MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC IN **2014**

Report on Water Management in the Czech Republic in 2014
As of 31 December 2014

Text
Department of State Administration of Water Management and River Basins
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 were used pictures from the children´s competition for pupils at primary and lower secondary school level on the topic of „Water for the future" organized by the Ministry of Agriculture of the Czech Republic as as part of the World Water Day 2015 celebration.
Pictures introduce each chapter.

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

Contents

The Čertova strouha stream in the Krkonoše Mountains

Dear Readers,

You hold in your hands a „Report on Water Management in the Czech Republic in 2014", traditionally prepared by the Ministry of Agriculture together with the Ministry of the Environment. This publication is the eighteenth summary of information on water management in the Czech Republic and its development trends, water uses, subsidy schemes, research programmes as well as cooperation with neighbouring countries.

2014 was a calmer year for water managers, compared to the previous one, which brought again a major flood in Bohemia and partly in Moravia. 2014 can generally be described as having received average precipitation amounts, but its first half showed a threat in the form of another extreme – drought. Groundwater levels reached at the time of usual annual maxima only subnormal to critical levels, which was a call for caution, although fears of an impending drought finally were not materialized and in the autumn there occurred a groundwater recharge. And as shown by drought this year, we have to accept the warning and prepare comprehensively and conceptually for a very likely occurrence of dry years in the future.

This is related to another worrying trend, which can be seen from the Blue Report: Currently, when the Czech landscape is increasingly exposed to the action of hydrological extremes, i.e. floods and droughts, one of the key factors which can mitigate the impacts of climate change is farming. Taking into account that now we have in the country more than 50% of agricultural land threatened by water erosion and about 10% at risk of wind erosion, these figures must be not only perceived, but they have to become a basis for remedying this condition.

The Blue Report, however, brings also more optimistic data: water consumption continues to decrease at a nationwide level, which means water savings, although not as dramatic as we would like. As regards invoiced water in 2014, the decrease in consumption reached 1.7 litres/person/day, compared to 2013. Another positive trend is the continuing increase in the number of population supplied from water supply systems and connected to sewerage systems. In 2014, water supply systems supplied water to 9.917 million inhabitants in the Czech Republic, i.e. 94.2% of the total population. In total 8.828 million people lived in buildings connected to sewerage systems, i.e. 83.9% of the total population, which corresponds to the level of hygiene in the most advanced countries.

Dear friends, I firmly believe that the „Blue Report 2014" is a source of getting a lot of important information on the status and development of water management in the Czech Republic and you will be able to get a picture of the diversity and range of activities which it involves. I also thank all those who strive through their daily work to contribute to the prosperity of water management.

Marian Jurečka
Minister of Agriculture
of the Czech Republic

Dear Readers,

Like every year, you get in your hands a publication entitled „Report on Water Management in the Czech Republic in 2014", which most of you know as the „Blue Report". Similarly to the previous years the report provides a comprehensive overview of the water management system and management of water quality in the Czech Republic.

Ministry of the Environment is in a shared responsibility with the Ministry of Agriculture the supreme water authority and within its competence is very actively engaged in the protection of water as the basic environmental compartment. Both ministries cooperate very closely and without their good work it would not be possible to meet the basic requirements for the protection of water not only for human purposes.

2014 was a key year from the water management perspective, especially given the intensive preparation of the drafts of National River Basin Management Plans including Programmes of Measures as well as Flood Risk Management Plans, the two most important strategic documents in the field of water management issues. Methodology of preparing the plans is guided by European directives (2007/60/EC and 2000/60/EC) and the individual steps are checked by the European Commission, which the outputs are reported to. The plans aim to identify the biggest water management problems in the Czech Republic and define the measures which can be used to address the problem concerned. Although this goal is significant in nature, I believe that the quality of preparing plans will allow us to identify and define the direction, which should be followed by the Czech Republic in the next six-year period between 2015 and 2021.

There was also carried out work to finalize the Operational Programme Environment 2014 – 2020, which promises to provide considerable funding to address water management issues under its Priority Axis 1 – Improving Water Quality and Reducing Flood Risks. Support will be granted for projects aiming to improve the status of surface water and groundwater, quality and supply of drinking water, projects to reduce flood risks and newly also projects focusing on the use and management of rainwater.

Last but not least, there was established under the supervision of the Ministers of the Environment and Agriculture Interdepartmental Commission WATER-DROUGHT, the output of which is material „Preparation of Measures to Mitigate the Negative Effects of Drought and Water Scarcity". This document was discussed on 29 July 2015 by the Government of the Czech Republic with a view to begin a preparation of a coherent long-term concept to ensure the protection of the Czech Republic against the harmful effects of drought, which may as a natural phenomenon occur unpredictably.

I believe that the „Blue Report" for 2014 will not only provide you with valuable information about water in the Czech Republic, but also contribute to raising the awareness of water as a natural wealth which must be valued and that its protection helps us enjoy a high quality of its daily use.

