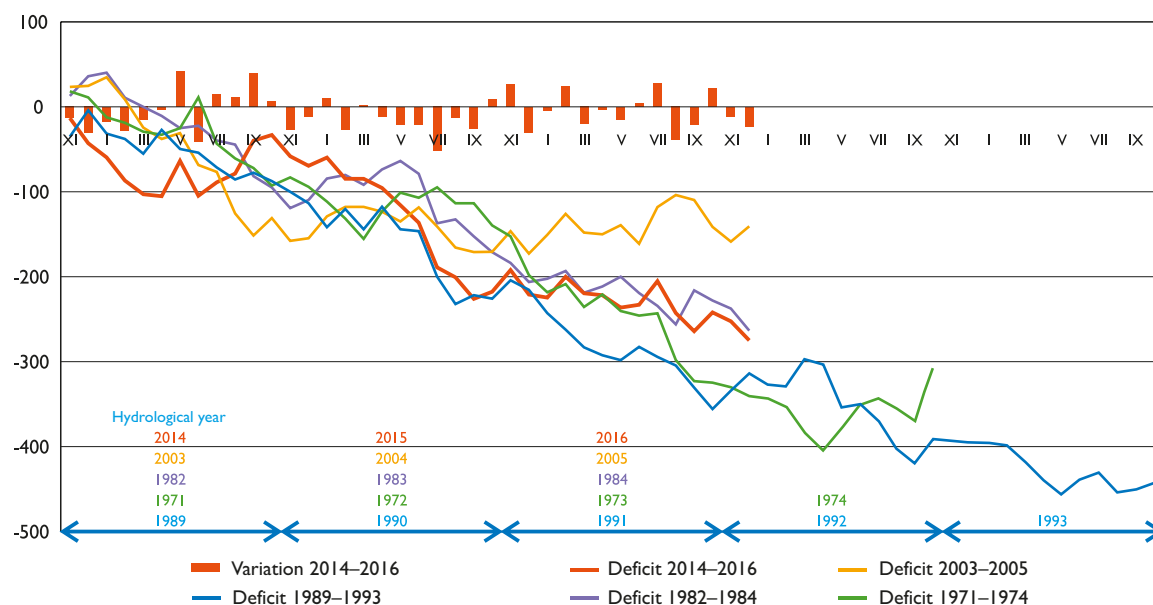
Drought is a condition with deviation of long-term average over a certain period, which does not necessarily imply an actual lack of water. For more information on drought and its intensity go to <http://portal.chmi.cz/aktualni-situace/sucho>.

Chart 2.3.1

The course of precipitation deficit for Bohemia and Moravia as compared with long-term average (period 1981–2010) in 2014–2016



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 committee WATER-DROUGHT

Interdepartmental committee WATER-DROUGHT continued in 2016 in performing the tasks resulting from Government Resolution No. 620/2015. In 2016, government members were presented with two reports concerning how these tasks are performed.

The final report and further information on the activities of the Interdepartmental committee WATER-DROUGHT together with analysis for compiling the Concept of protection against consequences of drought in the Czech Republic written by the members of the Interdepartmental committee WATER-DROUGHT is available at www.suchovkrajine.cz. The concept draft shall be presented to the government by 30 June 2017.



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



Denisa Krupová – Any difference?! – 5th grade, Primary school and Nursery school Pržno, Moravian-Silesian Region

3. QUALITY OF SURFACE WATERS AND GROUNDWATERS

3.1 Surface water quality

Current surface water quality in comparison with the 1991–1992 period

The map of the quality of waters in selected watercourses of the Czech Republic was first produced for the 1991–1992 period under CSN 75 7221 standard Water Quality – Classification of Surface Water Quality. Since this biennium, every year the Report on Water Management in the Czech Republic has included analogical maps so that they can be compared with the current water quality. With regard to the scope of indicators monitored in the 1990s, only a basic classification could be used for this comparison.

COD_{Cr} , BOD_5 , $N-NH_4$, $N-NO_3$ and P_{total} were used as indicators for assessment of surface waters. Comparison of Figure 3.1.1 and Figure 3.1.2 shows that in the past 25 years there has been a significant improvement of the water quality, however, even at present there are still sections (although short ones) of watercourses that belong to Class V of surface water classification. Most watercourses belong to Class III – polluted water. In comparison with the biennium of 2014–2015, while there has been an improved in water quality in some sections of the largest watercourses (e.g. in the Ohře, Vltava and Berounka Rivers) that were reclassified into Class II – slightly polluted water.

To produce the above presented map of quality of water in watercourses of the Czech Republic for the period 2015–2016, the resulting evaluation from selected profiles of the

water quality monitoring network provided by the Czech Hydrometeorological Institute (from primary data sent by the individual River Boards, s. e.). The respective monitored hydrometric profiles are classified in the following water contamination classes under the CSN 75 7221 standard:

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



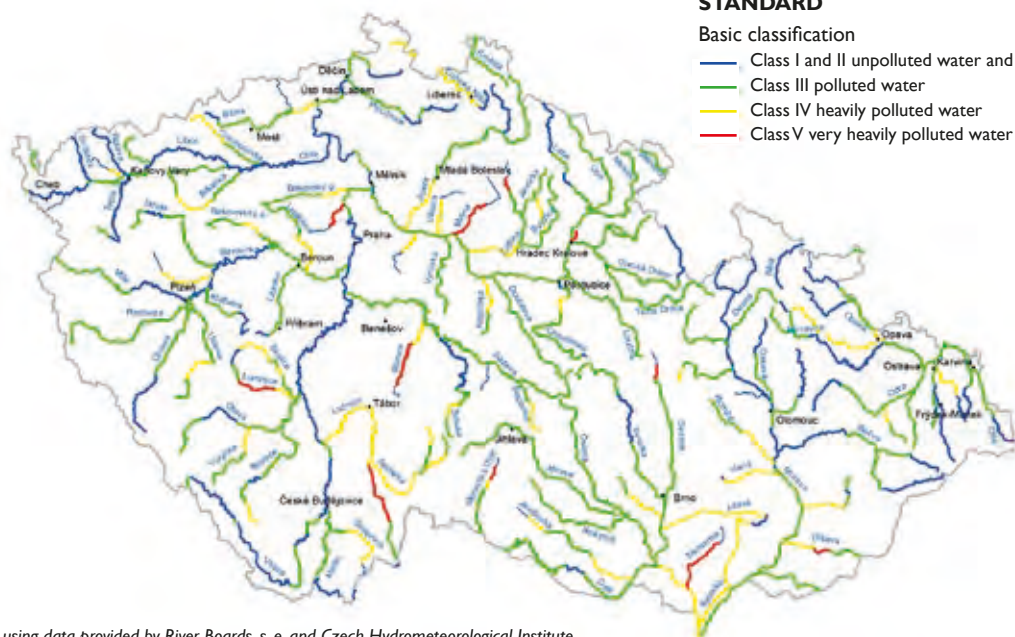
River bank vegetation (source: Ohře River Board, s. e.)

Figure 3.1.1
Quality of water in watercourses in the Czech Republic 1991–1992



Source: VUVTGM using data provided by the Czech Hydrometeorological Institute

Figure 3.1.2
Quality of water in watercourses in the Czech Republic 2015–2016



CLASSIFICATION UNDER CSN 75 7221 STANDARD

Basic classification

- Class I and II unpolluted water and slightly polluted water
- Class III polluted water
- Class IV heavily polluted water
- Class V very heavily polluted water

Source: VUVTGM using data provided by River Boards, s. e. and 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

2016 was a strongly above-average year in the Czech Republic in terms of temperatures, whereas in terms of precipitation it was an average year. Many water supply reservoirs (similarly to previous years) showed the presence of cyanobacterial bloom (i.e. a process caused by an increased content of mineral nutrients, especially phosphorus and nitrogen compounds).

Quality of water used for bathing during the 2016 bathing seasons

During the recreational season 2016 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 in waters in the Czech Republic due to water pollution caused particularly by phosphorus, which contributes to their excessive development at higher temperature and when there is a lot of sunshine.

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, i.e. undissolved substances transported in a watercourse as suspension and sediments. These matrices primarily bind many pollutants, in particular substances with significant accumulation potential that are complicated to detect in water samples and analysis in water solution thus does not provide plausible information about the presence of pollutants in watercourses.

Monitoring of the chemical situation concerning suspended matters and sediments was carried out in 2016 by the Czech Hydrometeorological Institute at 47 significant watercourse profiles of the Czech Republic and their significant tributaries in accordance with the General programme of monitoring and updated programme of situational monitoring of solid

matrices for 2016 approved by the MoE. In total, 130 chemical substances were monitored. The sampling frequency in suspended matters was four times a year, in sedimented suspended matters 4-6 times a year and in sediments twice a year. A gamma spectrometric analysis of radionuclides in sediments was performed at 10 selected profiles.

Bio-accumulation monitoring of surface waters

The programme of bio-accumulation monitoring allows to comprehensively determine the status of the sites in question and 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 the type of habitat.

In 2016, as in the previous years, the contamination of aquatic organisms with harmful substances was monitored in 21 river profiles in the Czech Republic that are a part of situation monitoring of surface waters. The results of bio-accumulation monitoring for 2016 clearly show that the aquatic ecosystem contains (often in high concentrations) priority hazardous substances, which in many cases exceed EQS limits and which are often not detected in water samples due to low concentrations. Aquatic organisms often accumulate such substances over the long term and thus provide information about their occurrence. Monitoring in several matrices then confirms complex contamination of the water environment. An analysis showed that values detected only in one of the matrices often do not provide sufficient information about the contamination of the entire aquatic ecosystem.



Living Ohře (source: Ohře River Board, s. e.)

3.2 Groundwater quality

A total of 675 sites were monitored in the national groundwater quality monitoring network in 2016. These comprised 184 springs, 221 shallow wells and 267 deep wells. The main indicators of groundwater pollution were ammonia ions (13% of objects exceeding the reference value for groundwater) and nitrates (12% of objects). Organic substances that serve as indicators include particularly pesticides and their metabolites (40% of objects exceeding reference values for the pesticides and 29% of objects exceeding the sum of pesticides).



Autumn in water (source: Ohře River Board, s. e.)

Table 3.2.1

Overview of the number of sites with exceedances of the limits (reference values) for groundwater for at least one indicator in 2016 (compared with 2015 and 2014)

Sites	Number of sites	Number of sites with exceedances of limit values for groundwater	% of sites with exceedances of limit values for groundwater		
			2014	2015	2016
Shallow wells	223	215	95.5	95.9	96.4
Deep wells and springs	452	371	77.8	75.1	82.1
Total	675	586	83.8	82.1	86.8

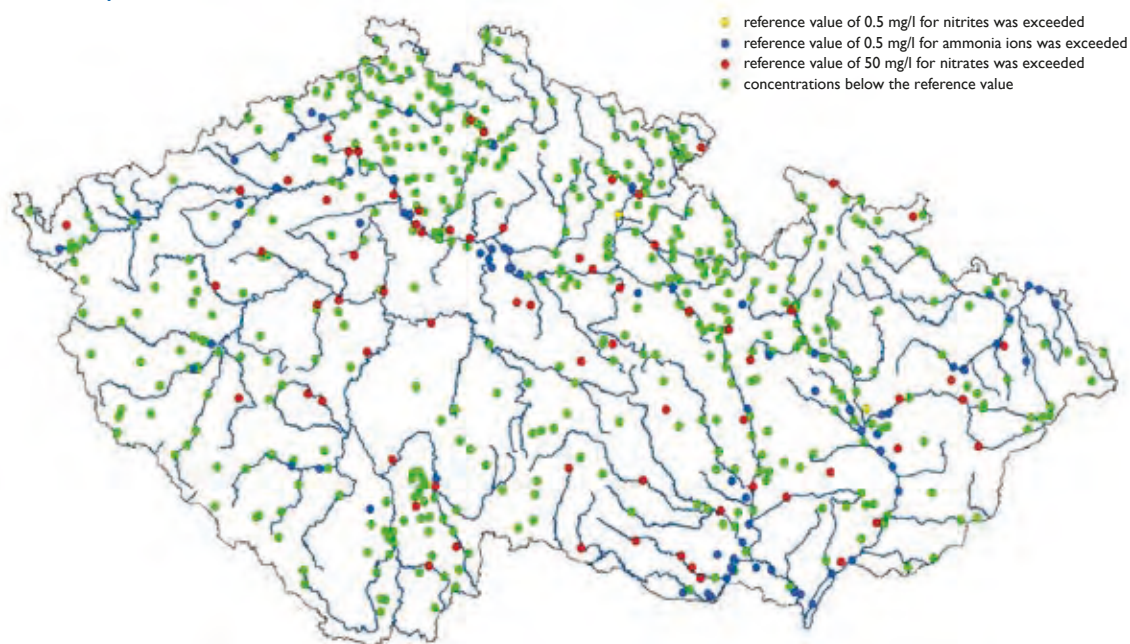
Source: Czech Hydrometeorological Institute



Julinka Retention Reservoir (source: Forests of the Czech Republic, s. e.)

Figure 3.2.1

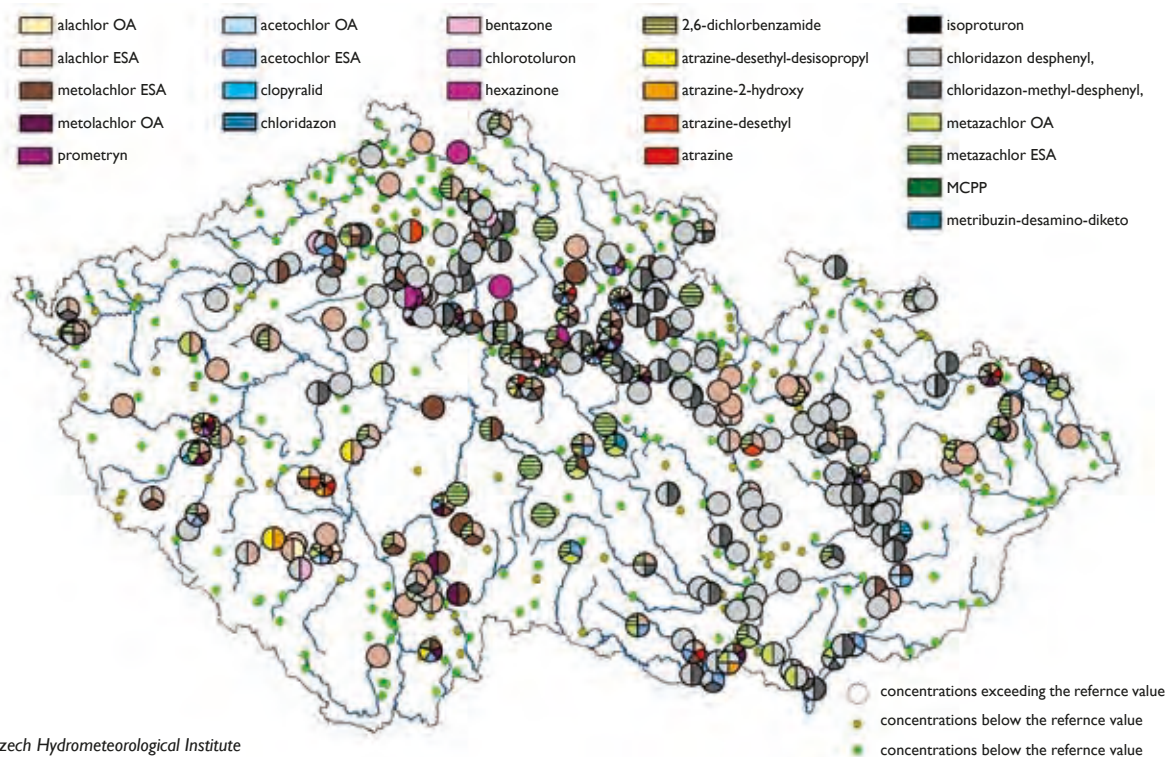
Concentrations of nitrogenous substances in groundwaters in 2016 (exceedances of reference values under Decree No. 5/2011 Coll.)



Source: Czech Hydrometeorological Institute

Figure 3.2.2

Concentrations of pesticides in groundwaters in 2016 (exceedances of reference values under Decree No. 5/2011 Coll.)



Source: Czech Hydrometeorological Institute



Johana Dráždilová – Life in sewerage and water from the pipeline – 4th grade, 15. Primary school, T. Brzkové 33-35, Pilsen, Pilsen 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.

Pursuant to the provision in Section 10 of this Decree, only abstractions (as well as waste water and mine water discharges) exceeding 6,000 m³ per year or 500 m³ per month are registered. The source documents for retrieving the data are the reports submitted to the Czech Statistical Office (hereinafter referred to as the “CSO”) by the respective river basin administrators before the deadline of 31 March of the following year. The data for 2016 were classified according to the NACE classification according to Eurostat. Similarly to the preceding years, with a view to integrating the data provided by the individual River Boards, state enterprises, no water transfers and waters abstracted for fishpond systems were included in surface water abstractions. Water transfers are not included in waste water discharges. The comparison of data for 2015 and 2016 was based on final official data of the Czech Statistical Office (www.czso.cz).



Sample taking (source: Vltava River Board, s. e.)



A laboratory, Prague, Vltava River Board, s. e. (author: Jakub Dobiáš)

Table 4.1
Classification of users in the individual user groups according to the NACE classification

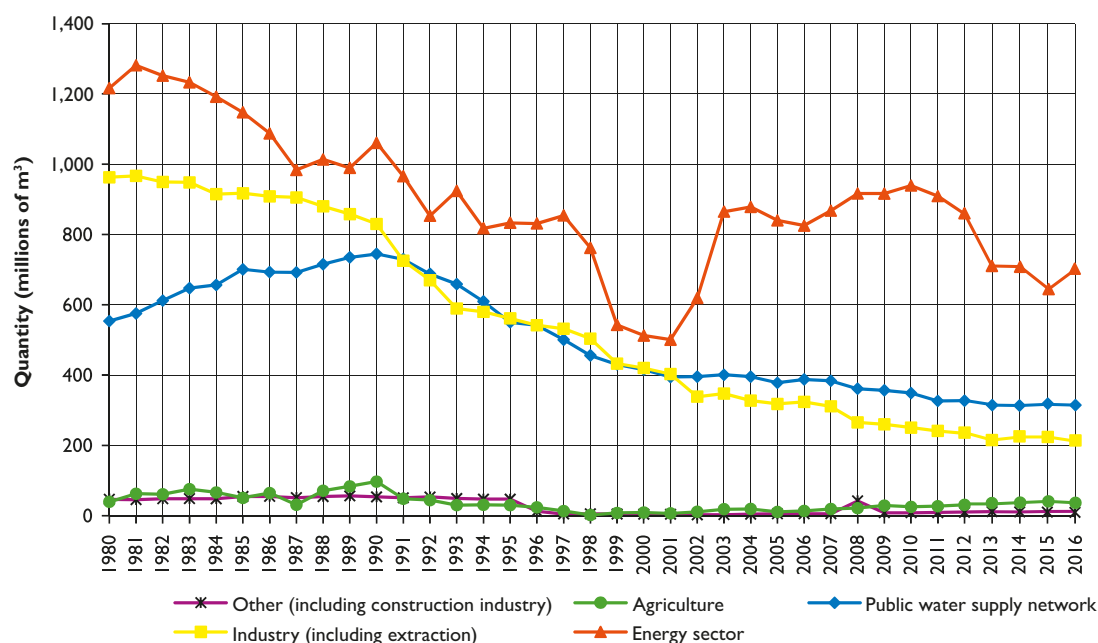
Public water supply networks	NACE 36
Public sewerage systems (excl. transfers)	NACE 37
Agriculture (incl. irrigation), forestry and fishing	NACE 01 – 03
Energy sector (electricity and heat generation and distribution)	NACE 35
Industry (incl. extraction of mineral resources – excl. energy sector)	NACE 05 – 33
Other (incl. construction industry)	NACE 38 – 96
Total (excl. fishponds and transfers)	NACE 01 – 96

Source: CSO

4.1 Surface water abstractions

The Reports on Water Management in the Czech Republic in the past decade largely stated that a year-over-year decrease in the total amount of surface water abstractions rather ceased. The exception was the year 2009, in which, compared to 2008, a temporary decline of surface water abstractions occurred, and also 2013, as in 2014 there occurred stagnation. 2015 was another slight decrease, which was partly due to the significantly dry period during that year. In 2016 there was a slight growth in the total amount of surface water abstracted: from 1,236.8 million m³ reported for 2015 to 1,272.1 million m³ in 2016.

Chart 4.1.1
Surface water abstractions in the Czech Republic in 1980–2016



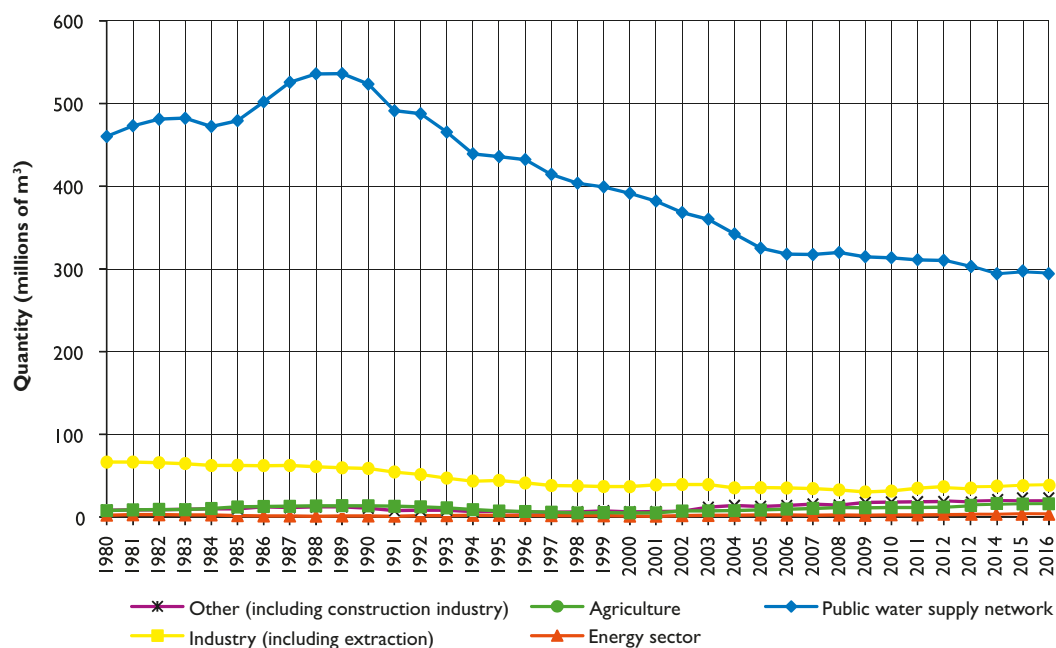
Source: VUV TGM using data provided by River Boards, s. e.

4.2 Groundwater abstractions

The Reports on Water Management in the Czech Republic assessing 2011 and 2012 stated that the decline rate in this category of abstractions reached its maximum, that means that the current state can be referred to rather as stagnation. Nevertheless, data for 2013 partially disproved this conclusion.

There was a similar situation in 2014 when the total amount of underground waters extracted dropped again in comparison with 2013 (although not dramatically) from 371.2 million m³ to 361.0 million m³, that is by 2.7%. In 2015, there was a slight increase – after a longer period of decrease – to 366.4 million m³. In 2016 there was another decrease in the amount of underground water abstracted to 362.8 million m³.

Chart 4.2.1
Groundwater abstractions in the Czech Republic in 1980–2016



Source: VUV TGM using data provided by River Boards, s. e.