Richard Brabec
Minister of Environment
of the Czech Republic

Barbora Rattayová – Water for the Future - 5th class, Slovácká primary school, Břeclav, Jihomoravský Region

1. Hydrological balance

1.1 Temperature and precipitation

In terms of temperature, the year 2014 was markedly above the average and by 1.4 °C warmer than the previous year with average temperature values. Annual mean air temperature of 9.4 °C exceeded the value of the long-term average (1961–1990) by 1.9 °C, which is the highest positive variation that has occurred in the last 40 years. Just a little less warm were the years 2007 and 2000 with the mean temperature of 9.1 °C and the variation of 1.6 °C. Above-average temperatures were shown by all winter months and also most of the spring and autumn months of the year. Four of them showed the mean temperature by more than 3 °C higher than the long-term average. Negative variation was recorded only in May with temperatures ranging around the average (–0.2 °C) and colder August (–0.7 °C).

Winter season 2013/2014 with the mean temperature of 1.3 °C, i.e. with a value of 2.9 °C above the long-term average was relatively very warm and approximately the fourth warmest in the last 40 years. The coldest period of the year (similarly to the previous year) was only a short period of between 24 and 26 January, with the mean daily temperature having varied between –5.0 and –9.0 °C.

Also the spring season showed above-average temperatures – with the mean temperature of 9.1 °C (1.7 °C above the average). This was primarily influenced by very warm March (in addition to March 1990 the warmest in the last 40 years) with the mean temperature of 6.2 °C (i.e. 3.7 °C above the average) and also warm April (2.5 °C above the average).

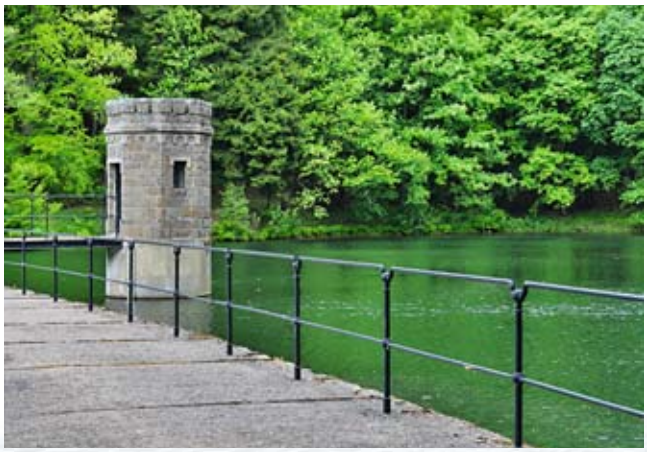
During the summer months, the temperature mostly showed values ranging around the average. The mean summer temperature of 16.7 °C (by one degree lower than in 2013) was only by 0.4 °C higher than the average. The warmest month was July with the temperature of 19.2 °C (2.3 °C above the average), August was colder with the temperature of 15.7 °C (0.7 °C below the average). The highest values of the mean daily air temperature were reached for the first time at the end of the first decade of June and again at the end of the second decade of July, having ranged between 22 and 24 °C, and between 22 and 29 °C, respectively. The growing season 2014 with the mean temperature of 14.2 °C (as in the previous year) showed only slightly above-average values.

Autumn season, with the mean temperature of 10.0 °C, showed again above-average values due to warm October (the mean temperature of 10.0 °C, i.e. 2.0 °C above the average) and and mainly due to record warm November (the mean temperature of 6.0 °C, i.e. 3.3 °C above the average). Neither the last month of the year brought exception (December with the mean temperature of 1.6 °C exceeded the average by significant 2.6 °C). Only the last week of December recalled the first month of winter 2014/2015 – in its frosty end (between 27 and 30 December) there occurred a cold period comparable to the annual minimum, which occurred as early as the beginning of the year, at the end of January.

In terms of precipitation, the past year 2014 in the Czech Republic showed the average precipitation amount of 657 mm, which corresponded to 97% of the long-term precipitation average ($N_{1961-90}$). Compared to the previous year, relatively more abundant precipitation amounts fell in eastern part of the country, i.e. the territory of Moravia and Silesia received by approx. 5% of the precipitation average more than Bohemia.

There were no major differences in the main river basins, which is also reflected by runoff conditions in 2014. Relatively smallest precipitation amounts (70 to 90% of the average) fell in catchment areas of right-hand tributaries of the Elbe (basins of the Orlice River and the Sázava River and basins of upstream parts of the Ohře River, the Mže River, the Vltava River, the Morava River, the Oder River and the Opava River). Precipitation amounts closest to the average were recorded in administrative regions in the south and east of the country and the largest precipitation deficit was recorded in the north and northeast of Bohemia. During the year, there were five months with precipitation amounts ranging around the average (March, April, August, October, December) – they alternated with four dry (January, February, June, November) and three wet months (May, July, September).