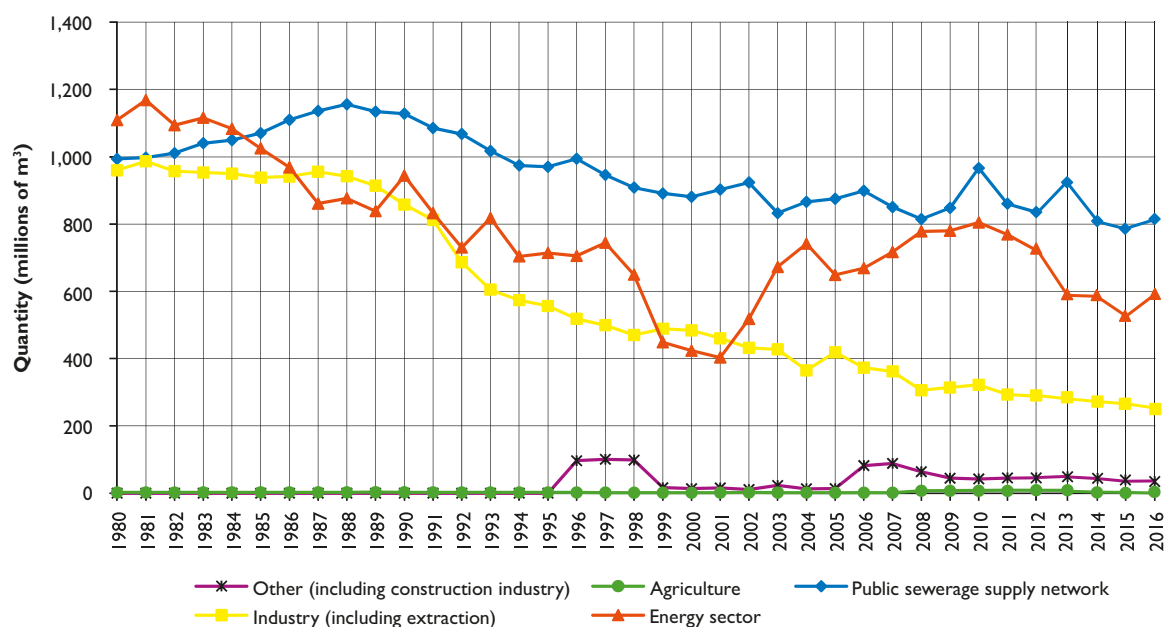
4.3 Waste water discharges

In 2016, in total 1,700.8 million m³ of waste waters and mine waters were discharged into surface waters. Compared to 2015, this represented a decrease of 4.9%. Similarly to the

preceding years (with regard to the integration of data provided by the individual River Boards, s. e.) these water discharges did not include waters discharged from fishpond systems.

Chart 4.3.1

Discharge of waste waters in the Czech Republic in 1980–2016



Source: VUVTGM using data by River Boards, s. e.



Field measurement (author: Jakub Dobiáš)



Michaela Jungová – Life-giving water – 2. B, Primary school, Školní 300, Volyně, South Bohemia Region

5. SOURCES OF POLLUTION

5.1 Point sources of pollution

Surface water quality is affected primarily by point sources of pollution (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.

Between 1990 and 2016 there was a decrease in the amount of the pollution discharged in BOD₅ by 96.2%, COD_{Cr} by 90.8% and in NM by 95.1%.

In 1990–2016, the water management sector succeeded also in reducing the quantity of the discharged hazardous and especially hazardous harmful substances. A significant decrease was also observed for macronutrients (nitrogen, phosphorus) as a result of the fact that waste water treatment technologies in the new and intensified waste water treatment plants apply the focused use of biological removal of nitrogen and biological or chemical removal of phosphorus.



The White Elbe in the Krkonoše Mountains (source: Elbe River Board, s. e.)

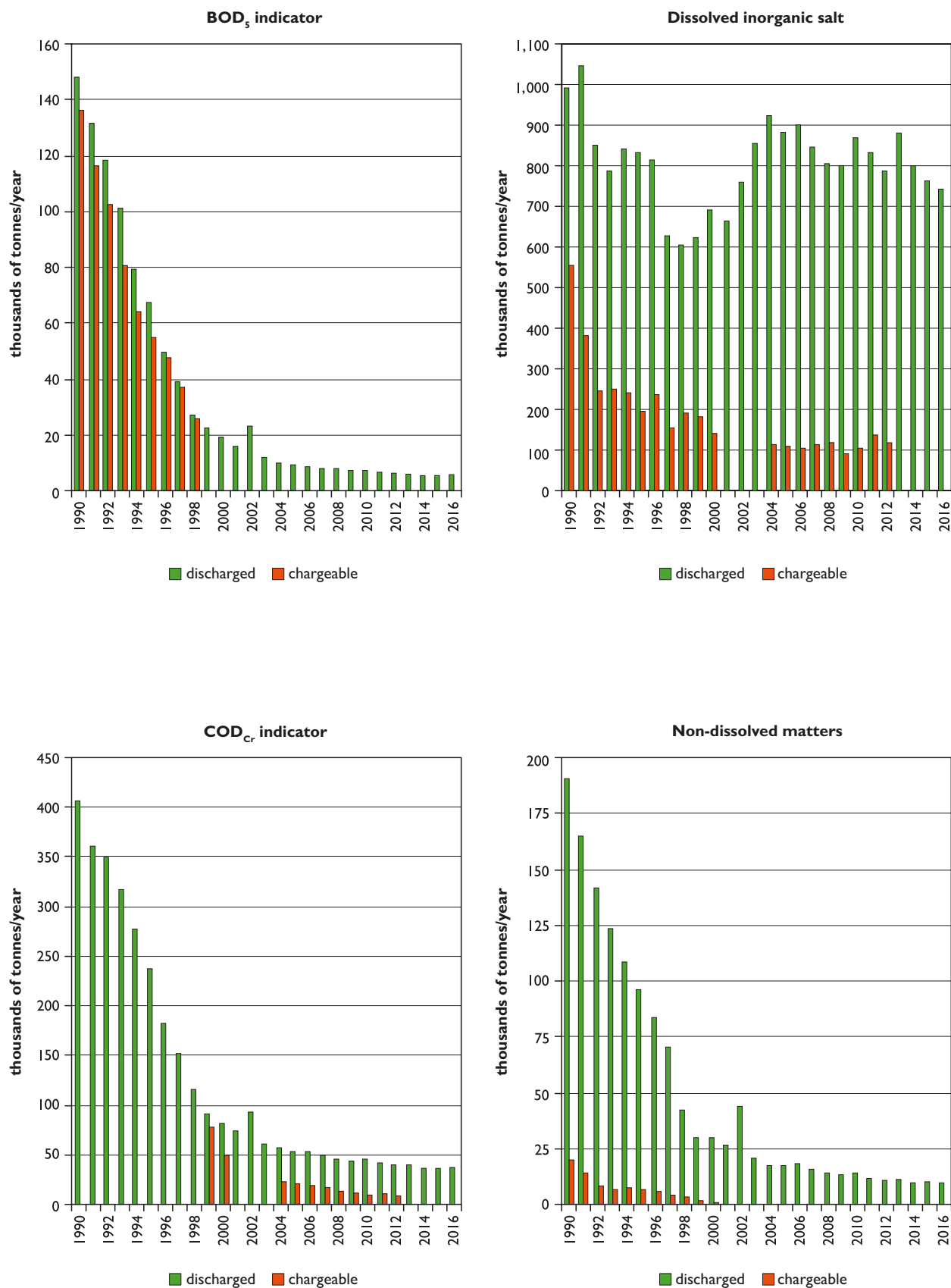
Table 5.1.1
Produced and discharged pollution in 2016

River Board, s. e.	Produced pollution in tonnes/year						Discharged pollution in tonnes/year					
	BOD ₅	COD _{Cr}	NM	DIS	N _{inorg}	P _{total}	BOD ₅	COD _{Cr}	NM	DIS	N _{inorg}	P _{total}
Elbe	51,644	124,154	54,646	195,437	7,116	1,274	1,320	10,527	2,320	191,418	2,076	222
Vltava	89,788	205,564	92,417	126,015	9,589	2,148	2,063	10,958	2,611	131,060	3,517	262
Ohře	18,378	42,060	20,653	86,092	2,297	750	403	3,568	1,323	93,754	1,276	250
Oder	31,641	64,744	28,404	180,807	3,582	685	646	5,198	1,444	197,763	1,172	125
Morava	66,894	161,466	81,996	134,577	7,395	1,695	1,230	7,195	1,719	128,923	2,016	199

Source: VUV TGM using data provided by River Boards, s. e.



A cycle (source: Ohře River Board, s. e.)

Chart 5.1.1**Discharged pollution and pollution on which charges were imposed in 1990–2016**

Source: VUV TGM using data provided by the CSO and River Boards, s. e.

5.2 Area sources of pollution

Area sources of pollution are, in addition to point sources of pollution, one of the most significant influences that affect the quality and therefore the condition of surface and underground water bodies. Especially in some indicators such as nitrogen or selected pesticides area sources of pollution represent the most serious source of water pollution. The most significant inputs are agriculture (especially nitrogen, pesticides and phosphorus), atmospheric deposition (polycyclic aromatic hydrocarbon, heavy metals – mercury, lead, cadmium) and substances of natural origin (particularly metals).

Fertilization

Since 2010, there has been a gradual increase in the total amount of fertilizers used per hectare of farmland. In 2015 and 2016 the value remained at approx. 6,700 kg/ha.

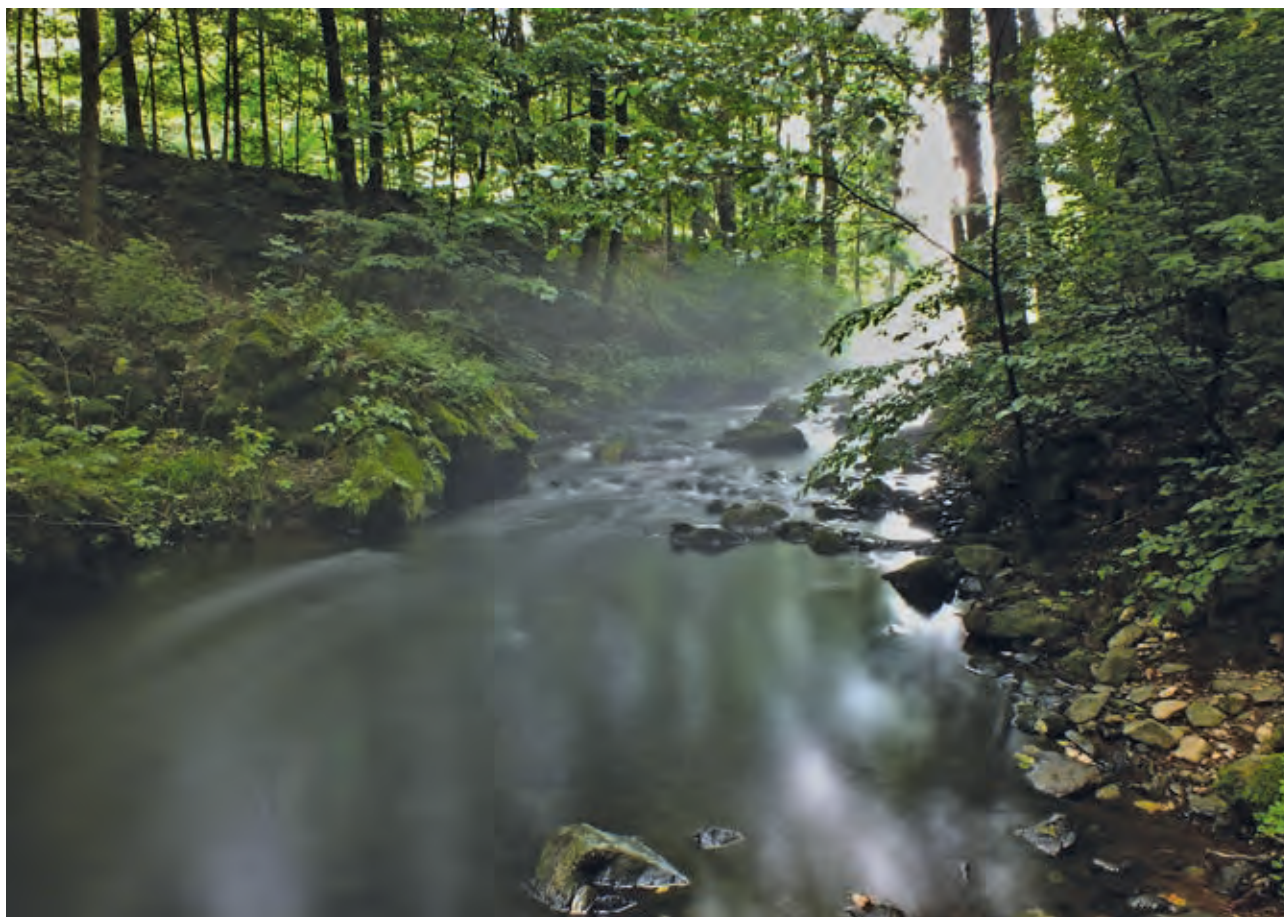
The growing trend in the consumption of fertilizers used on farmland is due to the inappropriate structure of crops (a decrease in areas with perennial forage crops, an increase in subsidized crops – particularly maize and rape).

Plant protection products

Another significant factor negatively affecting the quality of surface waters and groundwaters are chemicals that are used to prevent loss of crops, so-called plant protection products

that are classified – together with biocide preparations – as pesticides. Each year, thousands of tonnes of chemical compounds, often toxic or with other undesirable effects get in circulation. Excessive use of these substances is reflected in the final phase as increased organism burden and disruption of physiological processes. Pesticides are now used in 95% of agricultural land.

The consumption of effective substances contained in preparations for plant protection on farmland totalled 4,811.8 tonnes in the Czech Republic and was almost identical with the consumption in 2015. 1.35 kg of effective substances was used per 1 ha of farmland, the total area treated with plant protection products in 2016 was 14,447 tonnes ha and the total consumption of plant protection products was 12,809.8 tonnes, (an increase by 0.6% in comparison with 2015). Herbicides and desiccants contributed to the protection with 47.7%, fungicides with 27.4%, growth and development regulators with 8.9%, zoocides with 8.6% and other preparations with 7.4%. Data on the consumption of plant protection preparations and plant products in the Czech Republic in 2016 are based on the data submitted by approximately 3,100 entities whose area is around 74% of the total area of farmland, 86% of hop garden area, 62% of vineyard area, 52% of orchard area and 32% of grassland area. The main tool to be taken in order to ensure sustainable use of these substances is the National Action Plan (hereinafter referred to as the “NAP” aimed at reducing pesticide use in the Czech Republic. It is a set of measures intended to limit the adverse effects of preparations used for plant protection



The Bělá River, Boskovice (source: Morava River Board, s. e.)

products on human health and the aquatic environment and non-target organisms in the Czech Republic. The National Action Plan in the Czech Republic defines quantitatively measurable reducing, interim and final targets, measures and schedules with the view of reducing risks and impacts of preparation use on human health and the environment. This plan is implemented by the Ministry of Agriculture in cooperation with the Ministry of Health and the Ministry of the Environment. The National Action Plan is to be updated in 2017.

5.3 Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In 2016, the Czech Environmental Inspection registered in total 143 cases of accidental releases into surface waters and 10 releases into groundwaters in the Czech Republic.

The most common accidents continue to be those caused by transport. In 2016 there were registered 71 such accidents, which represents 30% of the total number of accidents. There was an increase by 5% in comparison with 2015. In total 22 accidents were accompanied by fish kill, which represents 9% of the total number of accidents and a decrease by 10% in comparison with 2015. Furthermore, there were nine accidents caused by agricultural activity, which is only 4% of the total amount. The cause (inflictor) of the accident was known in 116 events. Fire Rescue Department units intervened in 124 accidents registered by the Czech Environmental Inspection. The Czech Environmental Inspection investigated

or participated in the investigation of 73 accidents. Groundwater was polluted in ten cases.

5.4 Erosion of agricultural land

Currently, the Czech landscape is increasingly exposed to the effect of hydrological extremes (flood episodes caused by extreme rainfall and hydrological drought). Farming is one of the key factors that can mitigate the effects of climate change. Areas affected by hydrological extremes caused by climate change are expected to expand significantly in the Czech Republic in the years to come.

Erosion of agricultural land

There are specific conditions for the occurrence of water erosion in the Czech Republic as the country has greatest original soil blocks from all EU Member States and partial anti-erosion protection is used for growing crops that present erosion risk. This protection is ensured in the Czech Republic particularly with the Good Agricultural and Environmental Condition standard (hereinafter referred to as the "GAEC"). Under GAEC, land is protected against erosion by GAEC 5: the aim of GAEC 5 standard is mainly to protect soil from water erosion and to reduce the negative effects of erosion, such as damage to municipal and private property caused by flooding or silting with washed-out soil.

Monitoring of erosion of agricultural land has been carried out since 2012. Its main aim is to provide relevant information about the extent of the problem of erosion of agricultural



The Elbe River, the Předměřice nad Labem Weir (source: Elbe River Board, s. e.)



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

land, about the causes of this condition, the accuracy of targeting existing policies in the fight against erosion and about the effectiveness or ineffectiveness of some of erosion control measures. The subject of monitoring is manifestations of water and wind erosion and shallow slope deformations, which cause damage to agricultural land. Means for recording, managing and viewing information about monitored events is a web portal accessible from <http://me.vumop.cz>. Records of events are kept by employees of the State Land Office in cooperation with the Research Institute for Soil and Water

Protection, p. r. i. Obtained information is further used in the design of effective erosion control measures and in drafting new policies in this area.

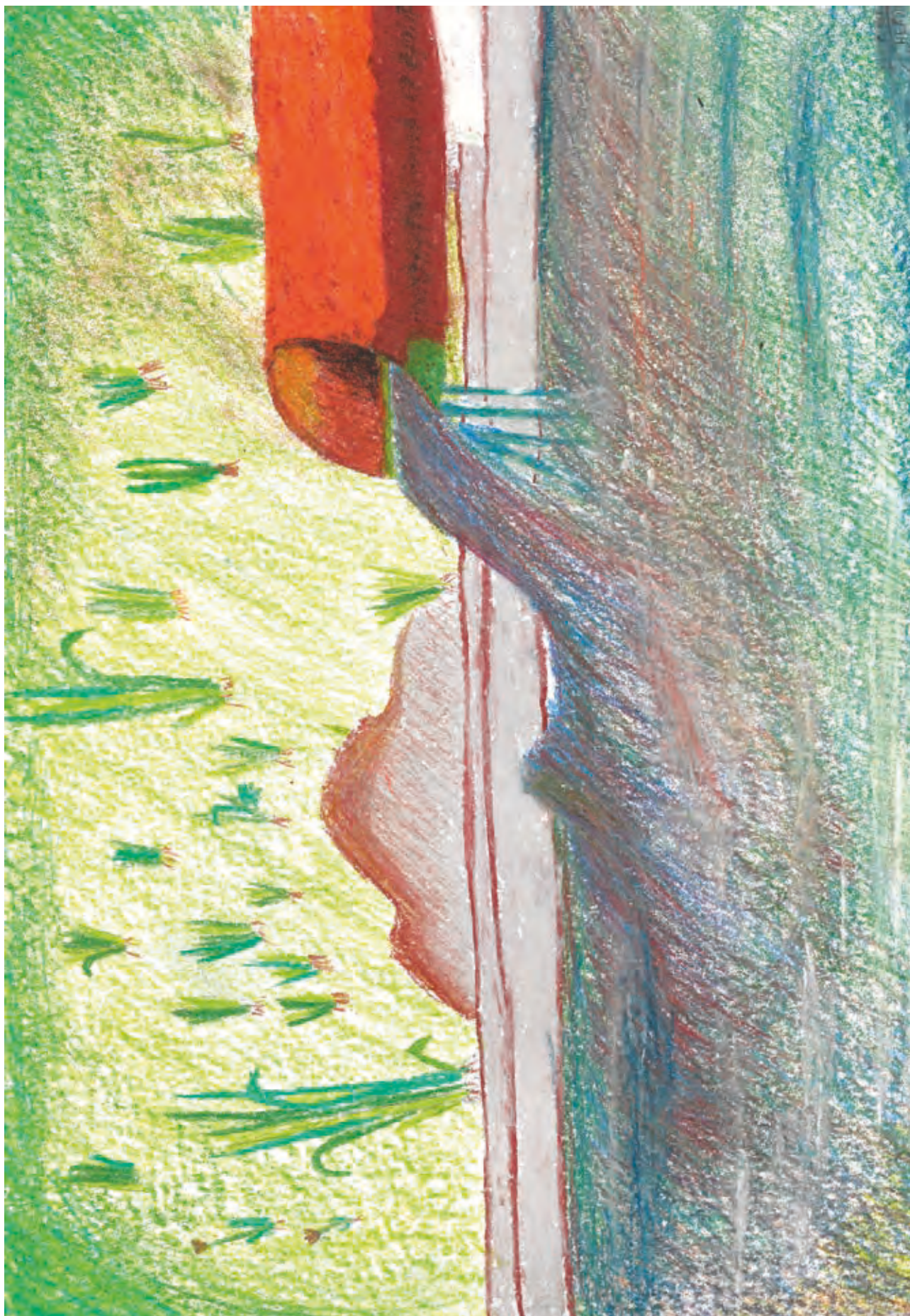
Torrential rains in most cases cause intensive surface runoff from agricultural land, which results in intensive erosion and subsequent accumulation of soil. Currently, in the Czech Republic more than 50% of agricultural land is threatened by water erosion and about 10% by wind erosion. Over the last 30 years, land degradation due to erosion dramatically accelerated.

Table 5.4.2

Monitoring erosion – overview of erosion events in the regions of the Czech Republic

Region	Total number of reported events	Number of reported events in 2016
City of Prague	0	0
South Bohemia	90	14
South Moravia	79	23
Karlovy Vary	4	0
Hradec Králové	111	36
Liberec	28	6
Moravia-Silesia	6	0
Olomouc	14	2
Pardubice	32	10
Pilsen	87	28
Central Bohemia	94	18
Ústí	16	10
Vysočina	200	70
Zlín	11	1
Czech Republic	772	218

Source: Research Institute for Soil and Water Reclamation



*Hynek Hladil – Waste water flowing to the river – 5th grade, Primary school and Nursery school, 17. Listopadu 1225, Kopřivnice, Moravian-Silesian Region
– First place in a competition as chosen by a jury*

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. From the hydrological viewpoint it may be called “the roof of Europe”. 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.

The main watercourse administrators are the River Boards, s. e., and Forests of the Czech Republic, s. e., who report directly to the Ministry of Agriculture. They are responsible for the management of 94.4% of the total length of watercourses in the Czech Republic. Other entities involved include the Ministry of Defence, the National Park Administrations and other natural and legal entities and they are responsible for 5.6% of watercourse management.

Table 6.1.1
Professional management of watercourses

Category	Administrator	Length of watercourses (km)	
		2015	2016
Significant watercourses	Elbe River Board, s. e.	3,667	3,586
	Vltava River Board, s. e.	5,503	5,520
	Ohře River Board, s. e.	2,377	2,377
	Oder River Board, s. e.	1,111	1,111
	Morava River Board, s. e.	3,755	3,756
	Total	16,413	16,350
Minor watercourses	Forests of the Czech Republic, s. e.	38,495	38,511
	River Boards, s. e., in total	40,928	39,120
	Other administrators ¹⁾	4,962	5,569
	Other ²⁾	3	0
	Total	84,388	83,200
Watercourses in total		100,801	99,550

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.

²⁾ From 2013 including sections of minor watercourses, for which the administrator has not yet been designated and which appear to be the solitary streams.

All significant watercourses are listed in Annex I of Decree No. 178/2012 Coll., stipulating the list of significant watercourses and the method of carrying out the activities relating to watercourse administration. It provides an overview of 819 watercourses included in the “List of significant watercourses”. This list also includes the identifier of watercourses (Central Register of Watercourses). Minor watercourses constituting the so-called “border” watercourses are also classified in this category. The significant watercourses, with a total length of 16,350 km, are administered under the provision of Section 4 of Act No. 305/2000 Coll., on river basins, by the respective River Boards, s. e.: the Elbe River Board, the Morava River Board, the Oder River Board, the Ohře River Board and the Vltava River Board. The backbone watercourses are the Elbe (370 km), the Vltava River (431 km) and the Ohře River (254 km) in Bohemia, the Morava River (269 km) and the Dyje River (194 km) in the south of Moravia and the Oder River (135 km) with the Opava River (131 km) in the north of Moravia and in Silesia.

All the other watercourses (provision of Section 43 of the Water Act) are in the category of minor watercourses. The administration of minor watercourses is carried out under the provision of Section 48 of the Water Act, based on the respective appointment by the Ministry of Agriculture (the provision of Section 48 (2) of the Water Act). If no administrator of a minor watercourse is appointed, the watercourse in question is managed by the administrator of the receiving watercourse where the outfall of the minor watercourse is situated. It does so until the administration of the watercourse is established under Section 48 (2) of the Water Act. The administration of minor watercourses may be carried out by the municipalities through the territory of which the minor watercourses flow, by natural or legal persons or, as the case may be, by the state organizational units using these minor watercourses or carrying out activities with which these watercourses are connected. The total length of minor watercourses according to the Central Register of Watercourses is 83,200 km. The process of reassessment, refining and reclassification of the mapping of the designated minor watercourses continues to be underway.



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

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

The acquisition value of the non-current tangible assets relating to watercourses amounted in 2016 to CZK 52.16 billion, which is by CZK 0.41 billion more than in 2015.

Auditing activities in the individual River Boards, s. e., are carried out by the respective controlling bodies. In 2016 there were a total of 94 audits, while two audits commenced in 2015 continued the following year. A total of 26 audits



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

Table 6.1.2

Acquisition value of non-current tangible assets relating to watercourses

Watercourse administrators directly responsible to the Ministry of Agriculture	2015	2016
	billions of CZK	
Elbe River Board, s. e.	10.33	10.48
Vltava River Board, s. e.	10.88	10.96
Ohře River Board, s. e.	9.97	10.10
Oder River Board, s. e.	6.07	6.10
Morava River Board, s. e.	8.60	8.60
Total River Boards, s. e.	45.85	46.24
Forests of the Czech Republic, s. e.	5.90	5.92
Total	51.75	52.16

Source: MoA

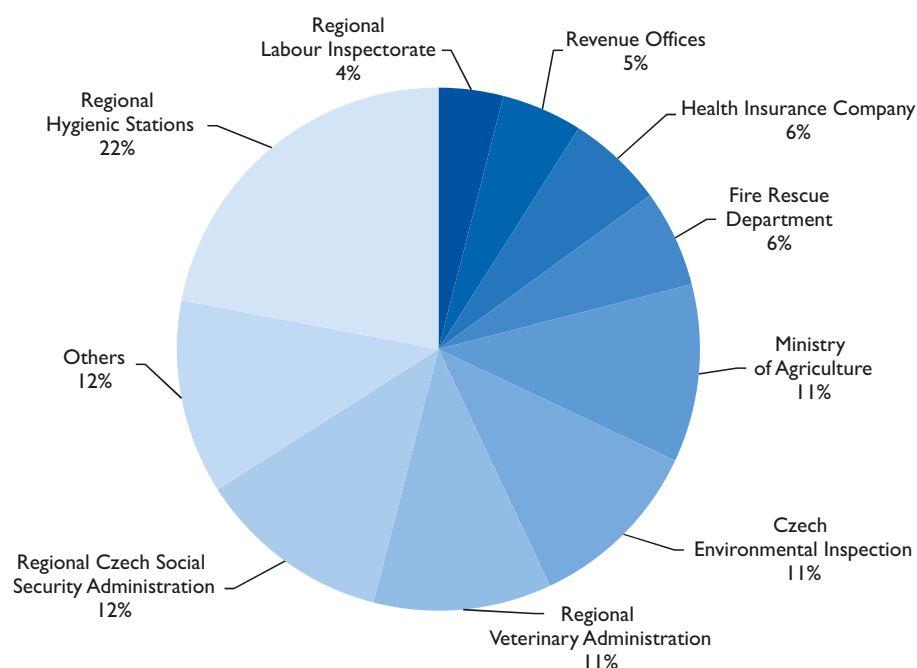
were performed at the Elbe River Board, s. e., 23 audits were performed at the Morava River Board, s. e., 19 audits at the Vltava River Board, s. e., 14 audits at the Oder River Boards, s. e., and 13 audits at the Oder River Board. Similarly to 2015, these audits were comprehensive as well as selective.

6.2 River Boards, state enterprises

In 2016, the total revenues generated by the River Boards, state enterprises, compared to 2015, decreased by approx. CZK 60 million, that is by 1.25%. This decrease was caused by three items of the revenue structure: electric energy generation, non-investment grants from the state budget and other revenues.

Chart 6.1.1

Auditing bodies performing audits at the River Boards, s. e., in 2016



Source: River Boards, s. e.

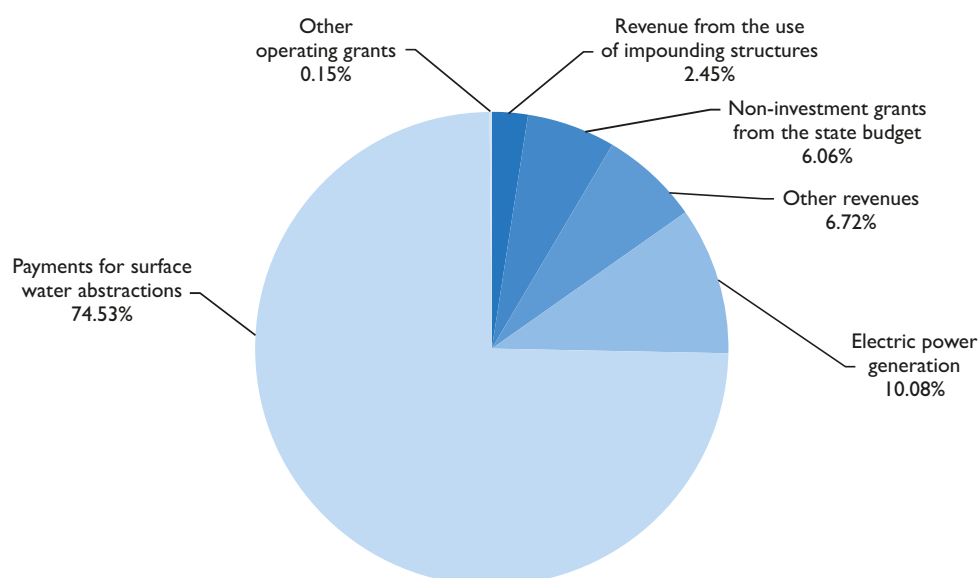
Table 6.2.1
Structure of the revenues of the River Boards, s. e., in 2016

Indicator	River Boards, s. e.					Total
	Elbe	Vltava	Ohře	Oder	Morava	
	thousands of CZK					
Payments for surface water abstractions	996,103	745,293	559,909	554,222	672,279	3,527,806
Electric power generation	27,754	225,704	138,347 ^{*)}	56,669	28,812	477,286
Sales from payments for the use of impounding structures	6,900	103,291	1,037	0	4,956	116,184
Other revenues	73,388	71,409	75,702	41,191	56,462	318,152
Non-investment grants from the state budget ^{*)}	41,676	104,493	27,072	22,304	91,425	286,970
Other operating grants	90	1,575	0	0	5,288	6,953
River Boards, s. e., in total	1,145,911	1,251,765	802,067	674,386	859,222	4,733,351

Source: River Boards, s. e.

Note: ^{a)} The item includes revenue from photovoltaic power plants.

Chart 6.2.1
Structure of the revenues of the River Boards, s. e., in 2016



Source: MoA

Table 6.2.2
Surface water supplies charged for in 2010–2016

River Boards, s. e.		2010	2011	2012	2013	2014	2015	2016
		thousands of m ³						
Elbe	a)	817,645	775,223	723,608	600,131	609,118	547,658	614,377
	b)	38,843	37,892	34,838	35,782	36,022	37,271	37,707
Vltava	a)	238,582	230,817	234,579	214,195	211,473	213,944	204,885
	b)	144,164	140,087	140,596	134,750	130,214	134,544	134,333
Ohře	a)	141,308	135,730	131,659	121,167	118,390	120,352	119,384
	b)	49,550	46,162	44,954	42,212	40,583	40,777	40,305
Oder	a)	144,155	138,942	139,124	136,614	135,223	136,832	127,995
	b)	66,936	64,179	67,102	65,105	64,920	65,045	62,306
Morava	a)	173,661	182,361	180,835	155,848	162,058	160,288	151,857
	b)	31,063	31,861	33,427	30,951	32,262	32,975	32,816
River Boards, s. e., in total	a)	1,515,351	1,463,073	1,409,805	1,227,955	1,236,262	1,179,074	1,218,498
	b)	330,556	320,181	320,917	308,800	304,001	310,612	307,467

Source: River Boards, s. e.

Note: a) charged for in total,

b) of which for public water supply systems.

In the River Boards, s. e., the average price of other abstractions of surface water in 2016 ranged around CZK 4.64 per m³, this means an increase by 6.89%, compared to

the previous year. This price is the so-called factually regulated price, which may include only justified costs, reasonable profit and the tax pursuant to the relevant tax regulations.

Table 6.2.3
Price for abstractions used for flow-through cooling in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	CZK/m ³						
Elbe	0.55	0.60	0.64	0.65	0.68	0.70	0.72
Vltava	1.10	1.13	1.22	1.22	1.25	1.25	1.27
Morava	0.67	0.67	0.72	0.89	1.15	1.19	1.21

Source: River Boards, s. e.

Note: Unit price per m³ excluding VAT.

Table 6.2.4
Price for other surface water abstractions in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	CZK/m ³						
Elbe	3.35	3.63	3.97	4.09	4.29	4.39	4.49
Vltava	2.94	3.15	3.40	3.45	3.55	3.62	3.69
Ohře	3.31	3.53	3.88	4.14	4.34	4.51	4.69
Oder	3.35	3.58	3.80	3.99	4.09	4.21	4.33
Morava	4.97	5.47	5.88	6.16	6.39	6.52	6.65
Average price quote by River Boards, s. e. ^{*)}	3.32	3.61	3.94	4.08	4.25	4.34	4.64

Source: River Boards, s. e.

Note: Unit price per m³ excluding VAT.

^{*)} Calculated using weighted average.

Table 6.2.5
Payments for surface water abstractions in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	millions of CZK						
Elbe	833	846	890	832	882	860	996
Vltava	686	707	778	725	739	759	745
Ohře ^{*)}	468	479	511	502	514	543	560
Oder	483	497	529	545	553	576	554
Morava	481	543	608	589	639	637	672
River Boards, s. e., in total	2,951	3,072	3,316	3,193	3,327	3,375	3,527

Source: River Boards, s. e.

Note: ^{*)} Excluding revenue from transport and abstraction of water.

In the current approach the current prices do not reflect the value of surface water, but they reflect the costs expended by the River Boards, s. e. on watercourse and river board administration. These prices are subject to regulation pursuant to Act No. 526/1990 Coll., on prices, and the rules stipulated by the decisions of the Ministry of Finance on price regulation, i.e. by the relevant notifications issuing the list of goods with regulated prices which are published in the Price Bulletin.

In 2016, the River Boards, s. e., reported in aggregate an increase in revenues from payments for surface

water abstractions, in absolute figures amounting to CZK 152 million, which means there was a year-on-year increase in this revenue category by 4.5%, compared to 2015. Three River Boards, s. e. reported an increase: the Elbe River Board, s. e., by CZK 136 million, the Morava River Board, s. e., by CZK 35 million and the Ohře River Board, s. e., by CZK 17 million. There were only two River Boards, s. e., who reported a decrease in this type of revenue (the Vltava River Board, s. e., and the Oder River Board, s. e.).



The Úšovice Stream (author: Anna Žáčková)

In 2016, revenues from sales of electric power from small hydroelectric power plants owned by the River Boards, s. e., reached the absolute minimum since 2008. The year-on-year drop by 22% was due to the fact that no support was allocated to renewable source of energy to small power plants reconstructed between 2 October 2013 and 31 December 2015. The total revenues for electric power generation by River Boards, s. e., were slightly below CZK 475.2 million.

Revenues from sales of electric power in small hydroelectric power plants (hereinafter referred to as the “SHPP”) are a significant part of the income received by River Boards, s. e., and they subsequently largely contribute to the payment of costs incurred by the administrators of river boards and watercourses. In 2016, there was another suspension of paying the grants to renewable sources of energy to SHPP reconstructed between 2 October 2013 and 31 December 2015. On the basis of the interpretation of the Energy Regulatory Office, the market operator (OTE, a. s.) suspended the payment of support for the renewable sources of energy to the above defined SHPP. In total, this decrease in revenue of River Boards, s. e., amounted to CZK 143.2 million, with the Ohře and Vltava River Board being affected the most. Negative consequences of the situation were prevented thanks to the notification of the support, which was provided

by the Ministry of Industry and Trade. Since 2016, the Energy Regulatory Office renewed the payment of the total sum of the grant to SHPP reconstructed in 2016. On 14 December 2016, the Government of the Czech Republic approved an amendment of the relevant act that addressed rectification of the situation of the SHPP reconstructed in 2013–2015. The unpaid subsidies for January–September are to be paid to the SHPP affected during 2017.

Table 6.2.6
Actual loss for January–September 2016 incurred by not receiving support for small hydroelectric power plants owned by the River Boards, s. e., reconstructed in 2 October 2013–31 December 2015

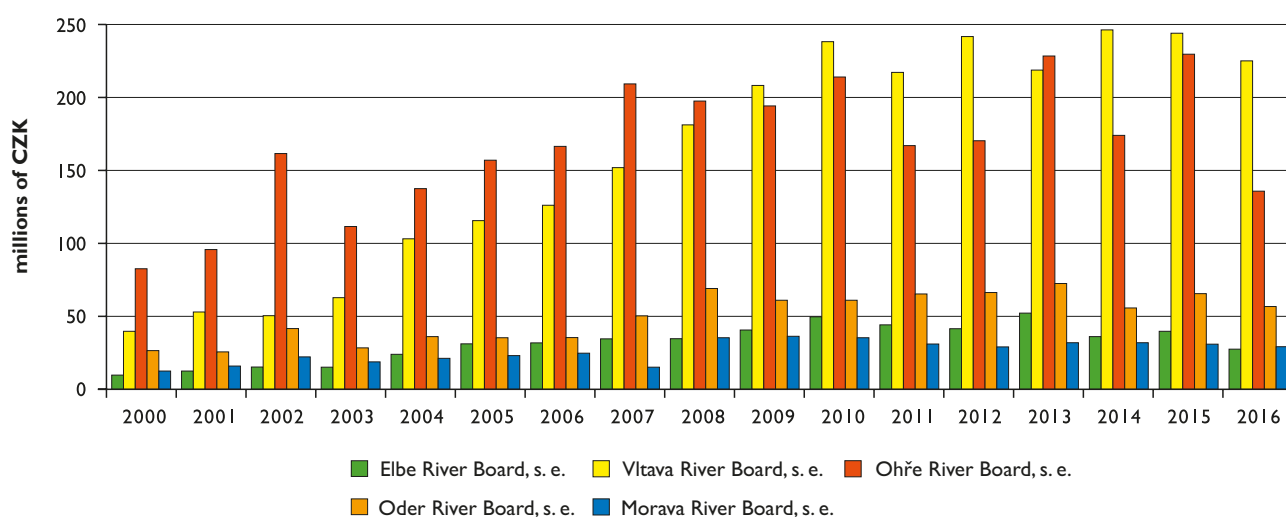
River Board, s. e.	Actual loss incurred by not receiving green bonuses for January–September 2016 in CZK
Ohře	90,030,028.00
Vltava	50,204,689.90
Elbe	2,756,000.00
Oder	135,916.00
Morava	59,147.00
Total	143,185,780.90

Source: MoA, River Boards, s. e.

Table 6.2.7**Number of small hydroelectric power plants owned by the River Boards, s. e., in 2010–2016**

River Boards, s. e.	Indicator	2010	2011	2012	2013	2014	2015	2016
Elbe	Number of small hydroelectric plants	20	20	20	20	20	20	20
	Installed capacity in kW	5,892	5,892	6,108	6,438	6,438	6,438	6,795
	Electric power generation in MWh	23,589	20,871	19,293	23,509	16,349	15,880	12,288
	Sales in thousands of CZK	49,299	44,387	41,222	52,257	36,532	39,390	27,754
Vltava	Number of small hydroelectric plants	18	18	19	19	19	19	19
	Installed capacity in kW	21,200	21,341	21,607	21,816	22,016	22,016	22,128
	Electric power generation in MWh	106,141	93,459	96,937	86,749	92,102	88,474	99,497
	Sales in thousands of CZK	238,981	217,348	242,709	219,464	246,837	244,146	225,704
Ohře	Number of small hydroelectric plants	21	21	21	21	21	21	21
	Installed capacity in kW	16,930	16,930	16,930	16,930	16,966	16,966	16,966
	Electric power generation in MWh	106,168	81,134	77,422	102,642	67,371	84,954	84,910
	Sales in thousands of CZK	214,290	167,297	171,112	229,545	174,342	230,236	136,223
Oder	Number of small hydroelectric plants	16	16	16	16	16	16	23
	Installed capacity in kW	5,731	5,731	5,809	5,809	5,809	5,809	6,236
	Electric power generation in MWh	30,937	28,113	26,068	27,201	20,656	24,535	21,569
	Sales in thousands of CZK	60,568	65,682	66,000	72,506	56,006	65,509	56,669
Morava	Number of small hydroelectric plants	14	15	15	15	15	15	15
	Installed capacity in kW	3,482	3,495	3,497	3,497	3,497	3,497	3,497
	Electric power generation in MWh	14,365	12,607	11,323	12,228	12,343	11,535	11,008
	Sales in thousands of CZK	35,623	30,831	29,331	31,592	32,014	30,432	28,812
Total	Number of small hydroelectric plants	89	90	91	91	91	91	98
	Installed capacity in kW	53,235	53,389	53,951	54,490	54,726	54,726	55,622
	Electric power generation in MWh	281,200	236,184	231,043	252,329	208,821	225,378	229,272
	Sales in thousands of CZK	598,761	525,545	550,374	605,364	545,731	609,713	475,162

Source: River Boards, s. e.

Chart 6.2.2**Development of revenues of small hydroelectric power plants owned by the River Boards, s. e., in 2000–2016**

Source: River Boards, s. e.

Table 6.2.8
Other revenues of River Boards, s. e., in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	thousands of CZK						
Elbe	89,889	80,646	98,258	83,184	147,863	86,346	73,388
Vltava	113,624	103,820	109,261	144,774	92,183	93,132	71,409
Ohře	101,250	109,694	94,847	90,474	107,668	79,965	75,702
Oder	108,667	93,210	48,316	39,639	43,802	43,221	41,191
Morava	56,000	50,719	62,345	74,491	53,933	57,799	56,462
Total	469,430	438,089	413,027	432,562	445,449	360,463	318,152

Source: River Boards, s. e.

Table 6.2.9
Grants used by River Boards, s. e., in 2016

River Boards, s. e.	Operating grants	Investment grants	Grants in total
	thousands of CZK		
Elbe	41,769	69,015	110,784
Vltava	106,068	21,192	127,260
Ohře	27,072	36,734	63,806
Oder	22,304	366,900	389,204
Morava	97,462	88,899	186,361
River Boards, s. e., in total	294,675	582,740	877,415

Source: MoA, River Boards, s. e.

Other revenues of the River Boards, s. e., include a list of less significant items such as income from lease of land, non-residential premises and water surfaces and from other business activities. The most important item among these revenues is income from performance of machinery and automobile transport, from performance of laboratories and for design and engineering. The total sum is also affected by financial yield.

In 2016, same as in the previous year, there was a year-on-year decrease of other revenues of River Boards, s. e., by CZK 42 million. All River Boards, s. e., recorded a decrease, the biggest one was recorded by the Vltava River Board, s. e., (year-on-year decrease by CZK 21.7 million) and the Elbe River Board, s. e., (decrease by CZK 13 million). In other River Board, s. e., there was just a slight decrease ranging between CZK 4.3–1.3 million.

In order to cover financial needs regarding the key activities of the River Boards, s. e., a lot of operational and investment grants are used every year. State subsidies are necessary for systematic activities allowing for implementation of flood control measures, defining inundation areas and producing a number of conceptual studies and the like as well as for remedying flood consequences.

In 2016, the total amount of grants was CZK 877.4 million, which means an increase of almost 8%, compared to 2015. Grants of investment nature showed a year-on-year increase

by 21% (i.e. by CZK 100.6 million), whereas operating grants dropped by CZK 36 million (year-on-year increase by 11%). The grants were allocated to programmes focusing on both prevention and remedying of flood damages from previous years.

Compared to 2015, the total costs in 2016 decreased by CZK 172 million, i.e. the year-on-year decrease amounted to 3.7%. The most significant year-on-year decrease was in two items – financial costs with year-on-year drop by 41.6%, although in absolute figures only by CZK 1.6 million and other costs with year-on-year drop by 35.9%, which means in absolute figures a drop by CZK 128.7 million. Three more items showed a decrease ranging between 5.1 and 8.5%, whereas three items showed a slight increase by up to 2.8%.



The Pařížov Dam on the Doubrava River (source: Elbe River Board, s. e.)

Table 6.2.10
Costs of River Boards, s. e., in 2015 and 2016

Type of cost	Year	River Boards, s. e.					Total
		Elbe	Vltava	Ohře	Oder	Morava	
		millions of CZK					
Depreciation	2015	157.4	311.1	195.2	146.3	160.4	970.5
	2016	159.0	321.9	190.1	147.1	165.8	983.9
Repairs	2015	230.6	319.0	201.2	126.7	157.8	1,035.3
	2016	218.6	292.3	153.3	152.3	130.7	947.1
Material	2015	38.9	29.6	18.8	36.6	48.3	172.2
	2016	41.1	28.7	15.4	32.0	46.2	163.4
Energy and fuel	2015	34.4	37.4	23.7	5.0	12.5	113.8
	2016	32.7	34.6	21.0	5.0	11.4	105,4
Personnel costs	2015	488.2	434.7	337.3	240.4	319.0	1,819.6
	2016	491.4	447.0	338.7	248.1	344.5	1,869.7
Services	2015	60.2	79.8	29.8	33.8	32.3	235.8
	2016	60.2	83.3	27.5	32.5	32.4	235.9
Financial costs	2015	0.4	0.9	0.1	0.2	2.2	3.8
	2016	0.8	0.7	0.1	0.2	0.4	2.2
Other costs	2015	39.8	67.7	87.9	83.0	79.8	358.2
	2016	120.1	29.6	28.6	36.3	14.9	229.5
Total costs	2015	1,050.0	1,280.2	894.0	672.8	812.3	4,709.3
	2016	1,123.9	1,238.1	774.6	654,3	746.3	4,537.2

Source: River Boards, s. e.

In 2016, River Boards, s. e. expended on investments the amount of CZK 1.86 billion, of which 67.7% (CZK 1.26 billion) was used from their own resources and 32.3% (in absolute figures: CZK 0.6 billion) of investment funds were covered by external financial resources.

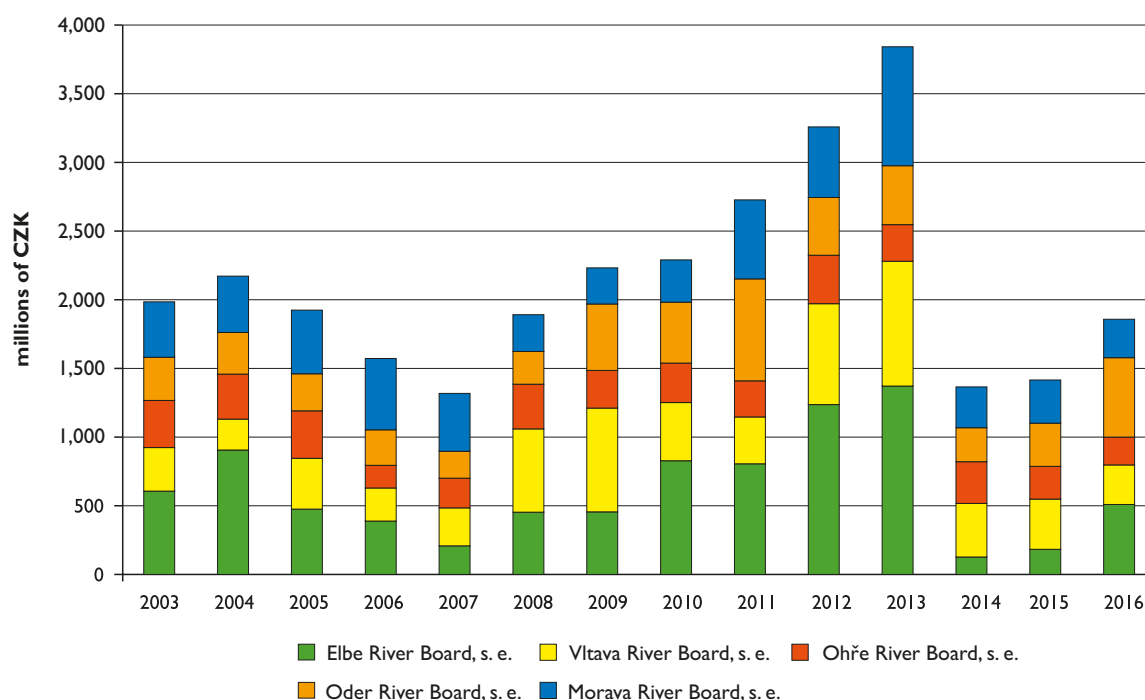
In 2016 there was a significant year-on-year increase in the total investment expended by River Boards, s. e., by approx.