Overall, drier was the first half of the year, especially the winter season 2013/14, with only 43% of usual precipitation amount having fallen, which was reflected in very warm weather by exceptionally low accumulation of water in snow cover. During the dry January, average precipitation amount reached 26 mm, i.e. 62% of the average; in the driest month of the year, February, only 10 mm, i.e. only 26% of the average (total precipitation amount in February in the Czech Republic in the last 40 years was one of the lowest – the second lowest after the value for February 1982 /8 mm/). Two following months with average values, March (85% of the average) and April (86% of the average) just maintained the current negative balance and the growing deficit began to be reduced by more abundant rainfall in May (114 mm, i.e. 154% of the average). However, roughly the same amount of rainfall which was received above the average in May, again lacked in dry June (40 mm, 48% of the average). Only in the period of the following four months with above-average rainfall amounts (July 133% of the average, August 118% of the average, September 187% of the average and October 119% of the average) the situation gradually improved, so despite the very dry November (23 mm, i.e. 47% of the average) and only slightly below-average December (39 mm, i.e. 81% of the average) the total annual precipitation amount reached the long-term average value. In the months of the growing season (April to October), total precipitation amount was slightly above the average and corresponded, similarly to the previous year, to approximately 118% of the average.



Jezeří hydraulic structure

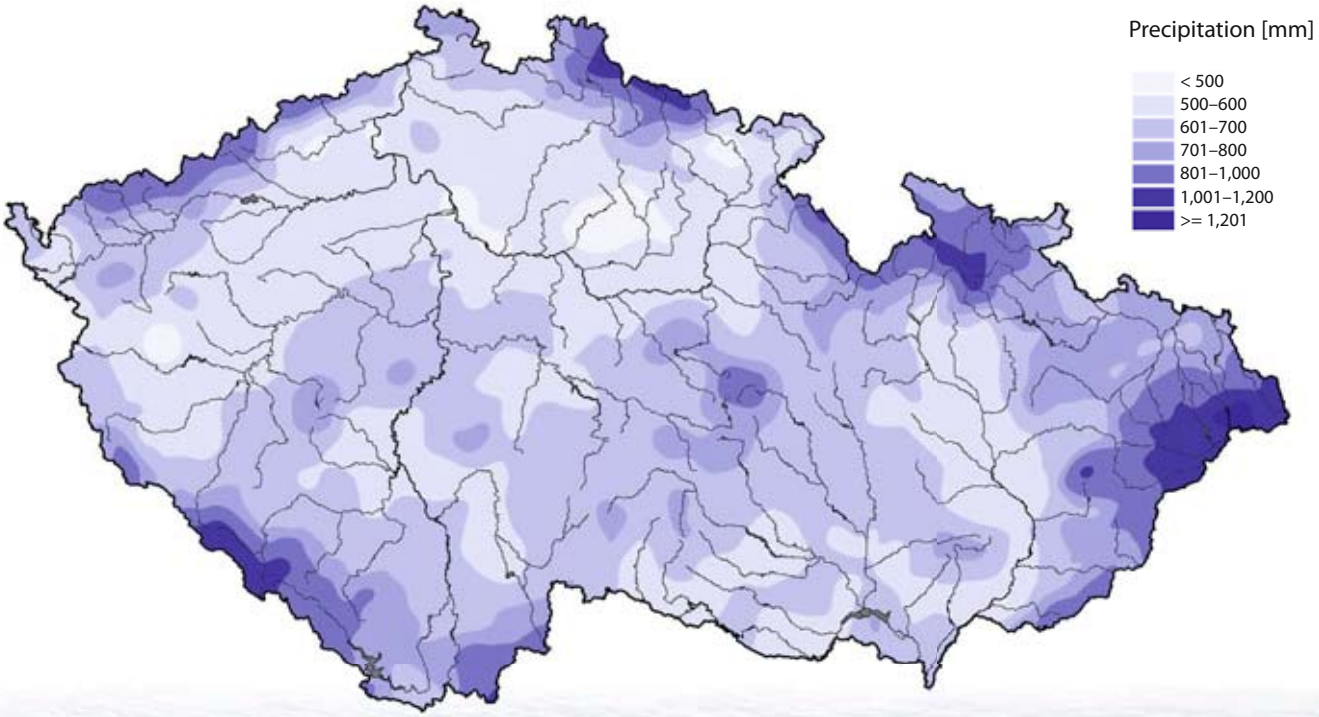
Revitalization of the Blanice River in Vlašim

Table 1.1.1
Renewable water sources in the years 2005–2014 in millions of m³

Item	Annual values									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Precipitation	57,730	55,837	59,544	48,818	58,676	68,692	49,449	54,812	57,336	51,815
Evapotranspiration	42,872	37,617	46,194	37,394	44,090	46,824	35,511	42,239	38,296	41,542
Annual inflow [1)]	781	1,070	637	462	714	781	482	492	845	388
Annual runoff [2)]	15,639	19,290	13,987	11,886	15,300	22,649	14,420	13,065	19,885	10,661
Surface water sources [3)]	5,489	5,317	4,673	4,503	5,112	8,788	5,770	5,195	6,626	5,273
Usable groundwater sources [4)]	1,305	1,345	1,244	1,209	1,266	1,594	1,340	1,311	1,657	1,077

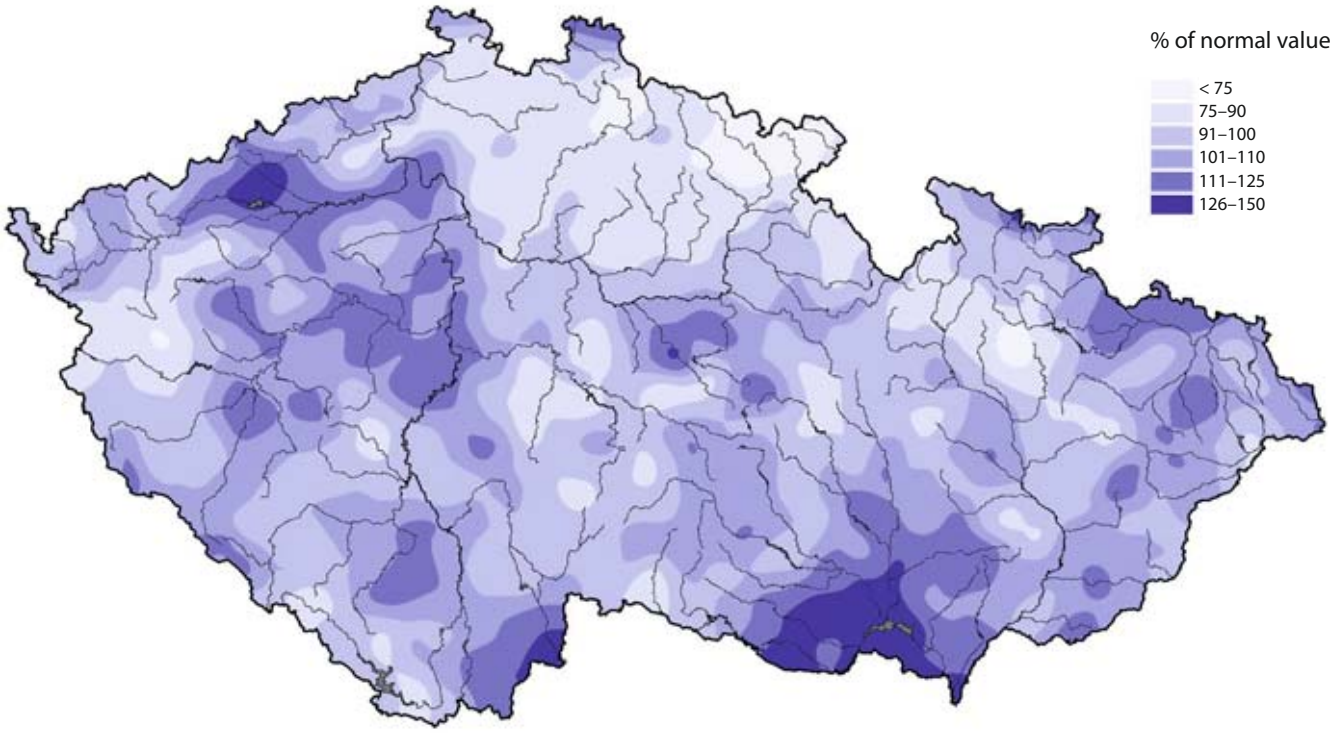
Source: Czech Hydrometeorological Institute
Note: 1) Annual inflow to the territory of the Czech Republic from the neighbouring states.
2) Annual runoff from the territory of the Czech Republic.
3) Determined as the flow in the main catchment areas with 95% probability.
4) A qualified estimate, specification in more detail is published by the Czech Hydrometeorological Institute not sooner than the second half of 2015.

Figure 1.1.1
Total precipitation amount in the Czech Republic in 2014 in mm



Source: Czech Hydrometeorological Institute

Figure 1.1.2
Total precipitation amount in the Czech Republic in 2014 by % of the average over the period 1961–1990



Source: Czech Hydrometeorological Institute

1.2 Runoff

In terms of runoff, the year 2014 in most of the territory of the Czech Republic reached below-average values. As regards the main river basins, long-term annual average was reached only by the Olše River (102% of the long-term annual average), significantly below the average remained the Oder River (71% of the long-term annual average) and the Morava River (68% of the long-term annual average). This year was the driest in the Elbe River basin (65% of the long-term annual average).

Runoff deficit was manifested from the beginning of the year, when due to poor precipitation flows remained until April markedly below the average; in the next four months, there was only a slight increase in the water levels. More significant improvements occurred only in the autumn. The total values of the annual runoff were similar to dry years in recent history (2008, 2007, 2004, 2003 and 1990); during the first half of the year even the runoff levels rather resembled the driest years ever recorded (e.g. 1933, 1943, 1963 and 1973). In the first months of the year there generally prevailed downward or sustained trend in water levels, in March and April, flow values were relatively the lowest. During May, the water levels on watercourses temporarily slightly increased. Until the end of October there prevailed fluctuating tendencies with temporary, at places even significant, rises in water levels. In November and December, the situation on watercourses did not change markedly and water levels were largely sustained. Major flood events occurred in May, at the turn of July and August and then in September and October. Flows on flooding watercourses mostly reached Q_{2-5}, during September even Q_{10-20}.