31%, in absolute figures by CZK 441 million. Other sources that covered investment construction of River Boards, s. e., in 2016 were funds amounting to CZK 601 million, of which almost 90% were funds from the state budget and 10% from other sources. Other sources included the OPE funds, the EU funds, municipal funds and free transfers. The largest amount of funding was used for flood control measures, the revitalization of river systems and restoration of hydraulic structures.

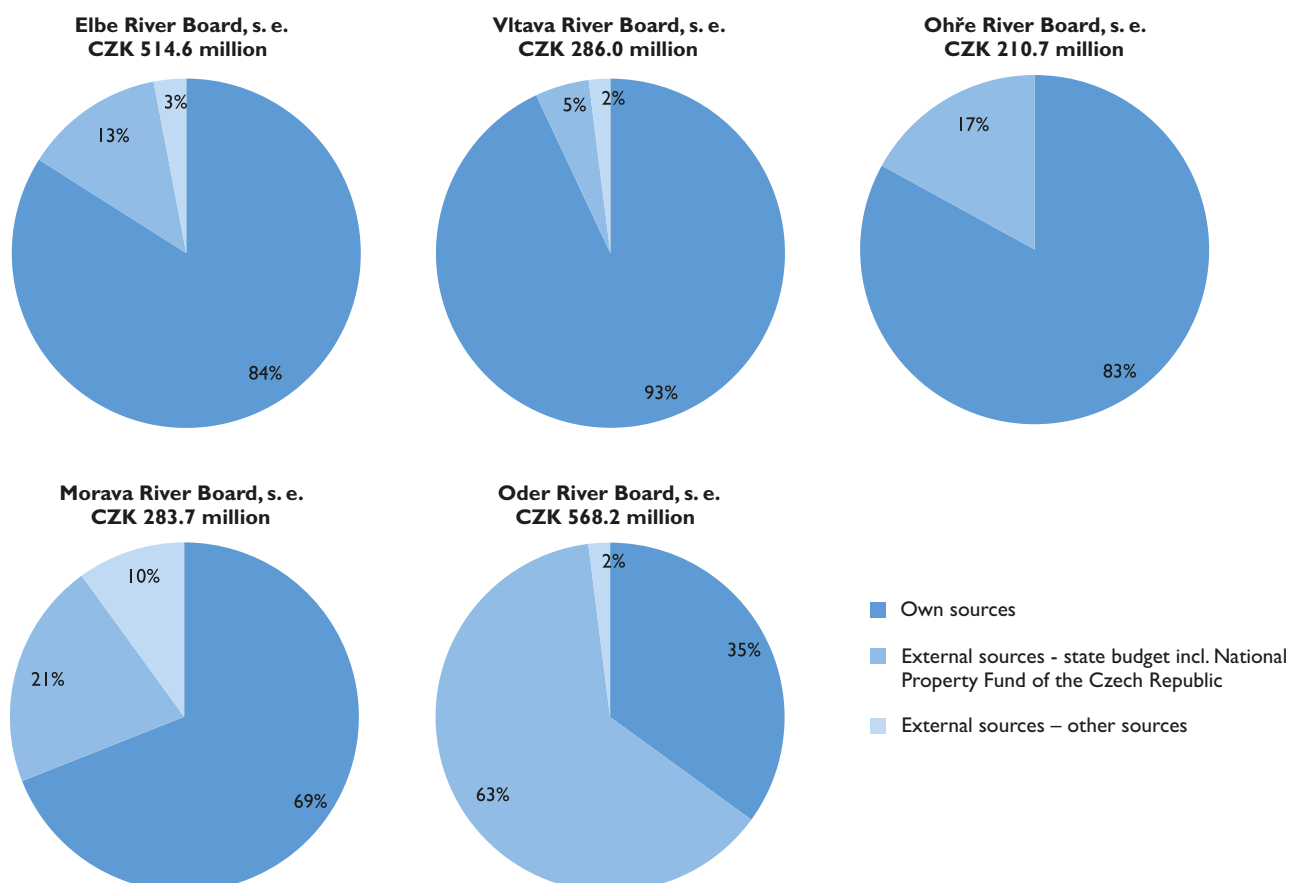
Table 6.2.11
Investments made by River Boards, s. e., in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	millions of CZK						
Elbe	829.8	806.7	1,240.8	1,378.3	132.6	189.9	514.6
Vltava	428.3	346.7	729.5	905.2	386.7	361.5	286.0
Ohře	287.4	265.8	357.1	262.5	306.7	242.5	210.7
Oder	443.4	741.2	419.7	435.4	248.4	313.7	568.2
Morava	302.6	571.9	512.0	856.0	290.4	314.5	283.7
Total	2,291.5	2,732.3	3,259.0	3,837.4	1,364.8	1,422.1	1,863.2

Source: River Boards, s. e.

Chart 6.2.3**Development of capital construction in River Boards, s. e., in 2003–2016**

Source: MoA, River Boards, s. e.

Chart 6.2.4**Structure of the use of investment funds by resource types in River Boards, s. e., in 2016**

Source: MoA, River Boards, s. e.

The financial results reached by all River Boards, s. e., showed only a profit. In total, River Boards, s. e., reached a profit amounting to almost CZK 197 million. In comparison with the previous year the profit grew by more than 134% (CZK 112.8 million).

In 2016, similarly to 2015, Morava River Board, s. e., showed the highest increase in profit. In comparison with the previous year (CZK 18.8 million) its profit grew significantly by CZK 94.1

million to almost CZK 113 million. The only year-on-year drop was reported by Vltava River Board, s. e. (in year-on-year comparison by 14.5%). All other River Boards, s. e., reported a growth in profit in comparison with 2015.

The proposal how the available part of profit shall be used is discussed at each River Board, s. e., by its supervisory board and the decision how the available profit should be used is to be taken by its founder.

Table 6.2.12
Economic results of River Boards, s. e., (profit, loss) in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	thousands of CZK						
Elbe	27,509	29,908	21,488	770	12,100	16,471	22,026
Vltava	13,530	12,702	25,088	14,495	16,022	16,038	13,711
Ohře	11,776	4,758	11,284	12,624	13,008	20,300	27,422
Oder	13,785	12,721	15,247	16,603	13,718	12,495	20,845
Morava	8,171	5,355	5,114	6,200	7,786	18,830	112,916
Total River Boards, s. e.	74,771	65,444	78,221	50,692	62,634	84,134	196,920

Source: River Boards, s. e.

Table 6.2.13
Allocation of profit of River Boards, s. e., for 2016

River Boards, 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	22,026	0	8,026	11,800	0	2,200	0
Vltava	13,711	3,556	8,000	0	155	2,000	0
Ohře	27,422	10,422	7,000	10,000	0	0	0
Oder	20,845	0	10,845	0	30	9,970	0
Morava	112,916	11,292	7,480	0	0	9,208	84,936

Source: River Boards, s. e.

The average number of employees in River Boards, s. e., increased in 2016 by almost 10 employees to a total of 3,575.

Table 6.2.14
The number of employees of River Boards, s. e., in 2010–2016 (average recalculated number)

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
Elbe	939.7	947.1	927.5	920.7	924.8	919.2	903.6
Vltava	779.2	846.3	841.4	842.3	852.8	852.0	854.7
Ohře	604.9	620.7	616.1	617.5	617.7	618.6	613.5
Oder	457.2	464.3	463.5	467.1	464.2	461.6	465.4
Morava	673.9	698.0	694.0	683.3	692.7	712.6	737.4
River Boards, s. e., in total	3,454.9	3,576.4	3,542.5	3,530.9	3,552.2	3,564.0	3,574.6

Source: River Boards, s. e.

The average monthly salary in the River Boards, s. e., in 2016 grew on average by 2.8% to CZK 31,497.

Table 6.2.15
Average salaries in River Boards, s. e., in 2010–2016

River Boards, s. e.	2010	2011	2012	2013	2014	2015	2016
	CZK/month						
Elbe	28,209	28,350	29,540	30,293	30,823	31,596	32,538
Vltava	28,864	28,311	29,285	29,808	29,809	30,398	31,087
Ohře	29,759	30,148	31,335	31,698	32,312	33,242	33,505
Oder	27,190	28,105	28,714	29,458	30,083	31,133	31,787
Morava	25,310	25,812	25,756	26,479	26,668	27,167	28,392
Average monthly salary in River Boards, s. e.^{*)}	27,905	28,126	28,942	29,574	29,932	30,650	31,497

Source: River Boards, s. e.

Note: *) Calculated using weighted average.

6.3 Forests of the Czech Republic, s. e.

Forests of the Czech Republic, s. e., carries out the management of the specified minor watercourses and torrents as one of non-production forest functions. In 2016, Forests of the Czech Republic administered more than 38.5 thousand km of watercourses.

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 5.92 billion (in particular watercourse regulation, torrent and ravine control, flood control measures and water reservoirs). The watercourse management is carried out by seven Watercourse Administrations, with territorial responsibility according to the respective river basin districts, including the new Watercourse Administration – Berounka River Board, which are all methodically controlled by the Water Management Department at the Head Office of Forests of the Czech Republic, s. e.

In 2016, the activities of Forests of the Czech Republic in the field of water management focused in particular on the following:

- remedying flood damage from 2013 and 2014,
- implementation of both capital investment projects and non-investment projects aimed at flood control measures, erosion control measures and also the public interest projects pursuant to Section 35 of the Forest Act,
- carrying out repairs and maintenance of property,
- preparation and implementation of projects under the MoA subsidy programme “Flood Prevention Stage III” and

“Measures in minor watercourses and small water reservoirs”,

- other activities aimed at riparian stand management, revitalization of watercourses which were improperly regulated in the past, non-productive forest functions, support of endangered species, elimination of non-indigenous invasive plant species, etc.,
- administering the Central Register of Watercourses and Water Reservoirs and inventory of assets.

The management of watercourses and the implemented measures (repairs, rehabilitation and new investments) were mainly funded from the organization’s own resources and to a certain extent from grants and subsidies. As regards subsidies, the funds in question include measures carried out in the public interest pursuant to Section 35 of the Forest Act and financial resources from the state budget allocated for the programme of the Ministry of Agriculture pursuant to Section 102 of the Water Act (“Support for Remedying Flood Damages to State-owned Water Management Property” and “Support of Prevention Against Floods III” and “Measures in minor watercourses and small water reservoirs”). In addition, Forests of the Czech Republic, s. e., also used the EU funds from the Operational Programme “Environment” and the “Rural Development Programme”. Measures relating to minor watercourses are also to a certain extent funded by the Regional Authorities. The activities carried out in connection with the management of watercourses are of a non-commercial nature and with regard to the overall funds expended they generate virtually no profit.

In connection with the management of watercourses, Forests of the Czech Republic, s. e., through its organizational units, the Watercourse Administrations, disbursed in 2016 a total of CZK 493.3 million, including expenditures of capital investment nature amounting to CZK 104.6 million. Its own funds used for these investments amounted to CZK 104.6 million. In total CZK 338.5 million, of which CZK 326.1 million of own funds, was used to perform the management of defined minor watercourses and repairs and maintenance of the relevant fixed assets. CZK 41.7 million, of which CZK 27.3 million of own funds, was expended on remedying flood damage. The above mentioned amounts include all costs relating to the management of watercourses.



The Vltava River at Vraňany, removal of sediments and repair of the bulwark (author: Richard Pawinger)

Table 6.3.1**Funding structure of watercourse management in 2016 (total costs)**

Projects	Total	Own sources in total	Grants in total	Of which flood damage	
				Grants	Own sources
	millions of CZK				
Investments	154.8	104.6	50.2	11.5	8.5
Non-investments	338.5	326.2	12.3	2.9	18.8
Total	493.3	430.8	62.5	14.4	27.3

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

Revenues obtained for surface water abstractions to cover the management of watercourses amounted to CZK 13.2 million in 2016.

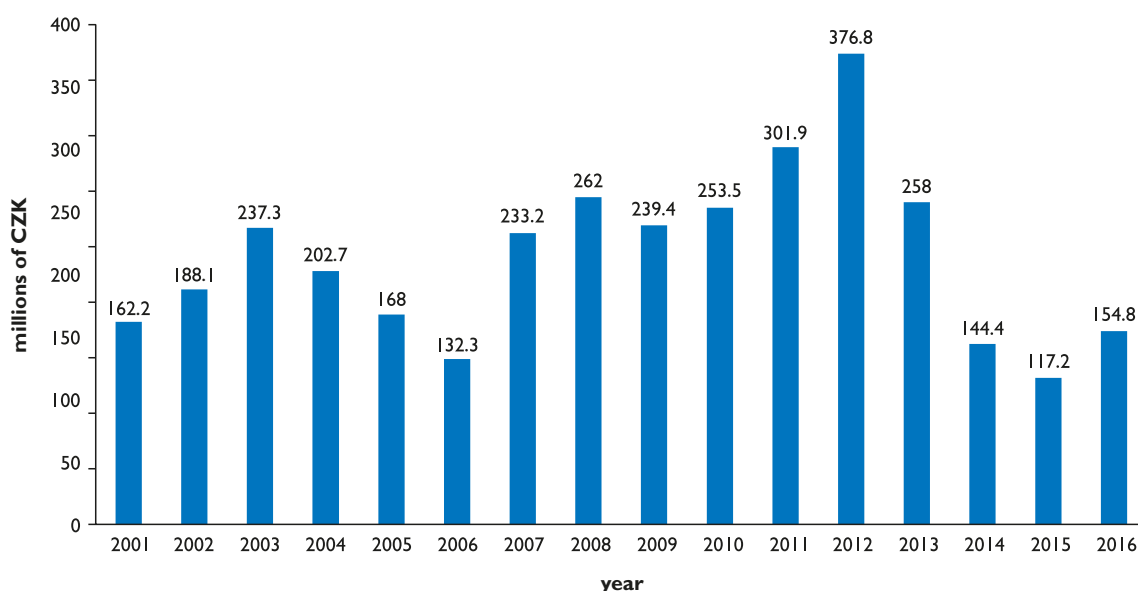
Table 6.3.2**Revenues for surface water in 2010–2016**

Year	2010	2011	2012	2013	2014	2015	2016
Revenues (thousands of CZK)	11,239	12,969	13,679	12,211	11,544	10,682	13,192
Price per m³ *)	1.6	1.9	1.96	2.00	2.05	2.06	2.26

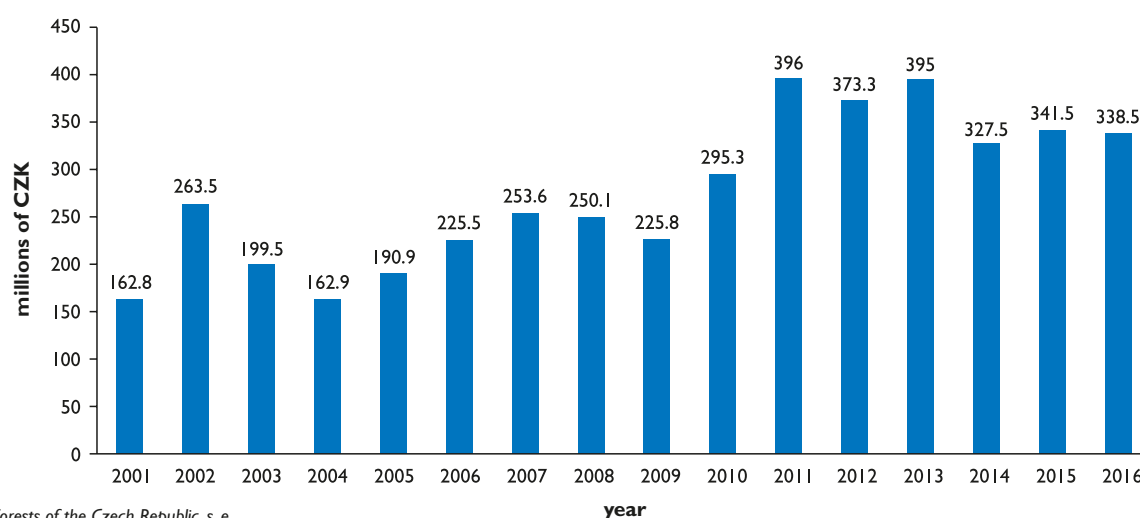
Source: Forests of the Czech Republic, s. e.

Note: *) Unit price per m³ excluding VAT.

The charts provide an overview of the overall annual capital and the funds spent on repairs and maintenance of property over a longer period.

Chart 6.3.1**Watercourses – capital expenditures in 2001–2016**

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

Chart 6.3.2**Repair and maintenance of watercourses (total costs) – expenditures in 2001–2016**

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

6.4 Land consolidation, structures used for amelioration

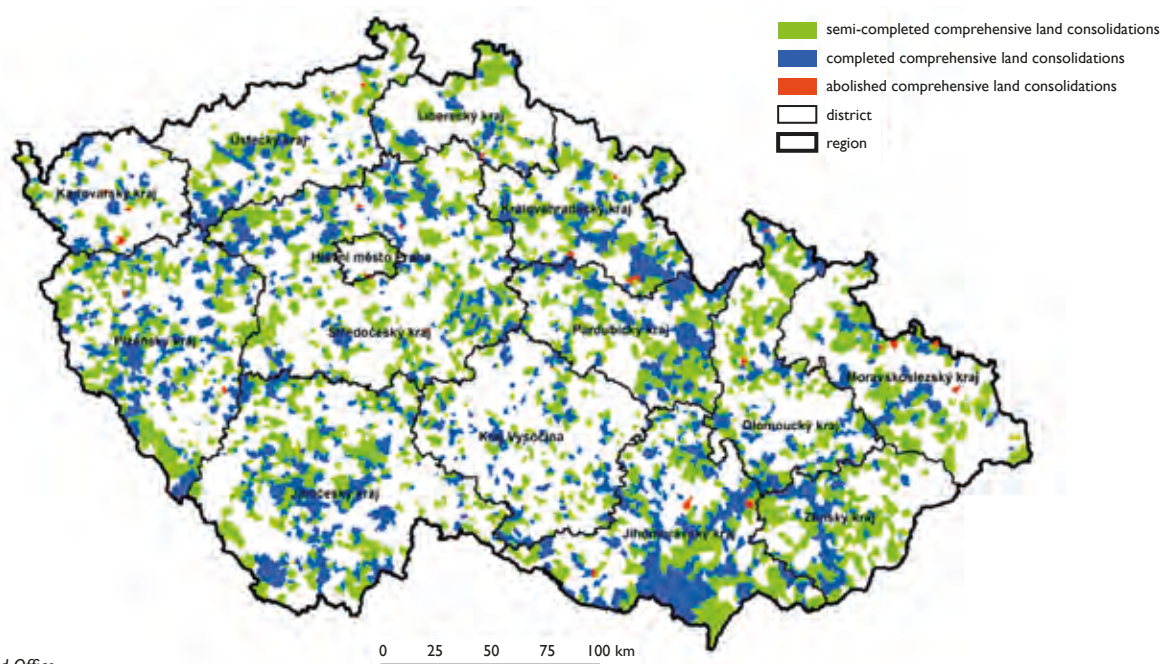
Land consolidation

In order to reduce the risks of soil erosion, the effects of drought and to improve protection from the negative effects of surface runoff it is necessary to design and implement measures, preferably in a comprehensive system. It is the most appropriate to combine organizational and agricultural measures with technical measures. The most effective instrument for the implementation of these measures in the landscape is the process of land consolidation, which is governed by Act No. 139/2002 Coll., on land consolidation and land offices, and amending Act No. 229/1991 Coll., regulating the ownership of land and other agricultural

property, as amended, and by implementing Decree No. 13/2014 Coll.:

Currently, simple and comprehensive land consolidation has been completed for more than 31% of area of agricultural land resources, for less than 7.1% of this area land consolidation is underway.

As of 31 December 2016, within the framework of implementation of joint measures, erosion control measures were built in the area of 705.1 ha and water management measures in the area of 461.25 ha. The State Land Office expended more than CZK 13 million on the implementation of erosion control measures and over CZK 67 million on the implementation of water management measures in 2016.

Figure 6.4.1**Semi-completed and completed comprehensive land consolidation in the Czech Republic as of 30 December 2016**

Source: State Land Office

Table 6.4.1
Use of funds for land consolidation measures in 2016

Non-investment activities *)		Implementation						Total
Total	Of which	Total	of which					
	land consolidation proposals		roads	erosion control measures	water management measures	ecological measures	other	
thousands of CZK								
370,613	273,784	883,331	742,830	13,497	67,364	28,560	31,080	1,253,944

Source: State Land Office

Note: *) land consolidation, identification of plots pursuant to Act No. 229/1991 Coll.

Table 6.4.2
Joint measures implemented under land consolidation as of 31 December 2016

State Land Office/ Region	Erosion control measures	Ecological measures	Water management measures	Roads
	ha			m
Central Bohemia and Prague	66.86	250.78	38.75	421,820.05
South Bohemia	60.21	43.33	40.62	458,754.49
Karlovy Vary	1.82	25.06	5.24	84,571.90
Pilsen	255.37	107.62	33.71	212,899.98
Liberec	15.24	6.48	2.12	61,328.22
Ústí	13.03	25.71	8.41	153,231.00
Hradec Králové	40.31	120.11	35.75	253,719.30
Pardubice	73.31	83.25	24.97	187,008.09
South Moravia	46.62	169.18	72.25	507,628.90
Zlín	38.56	57.64	95.52	110,058.01
Vysočina	32.92	31.5	15.49	260,958.41
Olomouc	48.88	418.68	68.34	206,282.08
Moravia-Silesia	11.925	188.13	20.08	70,412.30
Total	705.06	1527.47	461.25	2,988,672.73

Source: State Land Office

Structures used for amelioration

The State Land Office is authorized to carry out the management of structures used for amelioration of land and related hydraulic structures pursuant to Section 56 (6) of Act No. 254/2001 Coll., the Water Act, as amended, and Section 4 (2) of Act No. 503/2012 Coll., on State Land Office and on the amendment to some relevant acts, as amended. The State Land Office thus ensures the management, maintenance, repairs and operation of major drainage facilities, major irrigation facilities and erosion control measures owned by the state.

As of 31 December 2016, the total acquisition value of the property administered by the State Land Office amounted to CZK 2,581 billion consisting of 19,013 items of fixed assets, of which 8,953.262 km of channels (5,183.916 km of open channels and 3,769.346 km of piped channels) 22 water reservoirs and 130 pumping stations.

In 2016, the State Land Office expended CZK 36.6 million from the MoA state budget section on administration, 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 22.5 million, costs for ensuring the operation of pumping stations including the consumption of electric power and repairs were CZK 14 million.

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.