The lowest water levels were recorded in the first quarter of the year. The flows, compared to long-term averages, mostly ranged between 30 and 90% Q_m. Watercourse levels at the beginning of this period were mostly sustained or showed a gradual downward trend. More significant fluctuations in water levels occurred during the second decade of January, especially in the Upper Elbe, the Upper Morava River and the Desná River basins. In these areas, the flows were above the level of January averages (110 to 130% Q_I). At the end of January, the temperatures declined and some mountain streams were shortly affected by ice phenomena. The lowest flows were shown in January by watercourses in the Upper Vltava River Basin, especially the Lužnice River (15 to 25% Q_I). The water levels during January did not change much and reached max. $Q_{300-150d}$. At the beginning of February, similarly to January, the water levels did not change much and gradually declining trend continued to prevail. In the period of between 12 and 15 February after a longer time there occurred rainfall that caused the water levels to temporarily rise above the level of long-term February averages, especially in the Morava River and the Oder River basins. Very low flows (15 to 30% Q_{II}) in February were shown by watercourses in the Upper Elbe basin, followed by the Lužnice River, the Úslava River, the Opavice River and the Lomná River. The lowest water levels $Q_{364-355d}$ were shown by the Třebovka River, the Doubrava River, upstream part of the Úpa River, the Lužická Nisa River, the Teplá Vltava River, the Malše River and the Úhlava River. Then there followed a longer period with largely sustained and declining water levels, until the end of the first decade of March. More significant rainfall episode recorded during the second decade of March (15 to 16 March) caused the water levels to rise markedly on streams draining the Šumava Mountains and on watercourses in the Smědá River and the Olše River basins. On the Jizera River and the Zdobnice River, the water levels reached almost FAD I. Also at the beginning of the last week of March there were rainfall events that caused general fluctuations of water levels, mostly on the Cidlina River and the Sázava River (up to 62 cm/24 hours). Until the end of March, only downward trend predominated. Throughout the year, the March flows belonged to the lowest, mostly having reached 25 to 50% Q_{III}. The water levels ranged between Q_{330d} and Q_{90d}. The exception were only streams draining mountain regions where the flows reached approx. 60 to 80% Q_{III}.

At the beginning of the second quarter of 2014, the water levels were largely fluctuating, depending on frequent rainfall. More marked water level rises were recorded on streams in the Bohemian part of the Oder River basin as well as watercourses in

the Olše River and the Bečva River basins. More significant rainfall occurred in the third decade of April and caused marked daily water level rises on the Olše River (36 cm), the Oder River (34 cm) and the Jihlava River (70 cm). The water levels on these rivers did not reach the level of Q_1. On 26 April, on the Lužická Nisa River, FAD I (Q_{30d}) was shortly exceeded. The flows most frequently reached the values of 25 to 50% Q_{IV}, ones of the smallest flows throughout the year. The water levels of unaffected streams largely ranged between Q_{330d} and Q_{150d}; the highest water levels were recorded in the Upper Elbe and the Jizera River basins, followed by the Smědá River and the Olše River ($Q_{120–60d}$). The lowest water levels were shown by watercourses in the Upper Vltava River, the Middle Elbe, the Opava River and the Ostravice River basins ($Q_{365–330d}$). In the first half of May, sustained or slightly fluctuating trend prevailed on rivers. Runoff situation markedly changed in the second half of May, when two flood situations were recorded. The first one was caused by intense rainfall from 14 to 17 May that affected the mountain and foothill areas, especially in the Jeseníky Mountains and the Beskydy Mountains. On 16 May, FAD III was temporarily exceeded on the Olše River in Český Těšín ($Q_{5–10}$). On 17 May, FAD III was exceeded in the upstream part of the Elbe (Q_2) and a day later (on 18 May) on the lower reach of the Smědá River. Another rainfall of the local nature (on 23 to 24 May) caused rapid rises of water levels in the Sázava River basin; in Žďár nad Sázavou the water level shortly exceeded FAD II (Q_{60d}). The latter significant runoff situation occurred in the third decade of May in the Upper Elbe, the Vltava River and the Oder River basins. The highest water level rises were recorded in the Vltava River and the Berounka River basins. FAD III was temporarily exceeded on the Klabava River and the Úslava River, where the water levels reached $Q_{2–5}$. Rapid rises of water levels were recorded in late May also in the Oder River basin due to storms accompanied by torrential rains. On 27 May, FAD III was exceeded on the Jičínka River. The water levels of streams in the first half of May largely ranged between Q_{330d} and Q_{150d}. In the second half of May, average water levels rose up to $Q_{120–60d}$ in the Elbe, the Vltava River and the Oder River basins. In the Morava River basin, the water levels reached $Q_{270–60d}$. Generally lower water levels were shown at the end of May by streams in the Ohře River basin. The flows, compared to long-term May averages in the Elbe, the Vltava River and the Morava River basins, were below the average, having mostly reached 45 to 85% Q_V. Lower water flows were recorded in the Ohře River and the Lower Elbe basins (30 to 65% Q_V), while higher water flows occurred in the Oder River and the Bečva River basins (120 to 260% Q_V). During June there were no significant runoff situations, there occurred only temporary water level rises after rainfall caused by storms. Generally, at the beginning of June there continued a downward trend after the rainfall episode from the end of May. After that a slightly downward or sustained trend of water levels prevailed, in terms of flows, this month was below the average. Most often the flows, compared to their average levels, ranged from 35 to 65% Q_{VI}, higher flows were only shown by the Divoká Orlice River (110%) and the Stěnava River (100%). The lowest flows were shown by the Olšava River, the Ostravice River, the Lomnice River, the Skalice River and the Úterský stream (15 to 27% Q_{VI}).

Also at the beginning of the third quarter of 2014, the water levels were generally fluctuating, which was caused by the frequent occurrence of convective rainfall. Torrential rains caused temporary rises of water levels mainly on smaller and medium-sized streams. During July, several rainfall episodes with exceedances of flood activity degrees were recorded. The most significant rainfall occurred at the end of July (30 to 31 July). Short-term exceedances of FAD III were recorded on the Blanice River (Q_1), the Zlatý stream (Q_{10}) and the Lutoninka River (Q_2). Overall, however, July showed below-average runoff figures. The flows mostly ranged from 30 to 90% Q_{VII}. Lower levels were shown by watercourses in the Upper Oder River basin, the Mrlina River and the Lomnice River (5 to 20% Q_{VII}), while higher levels were shown by watercourses in the Otava River basin (105 to 120% Q_{VII}). The water levels in August were fluctuating similarly as in July. Significant runoff response was recorded after rainfall of 3 and 4 August. Higher water levels were shown by streams in the Upper Elbe, the Sázava River, the Upper Morava River basins and also in the Dyje River basin. On 3 August, short-term exceedance of FAD III was recorded on the Novohradka River, whose water level reached even Q_5. Overall, the flows compared to August averages ranged from 40 to 75% Q_{VIII}. Higher levels were shown by watercourses in the Upper Vltava River, the Oder River, the Olše River and the Morava River basins (75 to 125% Q_{VIII}). The lowest water levels in most of the country were recorded in the second half of August, with a gradual decline (except the Oder River basin) to between Q_{270d} and Q_{355d} and in ten hydrometric profiles even to Q_{364d}. The lowest water levels were recorded in most of the rivers between 20 and 23 August. Runoff situation then slightly improved mainly in the Vltava River basin and in Moravian river basins. In the Elbe basin and Bohemian part of the Oder River basin, however, there mostly remained minimum water levels. In September, watercourse levels fluctuated more frequently due to the occurrence of abundant local rainfall. At the beginning of September (on 1 September), rainfall in northern Moravia and Silesia and the following day (on 2 September) in southern Moravia and eastern Bohemia caused water levels to rapidly rise. Short exceedances of FAD I were recorded on some watercourses (the Novohradka River, the Svratka River, the Oslava River, the Dyje River, the Jevíčka River). The water levels rose significantly also at the beginning of the second decade of September (12 to 13 September). Flood activity degrees were reached on watercourses in the Berounka River, the Otava River, the Dyje River and the Morava River basins, with the highest runoff response having been shown by the Jevišovka River and the Velička River, where FAD III was temporarily reached. In September the water levels ranged from Q_{240d} to Q_{90d}, higher levels were recorded on watercourses in the Upper Vltava River basin (up to Q_{30d}). In the second half of September, downward trend prevailed on most rivers. The flows in September, compared to average levels for this month, were those of the highest of the year, having reached the levels of between 150 and 300% Q_{IX}. The exception were watercourses in the Upper Elbe, the Jizera River and the Ohře River basins, where the flows ranged from 75 to 105% Q_{IX}.

In October, the water levels initially showed a sustained trend, then there prevailed water level rises, especially in the Vltava River basin. After abundant rainfall on 22 October in the Šumava Mountains and the Novohradské Mountains, short-term exceedance of FAD III on the Otava River and the Černá River was recorded. The water levels in these rivers reached Q_{2-5}, which was also recorded on the Teplá Vltava River, the Vydra River, the Otava River, the Skalice River and the Bradava River. On the contrary, generally the lowest water levels in October were recorded on watercourses in the Jizera River and the Lužická Nisa River basins (Q_{364d}) – the flows there, compared to long-term October averages, reached the levels of approx. 60 to 90% Q_X. The highest water levels (250 to 300% Q_X) were shown by the Malše River, the Lužnice River, the Klabava River and the Oslava River. In November and December, significant runoff situations did not occur. Watercourse levels showed largely a sustained or slightly downward trend. Then slight fluctuations of water levels occurred in dependence on fallen rain. More significant water levels rises in November were shown by the Oder River and the Morava River (74 cm and 105 cm/24 hours, respectively). The water levels mostly reached $Q_{330–120d}$, higher ones were recorded in the Dyje River basin (Q_{90-60d}). In December, at the turn of the second and the third decades, there was recorded significant rainfall which in combination with snow thaw caused major fluctuations of watercourse levels, especially in the Krkonoše Mountains. In the upper reach of the Elbe, FAD II was temporarily exceeded on 19 December, the water level reached up to Q_{30d}. Overall, the water levels in December ranged from Q_{240d} to Q_{60d}. The flows in November, compared to average levels, were largely below the average and reached 40 to 90% Q_{XI}, in the Vltava River,

the Oder River and the Dyje River basins they reached 100 to 170% Q_{XI}. In December, the flows reached similar levels.