Under the “European Agreement on Main Inland Waterways of International Importance (AGN)” the E 20 main European waterway on the Elbe River and its branch E 20-06 on the Vltava River, is a waterway of international importance. As defined in Regulation No. 1315/2013 the European Parliament and of the Council of 11 December 2013 on the main trends of the European Union for the development of trans-European transport network, the entire Elbe waterway from the state border between the Czech Republic and Germany to Pardubice and the Vltava waterway from Mělník to Třebenice is included in the TEN-T system. In Annex I, Part I of this Regulation, this waterway is included in the “Eastern and Eastern-Mediterranean” corridor and into predetermined projects “Hamburg – Dresden – Prague – Pardubice” – “work on better navigability and modernization”. From this perspective, it is a project of highest importance. The necessity to increase the parameters is also evidence by the corridor study of December 2014 carried out for the European Commission and operational plan of the European coordinator for this corridor that defines as critical issues of the corridor for the Elbe-Vltava waterway the fact that there are inappropriate parameters for Class IV of waterways.

From the Ústí nad Labem hydraulic structure in Střekov to Přelouč on the Elbe and to Třebenice on the Vltava River, navigability is ensured by a system of hydraulic structures constituting a fully operational traffic system, independent of outer natural conditions. Navigation traffic on the regulated



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

stretch from Střekov down the stream to the CR/FRG state border depends, however, on water levels based on the current flows and on the overall water situation in the entire Elbe and the Vltava River Basins.

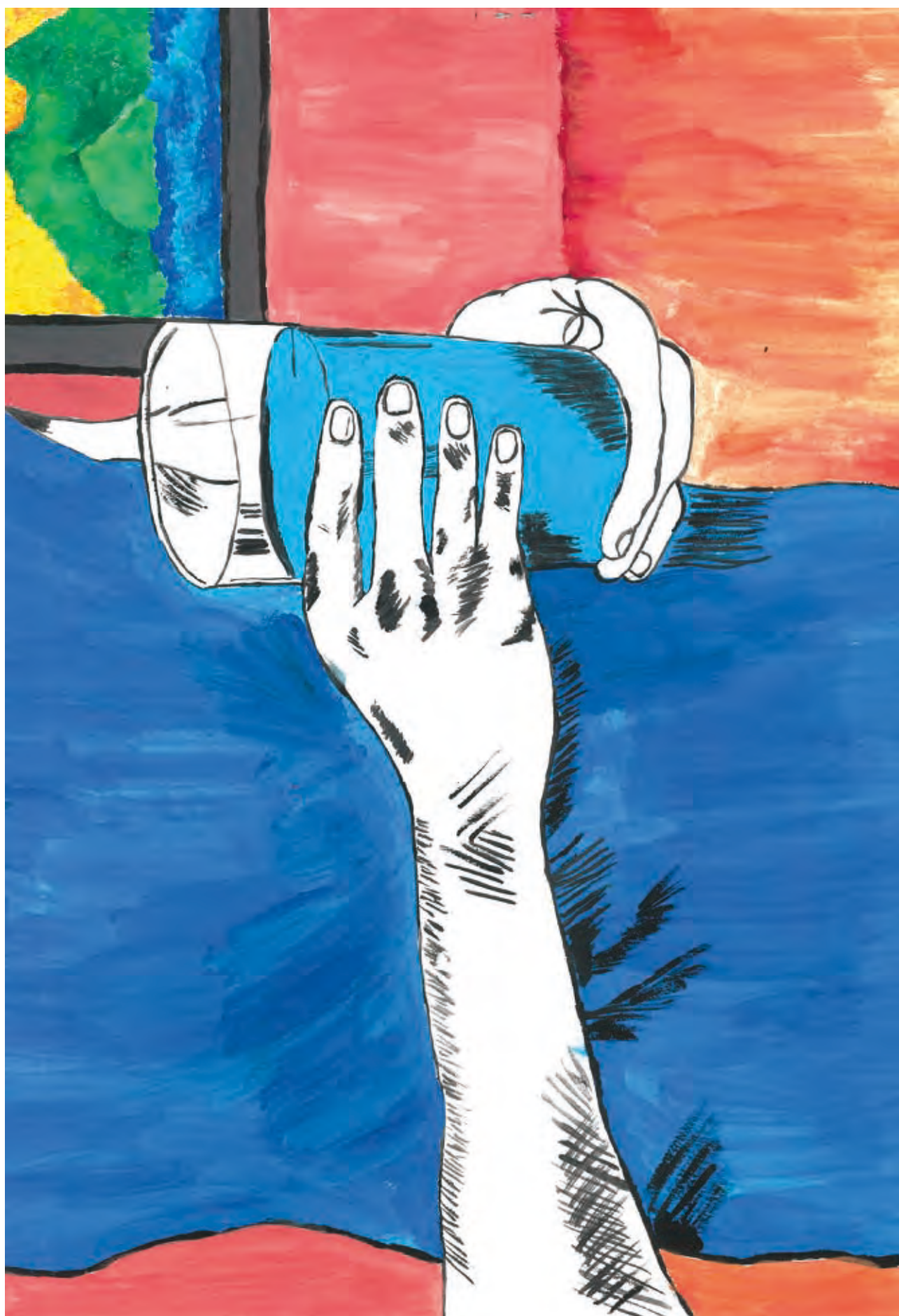
The national funds allocated from the budget of the State Transport Infrastructure Fund in the field of the development, modernization and maintenance of waterways with significance to transport amounted to CZK 273.7 million in 2016.

In order to ensure trouble-free navigation on the Elbe-Vltava waterway, in order to improve the navigation conditions in the 40 km long stretch between Ústí nad Labem and the state border, the construction of the Děčín Weir was proposed.

In 2016, River Boards, s. e. expended a total of CZK 152.7 million on maintenance, construction, reconstruction and modernization of waterways, of which CZK 119.5 million was from their own funds and CZK 33.2 million from grants.



Cruise on the Bat'a Canal (source: Morava River Board, s. e.)



Sabina Pospíšilová – Water for life – 5th grade, Primary school Žatčany, South Moravia Region – winner selected by public voting

7. PUBLIC WATER SUPPLY AND SEWERAGE SYSTEMS

7.1 Drinking water supply

In 2016, water supply systems supplied water to 9.972 million inhabitants in the Czech Republic, i. e. 94.4% of the total population.

All water supply systems produced in total 593.3 million m³ of drinking water: 478.9 million m³ of drinking water was supplied and charged for (invoiced), including 323.3 million m³ of drinking water for households. Drinking water losses amounted to 90.1 million m³, i.e. 15.4% of water intended for consumption.

The data provided by the Czech Statistical Office were collected on the basis of information provided by 1,487 reporting units, i.e. 297 professional water supply and sewerage system operators and a selected set of 1,190 municipalities operating the water management infrastructure on their own.



The Šance Water Reservoir (source: Oder River Board, s. e.)

In 2016, water consumption decreased. Specific quantity of water invoiced in total decreased by 0.3 l/person/day to 131.2 l/person/day, whereas water invoiced to households increased by 0.4 l/person/day to 88.3 l/person/day.

Table 7.1.1
Water supply from water supply systems in 1989 and 2010–2016

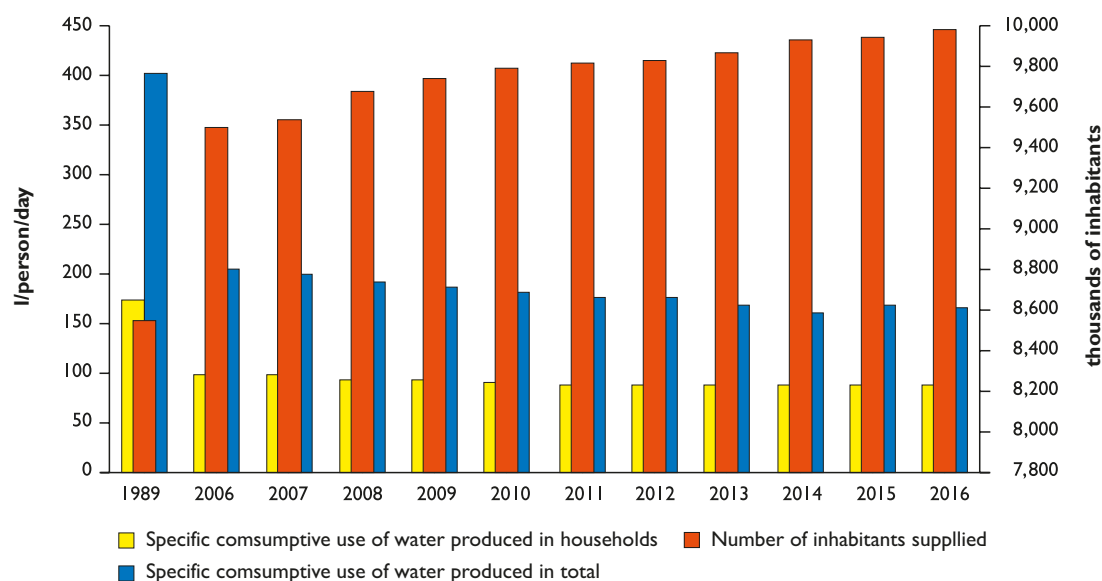
Indicator	Measurement unit	1989	2010	2011	2012	2013	2014	2015	2016
Inhabitants (mean)	thousand inhabitants	10,364	10,517	10,495	10,509	10,511	10,525	10,543	10,565
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537.0	9,787.5	9,805.4	9,823.1	9,854.4	9,917.2	9,929.7	9,972.5
	%	82.4	93.1	93.4	93.5	93.8	94.2	94.2	94.4
Water produced by water supply systems	million m ³ /year	1,251.0	641.8	623.1	623.5	600.2	575.4	599.6	593.3
	% as of 1989	100.0	51.3	49.8	49.8	48.0	46.0	47.9	47.4
Water invoiced in total	million m ³ /year	929.4	492.5	486.0	480.7	471.8	468.7	476.8	478.9
	% as of 1989	100.0	53.0	52.3	51.7	50.8	50.4	51.3	51.5
Specific consumptive use of water produced	l/person/day	401.0	180.0	174.0	173.8	166.8	158.9	165.4	162.5
	% as of 1989	100.0	44.8	43.4	43.3	41.6	39.6	41.2	40.5
Specific quantity of water invoiced in total	l/person/day	298.0	137.9	135.8	134.1	131.1	129.4	131.5	131.2
	% as of 1989	100.0	46.3	45.6	45.0	44.0	43.4	44.1	44.0
Specific quantity of water invoiced for households	l/person/day	171.0	89.5	88.6	88.1	87.1	87.3	87.9	88.3
	% as of 1989	100.0	52.3	51.8	51.5	50.9	51.0	51.4	51.6
Water losses per 1 km of water mains	l/km/day	16,842.0 ^{a)}	4,673.0	4,220.0	4,351.0	3,856.9	3,417.2	3,519.3	3,167.9
Water losses per 1 inhabitant supplied	l/person/day	90.0 ^{a)}	35.0	32.0	33.0	29.5	26.5	27.3	24.7

Source: CSO

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

Chart 7.1.1

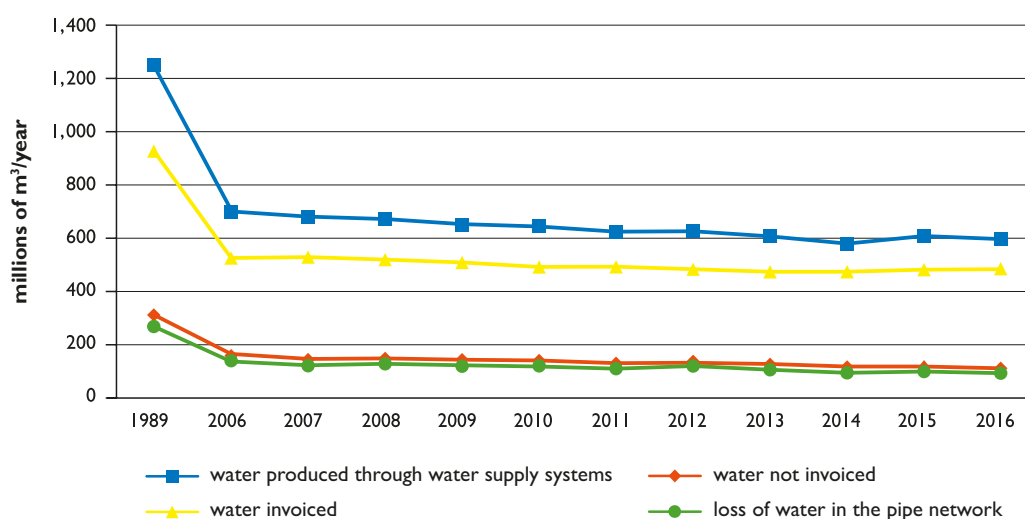
Development in the number of inhabitants supplied and the specific consumptive use of water invoiced in 1989 and 2006–2016



Source: CSO

Chart 7.1.2

Development in the quantity values of water produced in water supply systems and water invoiced in total in the years 1989 and 2006–2016



Source: CSO

The highest percentage of population supplied with drinking water from water supply systems in 2016 was recorded in the Karlovy Vary Region (100%), in the City of Prague (100%) and in the Moravian-Silesian Region (99.9%), the lowest percentage of inhabitants supplied with drinking water was recorded in the Pilsen Region (84.4%) and in the Central Bohemian Region (86.0%).

In 2016, the length of water supply network was extended by a total of 535 km and reached the length of 77,681 km. New construction of new water supply systems and completion of the existing ones thus

resulted in 2016 in an increase in the number of inhabitants supplied by water by 42,806. The length of water supply network per one inhabitant supplied was 7.79 m.

The number of water supply connections increased by 29,168 and amounted to 2,102,999. The number of water meters installed increased by 26,003 and amounted to 2,097,090. The number of connected inhabitants per one water supply connection is 5. Markedly shown in these figures are the results of rather intense building of family houses.

7.2 Discharge and treatment of municipal waste waters

In 2016, a total of 8,944 million people in the Czech Republic lived in buildings connected to sewerage systems, which was 84.7% of the total population. In total, 446.9 million m³ of waste waters (excluding rain water charged for) were discharged into sewerage systems. Out of this quantity, 97.3% of waste waters were treated (excluding rain water), which amounts to 434.9 million m³.

The number of inhabitants connected to sewerage systems increased by 62,109 in comparison with the previous year. The quantity of waste waters discharged to sewerage systems, excluding rain water, increased by 1.4 million m³. The indicator of the percentage of the treated waste waters, excluding rain waters, grew in 2016 by 0.3%.

Table 7.2.1
Discharge and treatment of waste waters from sewerage systems in 1989 and 2010–2016

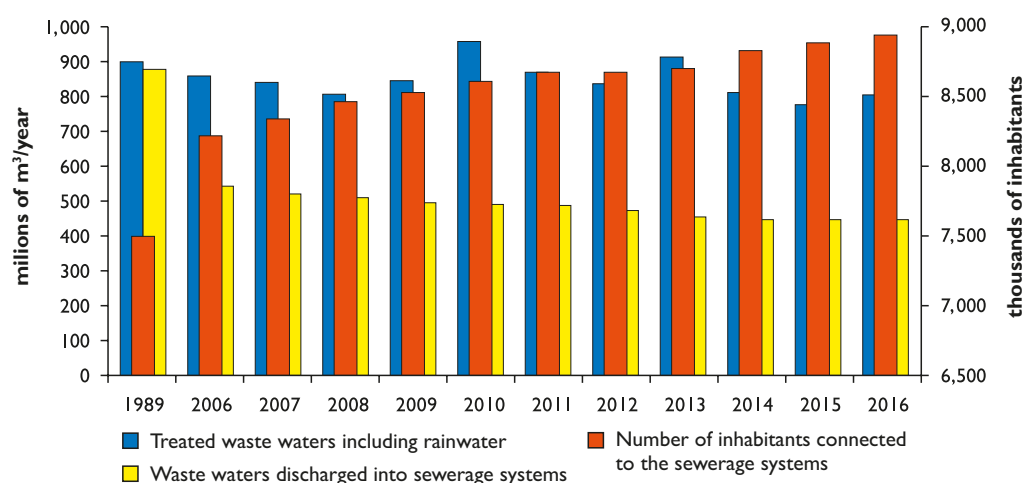
Indicator	Measurement unit	1989	2010	2011	2012	2013	2014	2015	2016
Inhabitants (mean)	thousands of inhabitants	10,364.0	10,517.0	10,495.0	10,509.0	10,511.0	10,525.0	10,543.0	10,565.0
Inhabitants living in buildings connected to sewerage systems	thousands of inhabitants	7,501.0	8,613.0	8,672.0	8,674.0	8,705.0	8,828.0	8,882.0	8,944.0
	%	72.4	81.9	82.6	82.5	82.8	83.9	84.2	84.7
Waste waters discharged to sewerage systems (excluding rain water charged for) in total	million m ³	877.8	490.3	487.6	473.2	455.3	446.1	445.5	446.9
	% as of 1989	100.0	55.9	55.5	53.9	51.9	50.8	50.8	50.9
Treated waste waters including rain water ¹⁾	million m ³	897.4	957.9	871.0	836.7	912.3	812.2	779.0	803.4
Treated waste waters in total excluding rain water	million m ³	627.6	471.5	472.2	459.4	443.4	432.3	432.0	434.9
	% as of 1989	100.0	75.2	75.3	73.2	70.6	68.9	68.8	69.3
Percentage of treated waste waters excluding rain water ²⁾	%	71.5	96.2	96.8	97.1	97.4	96.9	97.0	97.3

Source: CSO

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 rain water 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 waste waters in 1989 and 2006–2016



Source: CSO

The highest percentage of inhabitants connected to sewerage systems in 2016 was recorded in the City of Prague (99.1%) and the Karlovy Vary Region (97.0%), the lowest percentage was recorded in the Liberec Region (69.0%) and in the Central Bohemian Region (71.6%).



The waste water treatment plant in Beroun (author: Tomáš Petr)

In 2016, the sewerage network was extended by 1,257 km and reached the total length of 47,141 km. Based on the data provided by the Czech Statistical Office, the total number of waste water treatment plants in the Czech Republic increased in comparison with the previous year by 59 waste water treatment plants, i.e. to 2,554.

7.3 Development of water and sewerage charges

Based on the survey carried out by the Czech Statistical Office, the average price of water rate excluding VAT in 2016 amounted to 36.70 CZK/m³ and the average price of sewerage charge (after refining the method of calculation) amounted to 32.10 CZK/m³.

Table 7.3.1
Strike prices of water and sewerage charges (excl. VAT) in 2015 and 2016

Indicator	Measurement unit	2015	2016	Index 2016/2015
Water rates in total	millions of CZK	16,971	17,566	1.04
Water invoiced in total	million m ³ /year	476.8	478.9	1.00
Average price of water rate	CZK/m ³	35.60	36.7	1.03
Sewerage charges in total	million m ³ /year	15,810	16,636	1.05
Waste waters discharged to sewerage systems ^{*)}	million m ³ /year	515.6	518.0	1.00
Average price of sewerage rate	CZK/m ³	30.70	32.1	1.05

Source: CSO

Note: ^{*)} from 2013 including rain water charged for

Table 7.3.2
Water consumption, average prices of water and sewerage charges excluding VAT in 2016

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	
City of Prague	171.0	107.9	40.1	32.3
Central Bohemia	121.7	86.1	39.0	31.3
South Bohemia	123.0	84.7	35.4	28.6
Pilsen	137.9	87.4	37.5	26.7
Karlovy Vary	132.1	84.5	36.6	33.8
Ústí	126.2	90.2	43.0	41.4
Liberec	124.0	86.6	42.2	41.9
Hradec Králové	121.0	79.2	34.2	33.1
Pardubice	122.4	77.3	31.9	34.7
Vysočina	119.2	78.6	35.4	26.3
South Moravia	134.1	92.9	33.5	33.2
Olomouc	118.9	81.3	32.1	31.0
Zlín	112.4	74.9	35.4	29.8
Moravia-Silesia	129.9	89.8	33.3	30.5
Czech Republic	131.2	88.3	36.7	32.1

Source: CSO

7.4 Regulation in water supply and sewerage systems

In connection with the amendment to the regulation in the water and sewerage system industry for public use in the Czech Republic in 2015 resulting from the “Proposal of conceptual regulation in water industry” approved by the Government (Government Resolution No. 86 of 9 February 2015), the Ministry of Agriculture and Committee for Coordinating Regulation in the Water Supply and Sewerage System Industry continued to carry on their activities.

The main purpose of the amendment to the regulation in the water and sewerage system industry for public use (hereinafter referred to as the W&S) lies in three key fields:

- supervision over long-term sustainability of the W&S (renovation),
- increasing transparency of price regulation of water and sewerage rates,
- continual increase of protection of customers (consumers) using services of W&S operators and owners.

Auditing activity ensured by the department of water management supervision and regulation focused in 2016 on performing basic duties of W&S operators and owners resulting from Act No. 274/2001 Coll.

In 2016 there were two independent projects: “Benchmarking for the owners – 2015” and “Benchmarking for the operators – 2015”. The projects were implemented using data from



Operation and maintenance (source: Ohře River Board, s. e.)

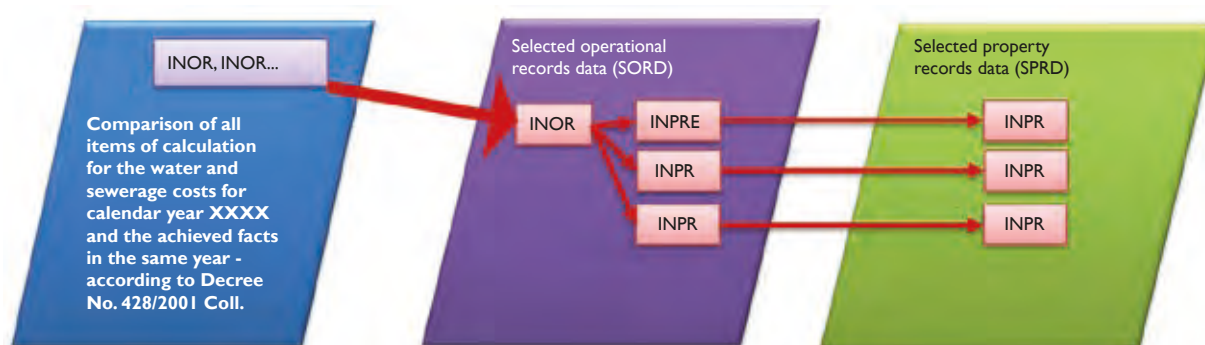
2015 when the data providers were obliged for the first time to state their ID number of the operational records (“SODR”) of assets in the forms for that period in accordance with the requirements of Decree No. 428/2001 Coll. This fact greatly contributed to data interconnection and quite precise identification of the relevant data in the selected data on property and operational records (SORD, SPRD) for the forms. Both projects were made in accordance with the Benchmarking method that defines performance and other indicators for monitoring the results and quality of owners’ and operators’ activities. The objective was to identify, in particular, anomalies in specific entities and map the situation in the W&S sector in more detail.

Table 7.4.1
Number of audits carried out in 2016 at W&S owners and operators

Entities	Audits of performance of basic duties	Targeted (correspondence) audits	Total
Owners	12	1	13
Mixed entities (owners and operators)	20	10	30
Operators	14	10	24
Total	46	21	67

Source: MoA

Figure 7.4.1
The principle of connecting data and selected data on property and operational records for the needs of Benchmarking



Source: MoA



Kristýna Eiglová – Wastewater from households – 4.B, Primary school, Kpt. Jaroše 836, Třebíč, Vysočina Region

8. FISHERIES AND FISHPOND MANAGEMENT

8.1 Fisheries and fishpond management

Czech fisheries include fish farming and recreation fishing, which are both regulated in the Czech Republic by Act No. 99/2004 Coll., on fish farming, performance of fishing right, fishing inspection, protection of marine fishing resources and on amendments to some acts (the Act on Fishing) and its implementing Decree No. 197/2004 Coll. Fish farming for production is a traditional part of agricultural production.

At present, there are approximately 24 thousand ponds and water reservoirs with total surface area of around 52 thousand ha in the Czech Republic, of which more than 41 thousand ha is used for fish farming. There are over 70 significant fish producers (i.e. companies producing more than 5 tonnes of fish per year) and several hundreds of minor breeders.

There are more than 2,000 official fishery districts in the Czech Republic with total area of approximately 42,000 ha

and around 350,000 recreation fishermen registered. Fishery districts are classified as either extra-trout-fishing waters or trout-fishing waters. Recreation fishermen catch every year in fishery districts around 4–5 thousand tonnes of fish, the most caught fish is common carp.