Water levels in most of the monitored reservoirs during the year 2014 showed a quite sustained trend. More significant fluctuations in terms of filling the storage space were mainly shown by water reservoirs in the Elbe basin in the first third of the year and then in November and December. Water levels in the monitored reservoirs in the Vltava River basin showed largely a sustained trend. The exception were the Hracholusky water reservoir with significant storage space filling in the first quarter of the year (from 55% to approx. 90%) and Hněvkovice water reservoir, where in November and early December the volume of accumulated water was markedly reduced to 32%. A different situation occurred in the Oder River and the Morava River basins, where fluctuations in the filling of storage space reflected the occurrence of flood events in late May especially in the Oder River basin. As regards the Brněnská hydraulic structure, at the beginning (January, February) and at the end of the year (December), the filling of storage space was reduced to 5% and 4%, respectively. Annual maxima of storage levels for most of the reservoirs in Bohemia were largely recorded during the spring months (April to June) or in October or November. In the Oder River basin, annual maxima were reached in May or June and in the Dyje River and the Morava River basin in October or November. Filling of storage space in the reservoirs was maintained throughout the year mostly above 55%. Retention volume was markedly affected by water levels only for a short time, namely for reservoirs in the Upper Ohře River basin (in the first quarter of the year) and the Oder River basin (in May, October and early November). The highest storage filling levels throughout the year were shown by water reservoirs in the Upper Ohře River basin: Skalka reservoir (257% in March), Jesenice reservoir (129% in March) and Morávka reservoir (135% in May). In contrast, the lowest filling (below 45% of storage space) was shown from the second decade of November to early December by Hněvkovice water reservoir (32%) and from mid-November to the beginning of the third decade of December also by Šance water reservoir (42 to 44%). Accumulation of water exceeding the operating minimum in the Vltava Cascade reservoirs was the largest at the beginning of February (approx. 352 million m^3). Accumulation of water then gradually decreased until the beginning of May to approx. 176 million m^3, which was the lowest recorded value in 2014. During May and June, accumulation of water increased to approx. 220 million m^3. In July and August it decreased to the level of approx. 183 million m^3, which was the second annual minimum. In the following months of the year, accumulation of water gradually increased. A larger increase at the end of the year was driven mainly by the December thaw. At the end of December, accumulation of water reached the amount of approx. 307 million m^3 above the operating minimum, which was the second annual maximum.

1.3 Groundwater regime

The year 2014 was specific with low shallow groundwater levels and yields in the spring season, which at the time of the usual annual maxima reached below-average to critical figures. Despite this unfavourable situation, great fears of an impending drought were not realized. In the autumn there occurred satisfactory groundwater recharge, and so this year can generally be regarded as ranging around the average. From a regional perspective, however, there were considerable differences in groundwater levels. While the northern and northeastern parts of Bohemia were affected by the year-long lack of groundwaters, in western Bohemia groundwaters reached their highest levels in the previous ten years.

At the beginning of the year, the situation in groundwaters was relatively good in most of the country. Shallow groundwater levels and yields were comparable with long-term averages, for groundwater levels ranging from 33% (the Berounka River) to 77% (the Oder River) of the long-term monthly cumulative frequency curve, for yields ranging from 31% (the Berounka River) to 62% (the Oder River) of the long-term monthly cumulative frequency curve.

In connection with minimum precipitation and a lack of snow the spring supply to groundwaters was very low and both the groundwater levels and yields declined or stagnated markedly below their usual spring maxima. Although in most of the country the monitored indicators ranged around values defined for this period as the drought, these were not annual minima. Their gradual decline without significant fluctuations continued until the summer months.

The lowest shallow groundwater levels were measured mainly in July and August, the yields in September. Due to occasional abundant rainfall episodes in the summer season the decline was not as dramatic as it is typical of this growing season. Therefore, the levels of annual minima with exceptions did not reach the limit defined for the drought (85% of the long-term monthly cumulative frequency curve). The minima of shallow groundwater levels ranged from 49% (the Lower Elbe) to 80% (the Dyje River) of the long-term monthly cumulative frequency curve, the minima of yields ranged from 52% (the Berounka River) to 79% (the Dyje River) of the long-term monthly cumulative frequency curve.