Czech fishery has been affected in the recent years mainly by excessive predation by piscivorous predators (particularly by the great cormorant and the Eurasian otter), climate change (drought, floods) and restriction of husbandry due to the environment protection. Any damage the owner (or holder) incurs in connection with limitation to husbandry in a pond with fish or waterfowl resulting from the environment protection under Act No. 114/1992 Coll. may be financially compensated (see Section 58 (2) of Act No. 114/1992 Coll.).

In total 8,252 tonnes of live fish were supplied to the domestic market in 2016, which means a decrease by 902 tonnes, compared to 2015. Exports of live fish reached the all-time high in 2016 with 10,977 tonnes, which represents an increase by 1,093 tonnes, compared to 2015. In 2016, a total of 2,474 tonnes of live-weight of fish were processed, i.e. 11.8% of the harvested quantity of marketable fish.

Table 8.1.1
Market production of farmed fish in the Czech Republic

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016
	tonnes								
Carp	17,507	17,258	17,746	18,198	17,972	16,809	17,833	17,860	18,354
Total	20,395	20,071	20,420	21,010	20,763	19,358	20,135	20,200	20,952

Source: MoA, the Czech Fish Farmers Association



The Vřešťovský Stream, Velký Vřešťov Pond (source: Elbe River Board, s. e.)

Table 8.1.2
Fish consumption in the Czech Republic

Species	2010	2011	2012	2013	2014	2015	2016
	kg/person/year						
Fish in total	5.1	5.0	3.7	3.7	3.7	4.0	0^{*)}
of which freshwater fish caught and bred in the Czech Republic	1.4	1.5	1.5	1.4	1.3	1.4	0.97 ^{**)}

Source: CSO and the Czech Fish Farmers Association

Note: ^{*)} data for 2016 are not available

^{**) catching fish on a hook is not included}

Fisheries 2014–2020 is an operational programme under which fishermen may use funds from the European Marine and Fisheries Fund under Priority Axis of the EU 2 – Support of environmentally sustainable, innovative and competitive aquaculture based on knowledge and effectively using resources for productive investment in aquaculture, support of new breeders and reintroduction of European eel in selected fishery districts in the Elbe and Oder River Basins. Under Priority Axis of the EU 3 – Support for Implementing Joint Fishing Policy, gathering of data and monitoring of products of fishing and aquaculture is supported. Under Priority Axis of the EU 5 – Support for introducing products to the market and processing concerns promotion and investment in fish processing, establishing farmers' organizations and making production plans.

MoA issued in 2016 a decision to grant subsidies within the first and second call under the Operational Programme Fisheries 2014–2020.

Under measure 2.1 Innovation, in 2016 decisions were issued to grant subsidies to two projects with the aggregate subsidy amounting to approx. CZK 1.25 million.

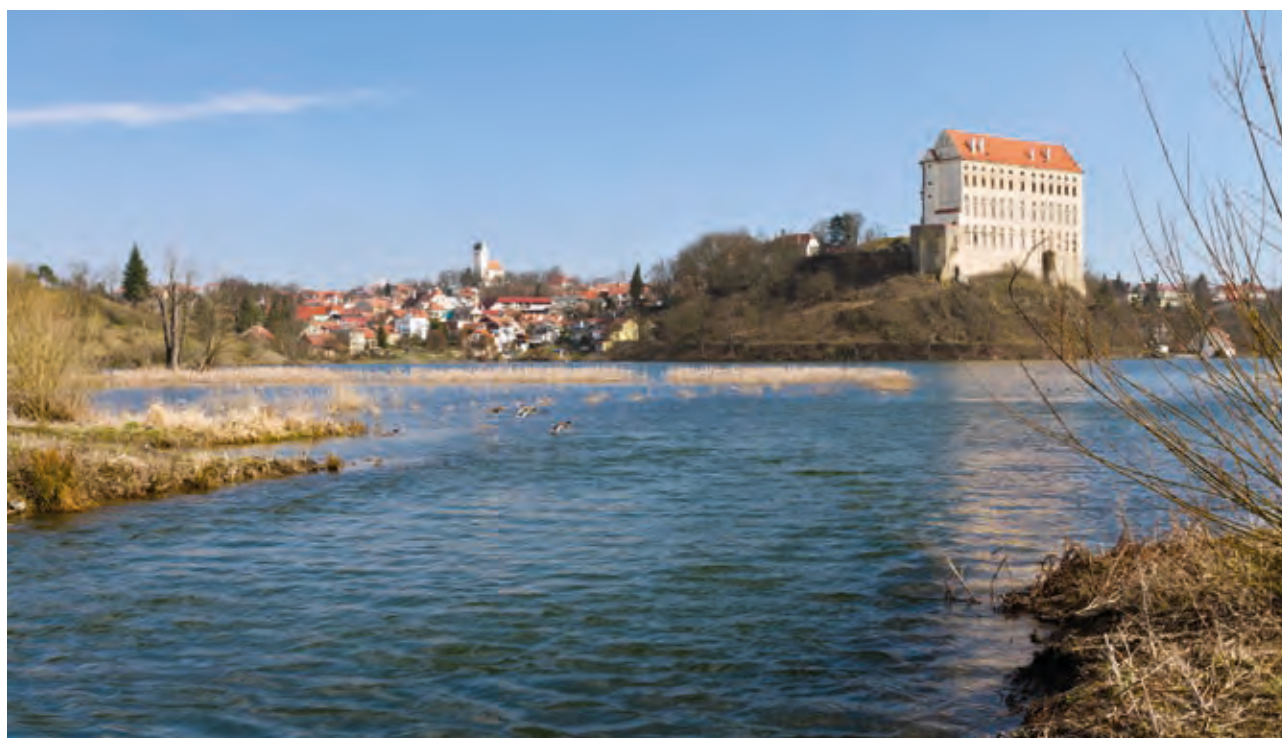
Under measure 2.2 Productive Investments in Aquaculture, intention a) in 2016 decisions were issued to grant subsidies to 67 projects with the aggregate subsidy amounting to approx. CZK 58.7 million.

Under measure 2.3 Support for New Breeders, in 2016 decisions were issued to grant subsidies to two projects with the aggregate subsidy amounting to approx. CZK 2.8 million.

Under measure 2.4 Recirculation devices and reclaim systems with final treatment, in 2016 decisions were issued to grant subsidies to 12 projects with the aggregate subsidy amounting to approx. CZK 48.2 million.

Under measure 2.5 Aquaculture providing environmental services, in 2016 decisions were issued to grant subsidies to four projects with the aggregate subsidy amounting to approx. CZK 4.0 million.

Under measure 5.3 Investment in product processing, in 2016 decisions were issued to grant subsidies to three projects with the aggregate subsidy amounting to approx. CZK 0.75 million.



The Podhradský Pond (source: Morava River Board, s. e.)



Sunset at the Pohořelice Pond (source: Morava River Board, s. e.)

Table 8.1.3
Operational Programme Fisheries 2014–2020

National support	
Number of measure	Name of measure
Measure 9.1	Support for improving practical training in production fishery
Measure 15	Support for extra-production functions of ponds
Measure 17	Support for extra-production functions of fishing districts

Source: MoA

8.2 Changes in the fishpond system

The programme 229 210 “Renewal, Dredging and Rehabilitation of Fishponds and Water Reservoirs” was terminated and in 2016 assessed. This programme is followed by a new programme 129 280 “Support of Water Retention in the Landscape – Fishponds and Water Reservoirs” that focuses on support for renewal and increasing of the retention capacity of the landscape, improvement of the technical condition of fishponds in the fishpond system of the Czech

Republic, increasing fishpond safety during floods and eliminating emergency situations at fishponds. In case of launching sub-programme 129 284 “Remedying Flood Damage at Fishponds and Water Reservoirs”, damage caused by floods will be compensated in cases which exceed CZK 250,000.

In 2016, 43 applications for support were received under programme 129 280. Projects were going through the application stage at the end of 2016, which means that no funds were allocated by then.



Eliška Kučerová – A root zone waste water treatment plant – 4th grade, Primary school and Nursery school, Dobrá Voda u Hořic, Hradec Králové Region

9. STATE FINANCIAL SUPPORT FOR WATER MANAGEMENT

9.1 Financial support provided by the Ministry of Agriculture

The Ministry of Agriculture subsidises water management in the sector of water supply and sewerage systems, flood control, remedying damage caused by floods, administration of minor watercourses, water in the landscape (ponds, irrigation). This chapter discusses in a great detail the subsidies allocated in 2016.

Water supply and sewerage systems

In 2016, investors received support in the form of grants as well as “subsidised loans”. Under its programme 129 250 “Support for Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure” 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 1.9 billion. The subsidy programme for 2013–2017 was approved.

In 2016, a total of 116 projects received support from the state budget in the form of subsidies amounting to approximately CZK 547 million under sub-programme 129 252 (measures aimed at water supply systems) and 185 projects were granted support amounting to approximately CZK 1,317 million under sub-programme 129 253 (measures aimed at sewerage systems), of which CZK 250 million was expended from the budget section Operations of State Financial Assets.

Subsidised loans were provided for the projects under programmes 129 180 and 229 310 that are over now. These loans were granted in the form of compensation payments



Černošice, a fish pass (source: Vltava River Board, s. e.)

for a part of interest rates for commercial loans used by 102 projects requiring larger investments in the years 2008–2013 in total amounting to CZK 1,578 million and with less than ten year maturity. In 2016, a part of interests in the remaining 95 unpaid loans was paid amounting in total to CZK 19.3 million. These were non-investment funds that are not recorded in the programme funding.

In 2016 no support for remedying flood damage to infrastructure of water supply and sewerage systems was provided.

Table 9.1.1

State budget funds provided in 2016 under programme 129 250 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 waste water treatment plants	Renovation of water supply systems and sewerage systems after floods	Ministry of Agriculture in total
	millions of CZK			
Subsidies under MoA programmes	547.355	1,316.720	0	1,864.075
Subsidies for a part of interest on commercial loans	5.854	13.437	0	19.290
Subsidies in total	553.208	1,330.157		1,883.365
Refundable financial assistance	0	0	0	0
Total	553.208	1,330.157	0	1,883.365

Source: MoA

Table 9.1.2

Development of the state support for construction of water supply systems, water treatment plants, sewerage systems and waste water treatment plants in 2012–2016 provided by the Ministry of Agriculture

Financial source	2012	2013	2014	2015	2016
	millions of CZK				
Refundable financial assistance	0	0	0	0	0
State budget subsidies	1,631	1,152	1,448	1,170	1,883
Support from the state budget	1,631	1,152	1,448	1,170	1,883
Subsidised loan (EIB and CEB)	0	0	0	0	0
Total support	1,631	1,152	1,448	1,170	1,883

Source: MoA

Flood control

In 2016, 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.

The measures under the programme, same as in the previous years, are implemented by river board administrators (especially state-owned River Boards and Forests of the Czech Republic). Municipalities will be actively involved in the programme as applicants for support for the implementation of measures of local nature aimed at reducing the risk of flash flooding on minor watercourses.

Also this programme allows, through the institution of the so-called promoter, the involvement of municipalities, association of municipalities, towns and regions in the



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

process of proposing flood control measures. The proposed measures will be implemented by watercourse administrators.

In 2016, under this programme, a total of 61 projects were funded with the use of funds from the state budget amounting to CZK 491,593 million, while CZK 100 million was used from the budget section Operations of State Financial Assets.

Table 9.1.3

Use of funds of the state budget in 2016 under program 129 260 by watercourse administrators

Owners and administrators	Use of funds in 2016	
	Investments	Non-investments
	millions of CZK	
Elbe River Board, s. e.	44,006	0
Vltava River Board, s. e.	0,718	0
Ohře River Board, s. e.	8,893	0
Oder River Board, s. e.	282,193	19,971
Morava River Board, s. e.	39,608	0
Forests of the Czech Republic, s. e.	31,003	0
Municipalities	64,072	1,129
Total	470,493	21,100

Source: MoA



Flood protection, the Křeslice Stream, 0.000–1.002 km, 2009 (source: Forests of the Czech Republic, s. e.)

Remedying flood damage

In 2016, under programme 129 270 “Remedying Flood Damage to State-owned Water Management Property II” the Ministry of Agriculture continued to implement sub-programme 129 272 “Remedying the Impacts of Floods in 2013”.

In 2016, under sub-programme 129 272 “Remedying the impacts of floods in 2013”, financial support of CZK 132.430 million was granted to a total of 22 projects. Vltava River Board, s. e., implemented seven projects, Elbe River Board, s. e., implemented two projects, Ohře River Board, s. e., implemented six projects and Forests of the Czech Republic seven projects.

In 2013–2016, under the duration of this sub-programme, Ohře River Board, s. e., used CZK 223.250 million for 54 projects, Forests of the Czech Republic, s. e. CZK 14.175 million for 18 projects, Vltava River Board, s. e., CZK 309,488 million for 197 projects and Elbe River Board, s. e., CZK 210,160 million for 108 projects.

Table 9.1.4
Use of state budget funds in 2016 under programme 129 272

Owners and administrators	Use of funds		
	In-vestments	Non-investments	Total
	millions of CZK		
Ohře River Board, s. e.	24.529	9.181	33.710
Forests of the Czech Republic, s. e.	5.270	1.742	7.012
Vltava River Board, s. e.	0	72.032	72.032
Elbe River Board, s. e.	12.000	7.676	19.676
Total	41.799	90.631	132.430

Source: MoA

Minor watercourses and small reservoirs

In 2016 Ministry of Agriculture opened programme 129 290 “Support for Measures at Fishponds and Small Water Reservoirs”, which is divided into two sub-programmes. Sub-programme 129 292 “Support for Measures at Fishponds and Small Water Reservoirs Owned by the State” is intended for River Boards, state enterprises, and Forests of the Czech Republic, whereas sub-programme 129 293 “Support for Measures at Fishponds and Small Water Reservoirs Owned by Municipalities” is intended for municipalities and unions of municipalities.

In 2016, under sub-programme 129 292 “Remedying the Impacts of Floods in 2013”, financial support of CZK 110.154 million was granted to a total of 167 projects. The Ohře River Board, s. e., implemented 14 projects, the

Morava River Board, s. e., implemented eight projects, the Vltava River Board, s. e., implemented 88 projects, the Oder River Board, s. e., implemented three projects, Elbe River Board, s. e., implemented 32 projects and Forests of the Czech Republic seven projects.

Under sub-programme 129 293 “Support for Measures at Fishponds and Small Water Reservoirs Owned by Municipalities”, a total of CZK 10.179 million was provided to 13 projects in 2016.

Table 9.1.5
Use of state budget funds in 2016 for selected major projects under programme 129 292

Owners and administrators	Use of funds		
	In-vestments	Non-investments	Total
	millions of CZK		
Ohře River Board, s. e.	4.040	18.199	22.239
Forests of the Czech Republic, s. e.	6.319	5.759	12.078
Morava River Board, s. e.	0	1.660	1.660
Vltava River Board, s. e.	5.818	28.076	33.894
Oder River Board, s. e.	4.486	2.333	6.819
Elbe River Board, s. e.	2.855	30.609	33.464
Total	23.518	86.636	110.154

Source: MoA

Water in the landscape

In 2016, the Ministry of Agriculture completed the implementation of programme 129 130 “Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs”, which was replaced by new programme 129 280 “Support for Water Retention in the Landscape – Fishponds and Water Reservoirs”.

In 2016 no funds were provided under this programme and sub-programmes 129 133 and 129 134 underwent final assessment.

New programme 129 280 “Support for Water Retention in the Landscape – Fishponds and Water Reservoirs” comprises three sub-programmes: sub-programme 129 282 “Support for Construction, Renewal, Rehabilitation and Dredging of Fishponds and Water Reservoirs”, sub-programme 129 283 “Remedying Emergency Situations at Fishponds and Water Reservoirs” and sub-programme 129 284 “Remedying Flood Damage at Fishponds and Water Reservoirs”.

Programme 129 280 is expected to be funded between 2016 and 2021.

Sub-programme 129 162 “Support for the Renewal and Construction of Irrigation Detail and Optimization of Irrigation Systems”

Programme 129 160 “Support for Competitiveness of Agri-food Complex – Irrigation” including its sub-programme 129 162 was extended until 31 December 2016. The extension was discussed and approved by the European Commission. In 2014, programme 129 160 including its sub-programme 129 162, was reopened and new applications for grants were accepted. In 2016, applications from 2015 were administered, while 34 projects were supported with investment funds from the budget section of the programme administrator amounting to CZK 35.564 million.



Regulation, Boletice (source: Ohře River Board, s. e.)

Table 9.1.6

State budget funds provided by the Ministry of Agriculture on capital and ordinary costs in 2016 in the form of subsidies under various programmes

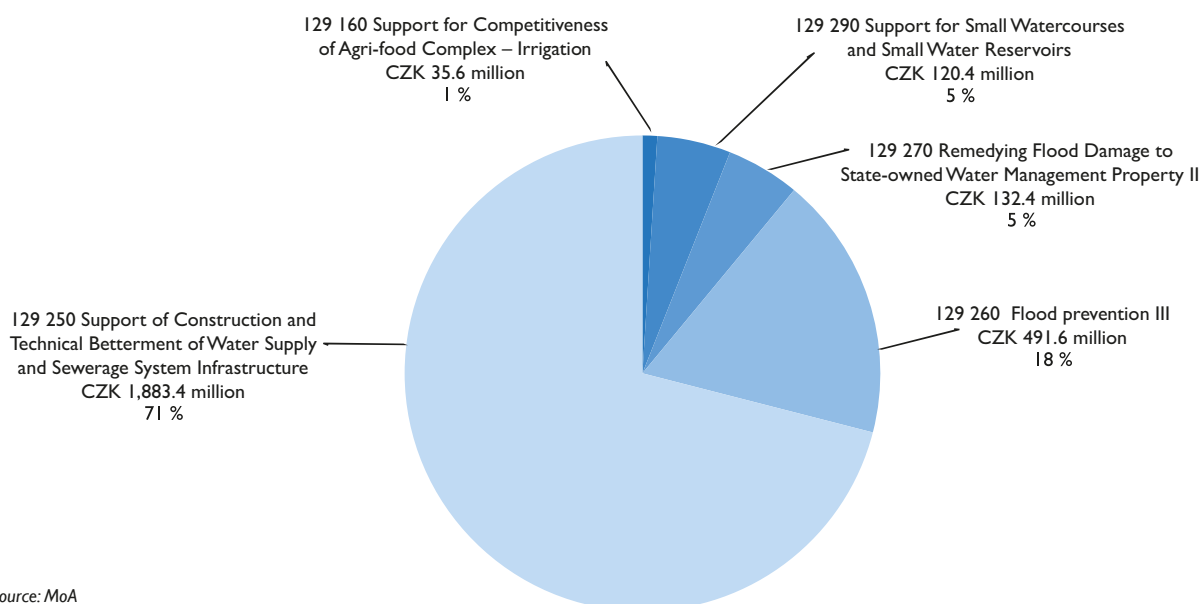
Register number of programme	Name of programme	Number of projects	Expenditure on programmes
		pcs	millions of CZK
129 250	Support of Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure	396 ^{*)}	1,883.4 ^{*)}
129 260	Flood prevention III	61	491.6
129 270	Remedying Flood Damage to State-owned Water Management Property II	22	132.4
129 290	Support for Small Watercourses and Small Water Reservoirs	180	120.4
129 160	Support for Competitiveness of Agri-food Complex – Irrigation	34	35.6
Total		693	2,663.4

Source: MoA

Note: ^{*)} includes a part of interests from preferential loans amounting to CZK 19.3 million

Chart 9.1.1

Subsidies provided by the Ministry of Agriculture in 2016



Source: MoA

9.2 Financial support provided by the Ministry of the Environment

9.2.1 Financial support provided under the programmes co-financed from the EU funds

Operational Programme “Environment 2007–2013”

The Operational Programme “Environment” is an operational programme for the programming period 2007–2013, which was approved on 20 December 2007. The funds started to be used in September 2008. The aim of the operational programme is the protection and improvement of the quality of the environment as a basic principle for sustainable development. The Operational Programme “Environment” is divided into a total of eight priority axes:

1. Improving Water Management Infrastructure and Reducing Flood Risks,
2. Improving Air Quality and Reducing Emissions of Pollutants,
3. Sustainable Use of Energy Sources,
4. Improving Waste Management and Rehabilitation of Contaminated Sites,
5. Reducing Industrial Pollution and Environmental Risks,
6. Improving the State of Nature and Landscape,
7. Development of Infrastructure for Environmental Education, Consultancy and Awareness,
8. Technical Assistance.

The Operational Programme “Environment” is managed and guaranteed by the Ministry of the Environment, the Intermediate Body is the State Environmental Fund of the Czech Republic (SEF CR). Applications for support are received by regional offices of the State Environmental Fund of the Czech Republic, those submitted under Priority Axis 6 and under intervention area I.3.2 are also received by the Agency for Nature Conservation and Landscape Protection of the Czech Republic. Deadlines for submitting applications were published in the form of Calls on the portal www.opzp.cz. In 2016, there was no call for submitting applications for support.

Under the Operational Programme “Environment”, Priority Axis I – Improving Water Management Infrastructure and



Pacov, intensification of a waste water treatment plant (author: Michal Němec)

Reducing Flood Risks, funds from the Cohesion Fund in the total amount of CZK 874.6 million were used in 2016. Under the Operational Programme “Environment 2007–2013” funds from EU grants totalling to CZK 906.6 million, of which funds from the Cohesion Fund of CZK 874.6 million and funds from ERDF CZK 31.9 million were used in 2016.

Operational Programme “Environment 2014–2020”

The Operational Programme “Environment 2014–2020” was approved by the European Commission on 30 April 2015. The Operational Programme “Environment 2014–2020” follows the Operational Programme “Environment 2007–2013”. In comparison with the previous programme, there is a decrease in the number of activities supported by priority axes. In 2014–2020, support from the programme may be received in one of the following fields:

1. Improving water quality and decreasing the risk of floods,
2. Improving air quality in urban areas,
3. Waste and material flows, ecological burden and risks,
4. Protection and care of the nature and landscape,
5. Energetic savings.

Under Priority Axis I – Improving water quality and reducing flood risk 450 projects with total subsidy from EU amounting to CZK 6,061.1 million were approved in 2016, while a legal act on providing support with a total contribution from the EU amounting to CZK 437.1 million was issued for 49 projects. In 2016, funds from the Cohesion Fund amounting to CZK 86.5 million were used.

Table 9.2.1.1
Use of funds from the Operational Programme “Environment 2007–2013” in 2016

Area of support	EU grant	SEF co-financing	SEF loan	State budget co-financing
	millions of CZK			
I.1 – Reducing Water Pollution	814.762	47.927	27.521	
I.2 – Improving Drinking Water Quality	43.523	2.560	689	
I.3 – Reducing Flood Risks	16.355	962		27.082
PAI in total	874.639	51.449	28.210	27.082
6.4 – Optimization of Landscape Water Regime	31.939	2.397		5.016
Total	906.579	53.846	28.210	32.098

Source: IS Central

Table 9.2.1.2**Projects approved to receive funds under the Operational Programme “Environment 2014–2020” in 2016**

Priority Axis	Area of support	Number	Total costs	Total eligible costs	EU grant
			millions of CZK		
I	I.1	133	8,669.71	6,245.53	4,057.77
	I.2	34	1,396.97	1,048.63	669.73
	I.3	30	800.15	779.61	662.67
	I.4	253	925.06	912.88	670.96
PAI in total		450	11,791.89	8,986.65	6,061.13
4	4.3	27	47.39	42.16	34.12
Total		477	11,839.28	9,028.81	6,095.25

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

Table 9.2.1.3**Projects with an issued legal act on providing support from the Operational Programme “Environment 2014–2020” in Water Management in 2016**

Priority Axis	Area of support	Number	Total costs	Total eligible costs	EU Grant
			millions of CZK		
I	I.1	13	1,308.53	361.89	285.66
	I.2	5	277.37	149.16	96.32
	I.3	3	13.95	13.29	11.29
	I.4	28	62.71	62.56	43.82
PAI in total		49	1,662.56	586.90	437.08
4	4.3	4	7.69	6.71	5.61
Total		53	1,670.25	593.61	442.70

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

Table 9.2.1.4**Use of funds from the Operational Programme “Environment 2014–2020” in 2016**

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	75.38
I.2 To ensure the supply of drinking water of an adequate quality and quantity	6.0
I.3 To ensure flood protection of urban areas	3.40
I.4 Promote flood prevention measures	1.69
PAI in total	86.47
4.3 To strengthen natural landscape functions	1.87
Total	88.34

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

Under Priority Axis 4 – Protection and Care of Nature and Landscape (Area of support 4.3 – Enhancing the Natural Function of the Landscape) 27 projects with a total support from the EU amounting to CZK 34.1 million were approved in 2016, while a legal act on providing support with a total contribution from the EU amounting to CZK 5.6 million was issued for four projects. In 2016, funds from the Cohesion Fund amounting to CZK 1.9 million were used.

For 2016, applications for grants from the Operational Programme “Environment 2014–2020” in the field of water management were received under ten calls (of which eight were under specific targets 1.1 to 1.4 and two calls under specific target 4.3).

9.2.2 Overview of the administration of large projects submitted since the launch of the Operational Programme “Environment”

A large project under the Operational Programme “Environment” is defined as an operation comprising a series of works, activities or services intended to accomplish an indivisible task of a precise economic or technical nature, with clearly identified goals, whose total costs exceed the amount of EUR 50 million (hereinafter referred to as a “Large Project”). The main difference, compared to individual projects, is that large projects are to be, in addition, approved by the European Commission.

Since the launch of the Operational Programme “Environment”, so far 19 applications for the granting of support in the category of large projects have been submitted. Of this, one project belongs to Priority Axis 3, six projects belong to Priority Axis 4 and the remaining projects belong to Priority Axis 1.



Confluence of the Elbe River and Metuje River in Jaroměř (source: Elbe River Board, s. e.)



Jizera Příšovice, removal of sediments (source: Elbe River Board, s. e.)

9.3 The State Environmental Fund of the Czech Republic

The State Environmental Fund (SEF) of the Czech Republic 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.

As of 31 December 2016, the revenues of the SEF reached 119.6% of the budgeted revenues, which means the SEF received CZK 2,112.7 million.

Revenues from charges for environmental pollution were CZK 1,375.3 million in 2016, while revenues from fines and financial penalties amounted to CZK 65.2 million.

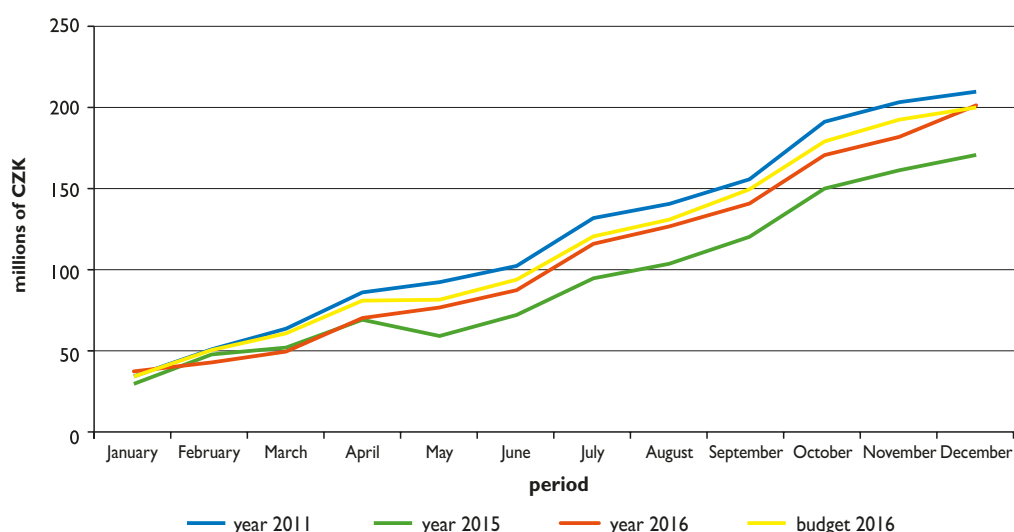
The revenues of the State Environmental Fund of the Czech Republic include collected charges for environmental pollution. In the area of the protection of waters they comprise a charge for waste water discharges into surface waters and a charge for abstracted groundwater quantities.

The collection of charges for waste water discharges into surface waters in 2016 amounted to 100.3% of the budgeted revenues. For 2016, the planned budget revenues were CZK 200 million. The amount of charges collected for waste water discharges was CZK 0.6 million higher than planned.

Table 9.3.1
Structure of the revenue part of the budget (only water-related)

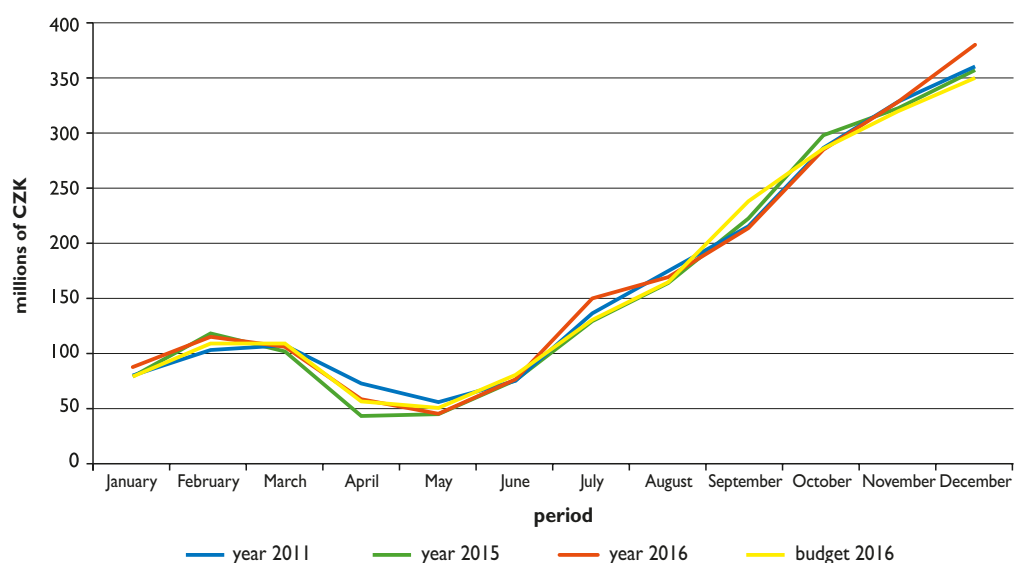
Revenues from charges and penalties broken down to environmental compartments (water only)	Budget for 2016	Revenue as of 31/12 2016	Pay-ments	Diffe-rence
	millions of CZK		%	millions of CZK
Waste water	200.0	200.6	100.3	0.6
Groundwater	350.0	379.3	108.4	29.3

Source: SEF

Chart 9.3.1**Development of revenues from charges for waste water in 2014–2016 in millions of CZK**

Source: SEF

The collection of charges for groundwater abstractions in 2016 reached 108.4% of the budgeted revenues. For 2016, the planned budget revenues in the amount of CZK 350 million were exceeded by CZK 29.3 million.

Chart 9.3.2**Development of revenues from charges for groundwater in 2014–2016 in millions of CZK**

Source: SEF

National programmes

The State Environmental Fund of the Czech Republic administered in 2016 the following programmes (according to Annexes IV and V of the MoE Directive No. 6/2010 and the MoE programme 115 270 “MoE Remedying Damage Caused by Natural Disasters”) related to water management infrastructure:

- Programme of Support for Municipalities Located in the Regions of National Parks (Annex IV of the MoE Directive No. 6/2010)
- MoE Programme 115 270 “Remedying Damage Caused by Natural Disasters”
- Call No. 10/2015 “Environmentally Sensitive Renewal and Maintenance of Water Surfaces and Watercourses” under the National Programme “Environment”
- Call No. 3/2016 “Sustainable and Effective Management of Water in Municipalities” under the National Programme “Environment”
- Call No. 8/2016 “Research, Enhancement and Building Resources of Drinkable Water” under the National Programme “Environment”
- Call No. 11/2016 “Small Waste Water Treatment Plants” under the National Programme “Environment”
- Call No. 12/2016 “Disposal of Unnecessary Drills” under the National Programme “Environment”
- Call No. 2/2016 PU in accordance with Directive of the MoE No. 5/2016 – loans from the SEF

The SEF also provided CZK 1,275.18 million from the state budget to co-fund OPE projects in water management.

9.4 Financial support from international cooperation and the EU

9.4.1 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 CENTRAL EUROPE
- DANUBE
- Interreg EUROPE
- URBACT III

Under these programmes, projects that contribute to the improvement of the environment, risk prevention (natural and technological risks including the impact of climatic changes on water management, etc.) were submitted, approved and supported. With respect to the beginning of the programme period, most projects are in the initial stages of their implementation, as they were approved in 2016 and they are expected to be implemented by 2017.

9.4.2 Rural Development Programme of the Czech Republic

The Rural Development Programme of the Czech Republic for 2014–2020 is based on the Joint Strategic plan, Partnership Agreement and other strategic documents such as the Strategic Plan for Biodiversity 2011-2020, the National Programme of Nature and Landscape Protection in the Czech Republic, System Natura 2000 in the Czech Republic, the Strategy of Adjusting to the Climate Change in the Czech Republic and others. The programme was designed also in accordance with Regulation No. 1305/2013 of 17 December 2013 on support for rural development from the European



The Úhlava River, renovation of the Poborovice Weir (author: Miloslav Křen)

Agricultural Fund for Rural Development and cancellation of Directive of the Council (EC) No. 1698/2005. The provision of grants is aimed at renewal, preservation and improvement of eco-systems dependent on agriculture by taking especially agroenvironmental measures, investing into competitiveness and innovating agricultural products, encouraging young people to enter the agricultural sector or landscape infrastructure.

The subsidies from the Rural Development Programme for 2014–2020 are co-funded from the EAFRD and from the state budget of the Czech Republic. The subsidies from the EAFRD for 2014–2020 amounting to EUR 2.3 billion and € 1.2 billion will be provided from the state budget. Funding the RDP 2014–2020 is first funded from the state budget, which means that the recipients first receive funds from national sources.

RDP support, among others, land adjustments. The State Land Office, more precisely the branches of State Land Offices, are defined as the only recipient of funds granted in connection with land adjustments. Subsidies granted under the RDP 2014–2020 for land adjustment follows the support provided in the previous programme period.

The subsidies correspond with 100% of eligible expenses (of which the grant from the European Agricultural Fund for Rural Development is 49.5% of total public expenses and contribution of the Czech Republic is 50.5%). CZK 3.5 billion was allocated for 2014–2020. Applications are accepted on a continual basis as of 22 February 2016.

In the programme period 2014–2020, under 4.3.1 Land Adjustment a total of 57 applications for grants amounting to CZK 507,947.40 thousand were registered as of 31 December 2016. 35 applications totalling CZK 250,221.70 thousand were approved by then.



The Úhlava River, renovation of the Poborovice Weir (author: Miloslav Křen)



Sofie Bradáčová – Sewer – 3rd grade, Primary school, Lupenická 20, Prague – Koloděje, City of Prague

10. LEGISLATIVE MEASURES

10.1 Water Act and implementing regulations

The Water Act did not undergo any changes in 2016.

The following legislation was published in the Collection of Laws of the Czech Republic in 2016:

Government Order No. 57/2016 Coll., on Indicators and Values of Acceptable Pollution of Waste Waters and on Terms of the Permit to Discharge Waste Waters into Groundwaters

Government Order No. 99/2016 Coll., which cancels Government Order No. 262/2007 Coll., on Declaring the Binding Part of the Plan of Main River Boards of the Czech Republic

Government Order No. 235/2016 Coll., which amends Government Order No. 262/2012 Coll., on Definition of Vulnerable Areas and Action Programme, as amended

Government Order No. 351/2016 Coll., which amends Government Order No. 262/2012 Coll., on Definition of Vulnerable Areas and Action Programme, as amended

Decree No. 154/2016 Coll., that amends Decree No. 98/2011 Coll., on the Manner of Assessing the Condition of Surface Water Bodies,



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



The Kocába River, Masečín, renovation of the river basin bulwark (author: Šárka Hermanová)

the Manner of Assessing the Environmental Potential of Strongly Influenced and Artificial Bodies of Surface Waters and Terms of Programmes of Ensuring and Assessing the Condition of Surface Waters, as amended by Decree No. 313/2015 Coll.

Decree No. 232/2016 Coll., which amends Decree No. 46/2015 Coll., on Definition of Water Reservoirs and Watercourses Where Navigation of Vessels with Combustion Engines is Prohibited, and on the Extent and Condition of Using Surface Waters for Navigation

Decree No. 349/2016 Coll., which amends Decree No. 5/2011 Coll., on Definition of Hydrogeologic Regions and Groundwater Bodies, the Manner of Assessing the Condition of Groundwaters and Terms of Programmes of Detecting and Assessing the Condition of Surface Waters, as defined in Decree as amended by Decree No. 264/2015 Coll.

Decree No. 350/2016 Coll., which amends Decree No. 24/2011 Coll., on River Boards' Plans and Plans for Coping with Flood Risks, as amended

10.2 Act on Public Water Supply and Sewerage Systems and implementing regulations

In 2016, there was no direct amendment to Act No. 274/2001 Coll., on public water supply and sewerage systems. Decree No. 428/2001 Coll., which implements the above stated act was not amended in 2016 either.

In connection with the obligatory transposition of European Directive No. 2015/1787 of 6 October 2015 which amends Annexes II and III to the Directive of the Council 98/83/EC on Quality of Water Intended for Human Consumption into Czech legislation, an amendment to Act No. 258/2000 Coll., on Protection of Public Health, Decree No. 252/2004 Coll. that defines hygienic requirements concerning drinkable and hot water and frequency and extent of audits of drinkable water and the above stated Decree No. 428/2001 Coll., will be amended in 2017. In this connection, in 2016 an expert working team was established and started working on the relevant amendments.



The Bilka Small Water Reservoir after renovation (author: Josef Vitek)

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

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.

Audits of Regional Authorities were carried out in 2016 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 2014–2016 (general monthly schedule) was prepared by the Ministry of the Interior of the Czech Republic.

In 2016, in accordance with the plan, audits of the execution of the delegated powers were carried out at four Regional Authorities performing the function of the water authority. Beyond the scheduled audits of regional water authorities, in the period from June to September, audits of the execution of the agenda of the water authorities of municipalities with extended powers were also carried out. These audits examined the activities of 17 offices of municipalities with extended powers performing the function of the water authority.

Based on audits carried out it can be stated that the exercise of the delegated powers of regional authorities in the field



The Pohořelice Pond (source: Morava River Board, s. e.)



The Brno Dam in autumn (source: Morava River Board, s. e.)

of water management is consistently on a high level. Positive as well as continuing efforts of regional water authorities to provide detailed methodological guidance for offices within their jurisdiction. The quality of administering this water management agenda at the level of municipal offices with extended powers often depends on the size of a particular office. None of the audited offices it was necessary to impose corrective measures. The identified shortcomings were mostly of a formal nature, having made the examined decisions unlawful in none of the cases.

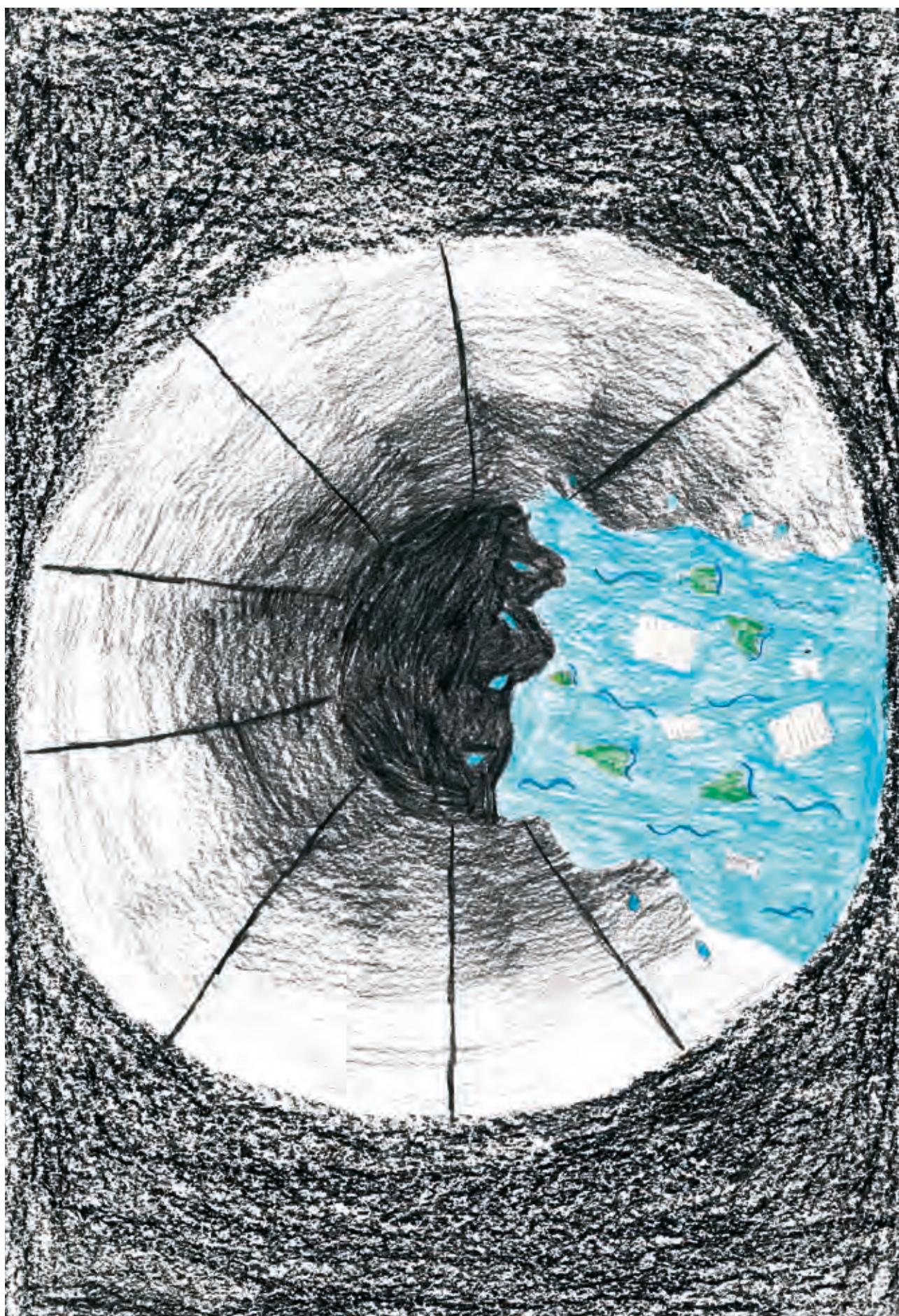
Ministry of the Environment

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. At the regional level, the supervisory activities were carried out in accordance with the Government Resolution No. 689 of 11 September, Section 6(2) of the relevant File No. 978/13 and in accordance with the “Plan of Audits to be Carried out at Regions and the Capital City of Prague in 2014–2016” of the Ministry of the Interior and plan of supervision performed by departments of state administration of the Ministry of the Environment. At the Czech Environmental Inspection and

municipalities with extended powers (water authorities) the supervisory activities were carried out by the departments for execution of state administration I-IX in accordance with the plan of supervisory activities of the Ministry of the Environment.

Execution of the supreme government supervision is imposed on the ministry by the Act No. 2/1969 Coll., on the establishment of ministries and other central bodies of state administration of the Czech Republic and Section 111 of the Water Act).

Based on the conclusions of the audits it can be stated that the exercise of the delegated powers in the field of water protection by regional authorities, water authorities and the Czech Environmental Inspection audited in 2016 is provided at a very good level, the decisions issued contain the particulars required by the Code of the Administrative Procedure and references to the relevant provisions of the Water Act. The MoE methodologies and guidelines are respected in the proceedings and decision-making. Positively assessed are also supervisory activities of the regional authorities and methodical guidance provided to lower-level water authorities in their administrative ward, which in turn is positively reflected in the fact that none of the audited water authorities in 2016 were imposed remedial measures.



Dominika Oháňková – Sewer with the waste water inside – 5th grade, Primary school Lískovec, Frýdek-Místek, Moravia-Silesia Region

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

II.1 Planning in the field of waters

National plans for River Boards and plans for coping with flood risks were issued in 2016 through measures of a general nature, partial plans of River Boards were approved and preparations of the third stage of planning in the field of water management for 2021–2027 were initiated. In this context, a new Committee for Planning in the Field of Waters was established. This Committee is to follow the work of the Committee for Planning in the Field of Waters from the second planning stage.

The current and general information about the process of planning in the field of waters, including materials and minutes from meetings of the Committee for Water Planning, is available to the general public at www.eagri.cz with links to the MoE website and river basin administrators. For the purpose of implementing the Flood Guideline, the Flood Information System (www.povis.cz) is used as a communication platform.

Plans for coping with flood risks

Under the first planning stage under Directive 2007/60/EC on Assessing and Coping with Flood Risks, the Czech Republic complied with the duty to report. When preparing the second planning stage under this Directive, necessary measures were taken in order to update the preliminary assessment of water risks as well as measures related with the preparation of updating the following stages: update of maps of flood danger and flood risks and plans for coping with flood risks. Also, measures defined in the approved plans for coping with flood risks started to be implemented.

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, Subsection I, Letter 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. Therefore, one of the obligations of each applicant requesting the provision and use of the state financial support is to demonstrate the compliance of the submitted technical and economic solution with the valid Regional Development Plan for Water Supply and Sewerage Systems.

The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic is based on a synthesis of information from the Regional Development Plans for Water Supply and Sewerage Systems, including their updates, which were prepared, discussed and approved by the councils of regional authorities. It follows up with other strategic documents and departmental policy documents and also respects the requirements resulting from the relevant regulations of the European Communities. The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic also includes standpoints of the Ministry of Agriculture issued to each of the updates of the Regional Development Plans for Water Supply and Sewerage Systems.

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 waste waters.

In 2016, 307 statements were issued. In total for the period 2006–2016, the Ministry of Agriculture issued 5,256 statements.

II.3 Programmes and measures to reduce surface water pollution

Construction projects for water quality protection completed in 2016

As regards the most important projects relating to the sources of pollution produced by the municipalities with the population of more than 2,000 PE, the following waste water treatment plants were completed in 2016 (N = nitrification, DN = denitrification, BP = biological removal of phosphorus, CHP = chemical removal of phosphorus):

New municipal waste water treatment plants (in total 10,020 PE): Bohutín Vysoká Pec (2,320 PE, N, DN, CHP), Vratimov – Horní Datyně (2,000 PE, N, DN, CHP), Kněždub – Horní Lhota (3,600 PE, N, DN, CHP), Šarátice (2,100 PE, N, DN, CHP).

Furthermore, 16 existing municipal waste water treatment plants and four industrial waste water treatment plants were reconstructed or extended in 2016.

Action Programme under the 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. Council Directive 91/676/EEC is implemented in the Czech Republic in three national legal regulations: Government Order No. 262/2012 Coll., on specification of vulnerable zones and action programme, Act on Fertilizers No. 156/1998 Coll., as amended, and the Water Act, where a directive requires the Government to define vulnerable areas and regulate the use and storage of fertilizers and farmyard manure, crop rotation and taking anti-erosion measures in these zones.

In 2003 vulnerable zones were defined and their list was declared by Government Order No. 103/2003 Coll., on specification of vulnerable zones and on the use and storage of fertilizers and farmyard manure, crop rotation and implementation of anti-erosion measures in these zones. The Action Programme is updated every fourth year. The fundamental measures of the Action Programme in the Czech Republic include:

1. Period of ban on fertilization on arable land and permanent grassland (with the allowance of emergency application of farmyard manure and organic fertilizers during this period in order to avoid an emergency situation or lack of fertilizers).
2. Fertilization limits according to the yield levels (with the possibility to switch to a higher yield level on the basis of evidenced higher yields).
3. Storing farmland manure (the time of storing manure on a farmland must not exceed 12 months, in case of temporary storage this time is limited to 9 months).
4. Crop rotation.
5. Farming on slopes (a ban on fertilizing permanent grassland with slope more than 12°), in the case of arable land there is a ban on using fertilizers on sloping lands exceeding 10° and a limit to apply fertilizers on sloping lands (on farmland with permanent grassland with slope exceeding 7° where fertilizers with quick-release nitrogen are used, the one-time amount that may be used is limited to 80 kg of total nitrogen per 1 ha, when using mineral nitrogen fertilizers, the total one-time amount is limited to 40 kg of total nitrogen per 1 ha. This does not apply to the intake of nitrogen from excrements and urine from pasturing farm animals or their stay at a farmland).
6. Farming near surface water bodies (the duty to prevent the spontaneous access of animals to a permanent watercourse), preserving the protective belt (unfertilized land at least 3 metres wide from the river bank line and 25 metres in case that the slope of the farmland exceeds 7°).

The measures included in the Action Programme must guarantee that the quantity of farmyard manure together with organic and organic-mineral fertilizers applied in any farming establishment in a vulnerable zone will not exceed on average the limit of 170kg nitrogen per hectare per year.

Based on comments raised by the European Commission, it tightened some methods of land use and management in these areas. This is particularly the extension of the period when the use of fertilizers is prohibited, the harmonization of farming on sloping land with the requirements of the standard of good agricultural and environmental condition (GAEC).

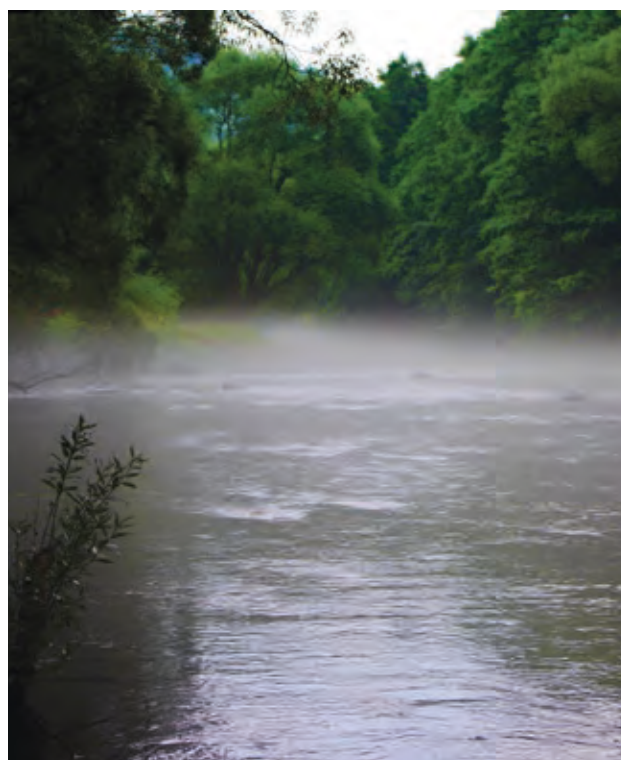
11.4 Accompanying strategic materials

National Action Plan for Adaptation to Climate Change

The National Action Plan for Adaptation to Climate Change is an implementing document of the Strategy of Adapting to Climate Change in the Czech Republic. The document was prepared in 2016 and it is a product of interdepartmental cooperation, the coordinator of the preparation was the Ministry of the Environment. The Action Plan was approved by Government Resolution No. 34 of 16 January 2017. The Action Plan is structured in accordance with the manifestations of climate change, which is due to significant interdepartmental overlapping of different manifestations of climate change and the need for interdepartmental cooperation when preventing or solving its negative impacts:

1. Long-term drought
2. Floods and torrential floods
3. Temperature increasing
4. Extreme meteorological phenomena
 - A. Heavy rainfall
 - B. Extremely high temperatures (heat waves)
 - C. Extreme wind
5. Wildfires

The Action Plan elaborates the measures included in the Adaptation Strategy of the Czech Republic into specific tasks and assigns them to relevant authorities, deadlines for completion, relevance of measures in relation to the different types of manifestation of climate change and funds. The Action Plan contains 33 specific targets and one cross-sectional objective, which is education and raising public awareness. The specific objectives are to be met through



The Svatka River, Koroužné, July 2016 (source: Morava River Board, s. e.)

52 priority measures and 160 priority tasks. The number of specific measures and the relevant tasks is due to a wide interdepartmental overlapping of climate change impacts and the need to adapt to such changes as well as the fact that most measures (more than 80%) are – in a certain sense – already included in other strategic materials of nationwide importance. These relations are identified in the document.

Analysis of threats for the Czech Republic

Analysis of threats for the Czech Republic was approved by Government Resolution No. 369 of 27 April 2016. The analysis is based on the Safety Strategy for the Czech Republic and follows up the Concept of Protection of the People until 2020 with the outlook until 2030. In relation to this Resolution, the Ministry of the Interior of the Czech Republic updated the Methodological Instruction on Elaborating Situational Plans. In 2017, the situational plans are to be processed. Subsequently, this change will be reflected in updating of critical plans on the nationwide, regional and municipal level. 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 Information system WATER of the Czech Republic

Records pursuant to Section 22 of the Water Act

In 2016, the order issued by the Deputy Minister on managing the section of water management in terms of administering central records of watercourses, records of water reservoirs, records of structures on watercourses and records of water structures used for land improvement by means of drainage and irrigation was amended. This order is to become effective in the first half of 2017 and it shall have fundamental influence on the way how data are presented in the above stated records. The river network will be presented as a set of watercourses and other water lines that together – with some exceptions – form a unit. The major drainage facilities which are the subject of water structure records concerning water management of lands will be represented in a separate dataset. This dataset will be geometrically in accordance with the river network and it will be presented graphically as a phenomenon on the relevant water line that may be a watercourse or another water line.

Preparation of stage II of the project “WATER MIS Development”

The project called “WATER MIS Development”, including its funding from the budget of the MoA, was definitely approved by the meeting of the MoA management on 29 September 2015. Since then, there have been many negotiations and preparations including compilation of project documentation necessary for assigning project tasks aimed at updating the website at www.voda.gov.cz, building a uniform map application for better presentation of spatial data and technical solution of infrastructure and data transport and building the necessary databases.

11.6 Czech Republic's reporting to the European Union

Submitting a report in accordance with the requirements of Article 15 of the Directive of the European Parliament and Council 2000/60/EC of 23 October 2000 which defines the framework for the activity of the Community in the field of water policy – reporting of river board plans.

In connection with the completion of preparations and approval of river board plans for the 2nd planning period by the Government of the Czech Republic it was necessary to ensure the duty to submit a report (hereinafter referred to as the “reporting”) to the EC in accordance with Article 15 General Directive 2000/60/EC. This section of General Directive 2000/60/EC imposes all EU member states the duty to send copies of river board plans and all their later updates to the EC and to all other member states concerned not later than in three months after they are published. Therefore, in the case of the Czech Republic it was necessary to submit the report by 22 March 2016.

Reporting in accordance with Directive of the European Parliament and Council 2007/60/EC of 23 October 2007 on the assessment and coping with flood risks

In 2016, complete data sets concerning the third implementation stage – plans for coping with flood risks were submitted to the EC under reporting in accordance with Article 15 of the Flood Directive on 21 March 2016.

Reporting in accordance with Directive of the Council No. 91/271/EEC of 21 May 1991 on Purification of Municipal Waste Waters

The Ministry of the Environment processed and then sent via the Eionet network reporting to the EC in accordance with Article 15 and Article 17 of Directive of the Council No. 91/271/EEC on Purification of Municipal Waste Waters for 2014. In order to comply with the reporting duty that arises once in two years, data from the property and operational records provided by the MoA were used.

Reporting pursuant to Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006, on the assessment and management of flood risks and on cancellation of Directive of 76/160/EEC.

The MoE in cooperation with the Ministry of Health presented to the EC a report on results of monitoring and assessing the quality of surface waters included in the List for bathing season 2016. This list was compiled in accordance with the requirements of Directive 2006/7/EC. Waters designated for bathing were classified on the basis of their quality as unsuitable, acceptable, good or excellent. The assessment was performed on the basis of the data set on quality for bathing season 2016 and the four preceding bathing season. Reports from all European countries are published every year after the results are processed on the EC website at: http://ec.europa.eu/environment/water/water-bathing/index_en.html.



Tobiáš Fleisner – The environment damaged by people – 5th grade, Primary and secondary school, Pržno, Moravia-Silesia Region

12. INTERNATIONAL RELATIONS

International cooperation of the Czech Republic in the field 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.

The roots of the involvement of the Czech Republic in international cooperation in the protection of waters date back to 1928, when the Joint Technical Committee was established between former Czechoslovakia and Austria. This commission in the period of its action dealt with technical issues in transboundary stretches of the Danube River, the Dyje River and the Morava River and also watercourses in the Malše River and the Lužnice River Basins.

Nowadays, the Czech Republic is a party to nine international treaties in the field of water protection. This international cooperation can be divided into the following areas:

1. cooperation within the UN/ECE,
2. cooperation in the area of international river basins of the Danube, the Elbe and the Oder;
3. cooperation of the Czech Republic with the neighbouring states in the field of water management on transboundary watercourses.

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. The Convention obliges the Parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and balanced way and ensure their sustainable management.

12.2 International cooperation 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.

12.3 International cooperation 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 bodies.

Transboundary waters are not only watercourses or water bodies that are crossed by the state border. Transboundary waters are also considered watercourses which criss-cross the state border and surface waters and groundwaters where the measures implemented on the territory of one party would substantially affect water management conditions on the territory of the other party. To avoid potential disputes with neighbouring states, the Czech Republic entered into international agreements with all neighbouring countries. Through these agreements, or through the relevant commissions for transboundary waters, the following issues are addressed at the level of bilateral cooperation: regulation and maintenance of transboundary watercourses including construction and operation of structures on these watercourses, water supply and amelioration of border reaching territories, the protection of transboundary waters against pollution (including the respective monitoring, joint monitoring of the quality of transboundary waters, exchange of data and organization of warning and alert service in case of emergency), hydrology and flood warning service (including monitoring, joint measurements, exchange of data and organization of warning and alert service in case of emergency), water management proceedings regarding transboundary waters, the protection of aquatic and littoral habitats (in the Bavarian part of the state border, for example, protection of freshwater pearl mussel), the course of the state border on transboundary watercourses, etc.

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 Czechoslovak Republic and the Government of the People's Republic of Poland on Water Management on Transboundary Waters



Karolína Křečková – An inhabitant of clear water – 2.C, Primary school Palachova 2189/35, Žďár nad Sázavou, Vysočina Region

13. RESEARCH AND DEVELOPMENT CONCERNING WATERS

13.1 Research and development in the competence of the Ministry of Agriculture

In 2016, 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 32.5 million.

Publicly accessible data on R&D projects and granted institutional support for long-term conceptual development are available on the website of the Information System R&D&I at www.rvvi.cz (the 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.



Smědá pod Jizerou (source: Elbe River Board, s. e.)

Table 13.1

Research and development projects in the field of water management financed from the budget section of the Ministry of Agriculture in 2016

Project No.	Project name	from – to	Coordinator	Funds (thousands of CZK)
QJ1220007	Possibilities of retention of reactive nitrogen from agriculture in the most vulnerable water resource area	1 April 2012 31 December 2016	Mendel University in Brno	1,486
QJ1220029	The planting and maintenance of pond dam vegetation with regard to their use	1 April 2012 31 December 2016	Mendel University in Brno	1,876
QJ1220052	The use of remote sensing for the identification and definition of the functions of drainage systems	1 April 2012 31 December 2016	Research Institute for Amelioration and Soil Protection	1,781
QJ1220218	The development of effective measures to eliminate the impact of invasion of <i>Chalara fraxinea</i> in forest nurseries and related aspects of forestry and water management	1 April 2012 31 December 2016	Silva Tarouca Research Institute for Landscape and Ornamental Gardening, public research institution	1,791
QJ1320122	Optimization of management of forestation of agricultural land in relation to improving the retention potential of the landscape	1 January 2013 31 December 2017	Research Institute for Soil and Water Reclamation, public research institution	2,323
QJ1320213	Innovation of farming systems in the environment of Quaternary sediments, their verification and application in water protection zones	1 January 2013 31 December 2017	The Crop Research Institute, public research institution	2,007
QJ1520026	Optimization of agricultural land use in terms of infiltration and retention support with impacts on drought and flood prediction in conditions of the Czech Republic	1 April 2015 31 December 2018	Research Institute for Soil and Water Reclamation, public research institution, public research institution	1,759
QJ1520265	Influence of the variability of short term precipitation and following discharge in small catchments in the Czech Republic on water management in landscape.	1 April 2015 1 December 2017	Czech Technical University in Prague	2,650
QJ1520267	Management system of monitoring and water management infrastructure maintenance.	1 April 2015 31 March 2018	VARS BRNO a.s.	1,458
QJ1520318	Securing availability of water resources in selected areas of Karlovy Vary region	1 April 2015 31 December 2018	T. G. Masaryk Water Management Research Institute, public research institution	1,176
QJ1520322	Procedures to compile and approve water footprint in accordance with international standards	1 April 2015 31 December 2017	T. G. Masaryk Water Management Research Institute, public research institution	1,954
QJ1530120	Occurrence of pharmaceuticals and other pollutants from municipal waste waters in river basins of key water sources of the Czech Republic	1 April 2015 31 December 2018	University of South Bohemia in České Budějovice	1,250
QJ1620240	Application of “top-down” biomanipulation to reduce eutrophication caused by agriculture in water reservoirs	1 April 2016 31 December 2018	Institute of Vertebrate Biology, Academy of Sciences of the Czech Republic, public research institution	2,020
QJ1620395	Renewal and construction of fish ponds in forests as a part of sustainable management of water sources in the Czech Republic	1 April 2016 31 December 2018	Czech Technical University in Prague	1,833
QJ1620040	Optimization of water and soil protection in river basins with water sources with respect to sustainable systems of farming	1 April 2016 31 December 2018	Research Institute for Soil and Water Reclamation, public research institution, public research institution	1,831
QJ1620148	Research of options of using artificial infiltration in order to increase capacity of groundwater resources during periods of drought	1 April 2016 31 December 2018	Technical University of Ostrava	1,377
QJ1620454	Water sources in the landscape that can be used for extinguishing forest fires	1 April 2016 31 December 2018	Czech University of Life Sciences, Prague	1,912
Total				29,235

Source: MoA

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

Other research and development projects were implemented either fully or partially by the T.G.Masaryk Water Management Research Institute, public research institution.

Table 13.2.1

Research and development projects in the field of water management financed from the budget section of the Ministry of the Environment in 2016

Project No.	Name of the project	From-to	Coordinator	Funds (thousands of CZK)
TB050MZP019	Methods for recording actual flood damage	February 2016 30 November 2016	DHI, a. s.	713
TB010MZP065	Methods for deriving N-year flow rates in unmonitored river basins	February 2016 30 November 2016	Czech Hydro-meteorological Institute	1,167
Total				1,880

Source: MoE



Water running from Mrtvý vrch (source: Ohře River Board, s. e.)

Table 13.2.2

Other research and development projects in the field of water management funded and solved or co-solved by T. G. Masaryk Water Management Research Institute, public research institution

Project No.	Project name	From-to	Coordinator	Funds (thousands of CZK)
2819	Increasing safety and reliability of culverts with respect to transferring flood flows	2014–2016	TACR ALFA	5,232
8509	Protection of the most endangered biotopes – wetlands and steppes	2015–2016	Norwegian funds – MoE – ČSOP	1,292
9392	Physical hydraulic model research of advancement of building a water structure – Improving navigation conditions on the Elbe River between Ústí nad Labem – borderline Czech Rep./Germany – Děčín Weir	2016	Czech Waterways Directorate	2,232
9405	Second stage of the District plan for water management of landscape in the Czech Republic	2016	Mendel University	455
9424	Hydrological modelling and calculation of water sources available in intercatchment on the basis of hydrological balance, database of water use and water management infrastructure	2016	CZECHGLOBE Global Change Research Institute, CAS	543
9081	Monitoring and assessment of surface water and groundwater quality and their changes in connection with the impact of Temelín Nuclear Power Station on its surroundings	2000–2016	ČEZ	12,221
9445	Content of radioactive substances in the Orlik Water Reservoir	2016	Vltava River Board, s. e.	2,020
2821	Development of methodological, planning and monitoring measures for solving the problem of fragmentation of the river network of the Czech Republic	2014–2016	Water Management Development and Construction, joints stock company – TACR ALFA	8,561
2991	Flooded cultural and natural heritage South Moravia	2013–2016	National and Cultural Identity, Ministry of Culture MK NAKI	8,379
9397	Draft of systems integrity of flood and drought prevention in Žulovsko	2016	Silezika, interest association	180
8507	Monitoring of localities of the Natura 2000 system as a tool of effective management and protection of autochthonous populations of cancers	2015–2016	NF – MoE	8,617
8508	Monitoring of chemism and bio-monitoring of the Upper Malše River with focus on freshwater pearl mussel's requirements	2015–2016	NF – MoE (MGS)	1,571
9399	Checking the municipal sources of pollution in the river basin of the Švihov Water Reservoir	2016	Vltava River Board, s. e.	514
9420	River wood in watercourses of the National Nature Park “the Morava River Arms” – current situation and management draft	2016	Nature Conservation Agency of the Czech Republic	97
Total				51,914

Source: VUV TGM



At the brink of the night (source: Ohře River Board, s. e.)

Interesting numbers (as of 31 December 2016)

- Basic hydrological network: 99.55 thousand km of watercourses
- Purchase value of non-current tangible assets related to watercourses: CZK 52.16 billion (year-on-year increase by CZK 0.41 billion)
- Income decrease of the River Boards, s. e., by CZK 60 million (mainly due to a drop in income from electric power generation, other revenues and non-investment grants)
- Average price for 1 m³ of surface water – CZK 4.64 (year-over-year increase by 6.9%)
- Income for small hydroelectric power plants owned by River Boards, s. e.: CZK 475.2 million (year-over-year decrease by 22.1%)
- Investments of River Boards, s. e.: CZK 1.86 billion, of which CZK 1.26 billion (67.7%) of internal funds
- Land consolidation: CZK 1,253.9 million, of which CZK 67 million for water management measures, CZK 13 million for anti-erosion measures
- Population supplied with drinkable water: 9.97 million (94.4%) – the most in Prague and the Karlovy Vary Region (100%) and Moravia-Silesia Region (99.9%), the least in the Pilsen Region (84.4%) and in the Central Bohemian Region (86%)
- Water consumption (invoiced to households): 88.5 l/person/day (year-over-year increase by 0.6 l/person/day)
- Population connected to sewerage system: 8.94 million (84.7%) – the most in Prague (99.1%) and the Karlovy Vary Region (97%), the least in the Central Bohemian Region (71.6%) and the Liberec Region (69%)
- 1,700.8 million m³ of waste waters and mine waters discharged into watercourses (year-over-year increase by 4.9%)
- Total length of the water supply system: 77,681 km (extended by 535 km)
- Total length of the sewerage system: 47,141 km (extended by 1,257 km)
- Number of waste water treatment plants: 2,554 (increased by 59)
- Water rate: average price: CZK 36.70 per m³, the highest in the Ústí nad Labem Region (CZK 43.00 per m³), the lowest in the Pardubice Region (CZK 31.90 per m³)
- Sewerage charge: average price: CZK 32.10 per m³, the highest in the Liberec Region (CZK 41.90 per m³), the lowest in the Vysočina Region (CZK 26.30 per m³)
- Production of market fish: 20,952 tonnes (20,261 tonnes from ponds)
- Operational Programme Fisheries 2014–2020: 90 projects (CZK 115.7 million)
- Operational Programme “Environment 2007–2013” (funds used in water management: CZK 906.6 million)
- Operational Programme “Environment 2014–2020” (funds used in water management: CZK 88.4 million)
- Grant programmes for the field of water supply and sewerage systems:
 - 116 projects focused on water supply systems (CZK 547.4 million),
 - 185 projects focused on sewerage systems (CZK 1,316.7 million),
 - subsidised loans: subsidies for interests (95 loans amounting to CZK 19.3 million)
- Grant programmes for flood control: 61 projects (CZK 491.6 million)
- Grant programme for remedying flood damage: 22 projects (CZK 132.4 million)
- Grant programme focused on minor watercourse management, ponds and small water reservoirs: 167 projects (CZK 110.2 million)
- Grant programme aimed at recultivation and reconstruction of ponds and water reservoirs: 13 projects (CZK 10.8 million)
- Grants for irrigation: 34 projects (CZK 35.6 million)
- Research and development in water management:
 - 16 projects (CZK 29.3 million) – MoA
 - 2 projects (CZK 1.9 million) – MoE
 - 14 projects (CZK 51.9 million) – VUV TGM

List of acronyms in text

BOD ₅	biochemical five-day oxygen demand
BP	biological removal of phosphorus
CEB	Council of Europe Development Bank
CHP	chemical removal of phosphorus
COD _{Cr}	chemical oxygen demand
CSN	Czech State Standard
CSO	Czech Statistical Office
DIS	dissolved inorganic salts
DN	denitrification
EAFRD	European Agricultural Fund for Rural Development
EEC	European Economic Commission
EIB	European Investment Bank
EQS	Environmental Quality Standards
ERDF	European Regional Development Fund
EU	European Union
FAD	flood activity degree
GAEC	Good Agricultural and Environmental Condition
MCFC	the monthly cumulative frequency curve
MoA	Ministry of Agriculture
MoE	Ministry of the Environment

N	nitrification
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
OPE	Operational Programme Environment
P _{total}	total phosphorus
PE	population equivalent
Q _a	annual average flow
Q _m	monthly average flow
R&D	research and development
R&D&I	research, development and innovation
RDP	Rural Development Programme
s. e.	state enterprise
SEF	State Environmental Fund of the Czech Republic
VAT	value added tax
VUVTGM	T. G. Masaryk Water Management Research Institute, public research institution
W&S	Water Supply and Sewerage System



Important contacts in water management

Ministry of Agriculture of the Czech Republic
Těšnov 65/17, Prague 1, 110 00, www.eagri.cz/en
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 – Smíchov, 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, s. e.
Dřevařská 932/11, Brno, 601 75, www.pmo.cz
Forests of the Czech Republic, s. e.
Přemyslova 1106/19, Hradec Králové, 501 68, www.lesycr.cz
Czech Hydrometeorological Institute
Na Šabatce 2050/17, Prague 412 – Komořany, 143 06, www.chmu.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



Farewell to winter (source: Ohře River Board, s. e.)

Report on Water Management in the Czech Republic in 2016

As of 31 December 2016

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Ministry of Agriculture of the Czech Republic

Department of Water Protection
Ministry of the Environment of the Czech Republic

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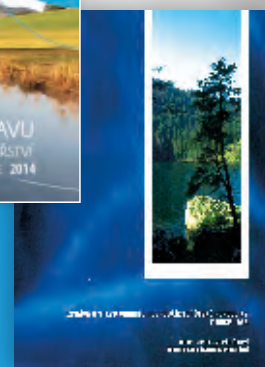
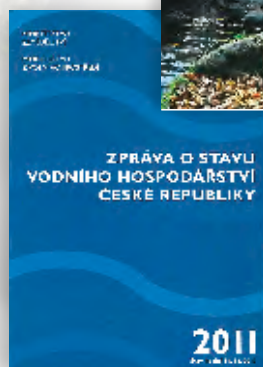
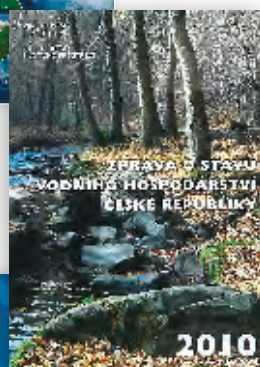
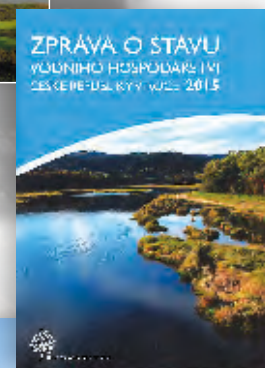
In the publication pictures from the children's competition on the topic of "Waste water" were used.
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OF THE CZECH REPUBLIC



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