In August and especially in September there occurred significant groundwater recharge, mainly in shallow circulation, with groundwater levels in many places having reached their annual maxima (the Upper Vltava River 21% of the long-term monthly cumulative frequency curve, the Oder River 18% of the long-term monthly cumulative frequency curve, then in October the Dyje River reached 14% of the long-term monthly cumulative frequency curve, the Lower Vltava 13% of the long-term monthly cumulative frequency curve, at the end of the year the Berounka River 21% of the long-term monthly cumulative frequency curve). Most of the monitored groundwater levels and yields so reached their annual maxima in the autumn period, when these values are usually the lowest. Only in the entire Elbe and the Morava River basin districts the levels from the beginning of the year were not exceeded, although they were comparable or higher than long-term averages (47%, 42% and 34% of the long-term monthly cumulative frequency curve). In the deeper groundwater horizons the favourable climatic situation was only slightly reflected, the decline stopped and the yields largely stagnated. Higher yield levels from the beginning of the year were exceeded only in the south and southwest of Bohemia (the Berounka River 21% of the long-term monthly cumulative frequency curve, the Upper Vltava River 43% of the long-term monthly cumulative frequency curve), in the Morava River basin they were comparable (34% of the long-term monthly cumulative frequency curve), in other areas they remained lower.

Despite the considerable differences in groundwater levels at the end of the year in different regions the values of the long-term monthly cumulative frequency curve were mostly comparable with long-term averages, having ranged from 19% of the long-term monthly cumulative frequency curve (the Dyje River) to 62% of the long-term monthly cumulative frequency curve (the Upper Elbe) for shallow groundwater levels and from 21% (the Berounka River) to 70% (the Upper Elbe) for yields. Most favourable groundwater status was in western Bohemia, where the monitored indicators throughout the year ranged around average levels, having markedly exceeded them at the end of the year. In contrast, the driest was the north of the country (the Upper Elbe), where the monitored indicators declined to levels for the drought and only got closer to average levels at the end of the year.

Patrik Ježek – Sewerage Dirt x Pure Nature - 5th class, Lužická primary school, Hradec Králové, Královehradecký Region

2. Flood situations

2.1 Flood courses

Major flood events in 2014 occurred in May and September, to a smaller extent in July, August and October. In most cases these were regional or flash floods that affected minor or medium watercourses. It is also worth mentioning that in the winter season there were no significant situations caused by the melting of snow or ice phenomena.

During May there occurred two flood situations. The first in mid-May affected the Oder River catchment area and partly also the upper Elbe catchment area. The latter at the end of the month hit watercourses in the Berounka River and the upper Elbe catchment areas and again streams in the Oder River catchment area. Water level rises were caused by intense persistent rainfall in the period from 14 to 17 May. Rains hit mountain and foothill areas, especially the Jeseníky Mountains and the Beskydy Mountains, later also the Orlické Mountains and the Krkonoše Mountains. In average, daily precipitation totals reached between 5 and 20 mm, in the most affected areas between 25 and 80 mm, on 15 May sporadically on the windward side of the Beskydy Mountains between 90 and 130 mm. On 16 May in reaching Q_{50}, FAD III was exceeded on the Lučina River (tributary to Žermanice water reservoir) in Horní Domaslovice and on the Olše River at the profile in Český Těšín (Q_{5-10}). On 17 May, exceedance of FAD III was also recorded on the upper Elbe at Labská and Vestřev profiles (Q_2), On 18 May, FAD III in Q_1 was also reached on the lower Smědá River in Předlánky. At other profiles, when reaching $Q_{1/2}$ to Q_5, the level of FAD II was exceeded (the Stonávka River in Hradiště, the Lubina River in Petřvald, the Olše River in Věřňovice, the Rožnovská Bečva River in Rožnov pod Radhoštěm and Valašské Meziříčí, the Jizera River in Jablonec nad Jizerou, the Černý stream in Velká Kraš and the Smědá River in Bílý Potok). Rainfall that caused significant, but only local runoff response, was recorded on 23 to 24 May in the upper Sázava River basin and at places reachedy 20 to 40 mm. Rapid rise of water levels to Q_2 caused a short-term exceedance of FAD II on the Sázava River in Žďár nad Sázavou. Another flood situation occurred in late May in the upper Elbe, the Vltava River and the Oder River basins. In the period from 26 to 28 May the above mentioned river basins received storm rainfall which reached 20 to 40 mm, sporadically even 65 mm, and caused rapid rises of watercourse levels. Exceedance of FAD III at reaching Q_{10} was recorded on 27 May on the Jičínka River in Nový Jičín, on 28 May on the Úslava River in Koterov, on the Klabava River in Hrádek and Nová Huť and also on the Černý stream in Velká Kraš (Q_{2-5}). Fluctuations around the level of FAD II were recorded on 26 and 28 May on the Porubka River in Vřesina (Q_{5-10}), on 28 May on the Bělá River in Mikulovice (Q_5). The level of Q_{5-10} was reached on 28 May on the Bradava River in Žákava and Q_{2-5} on the Vidnava River in Vidnavka.

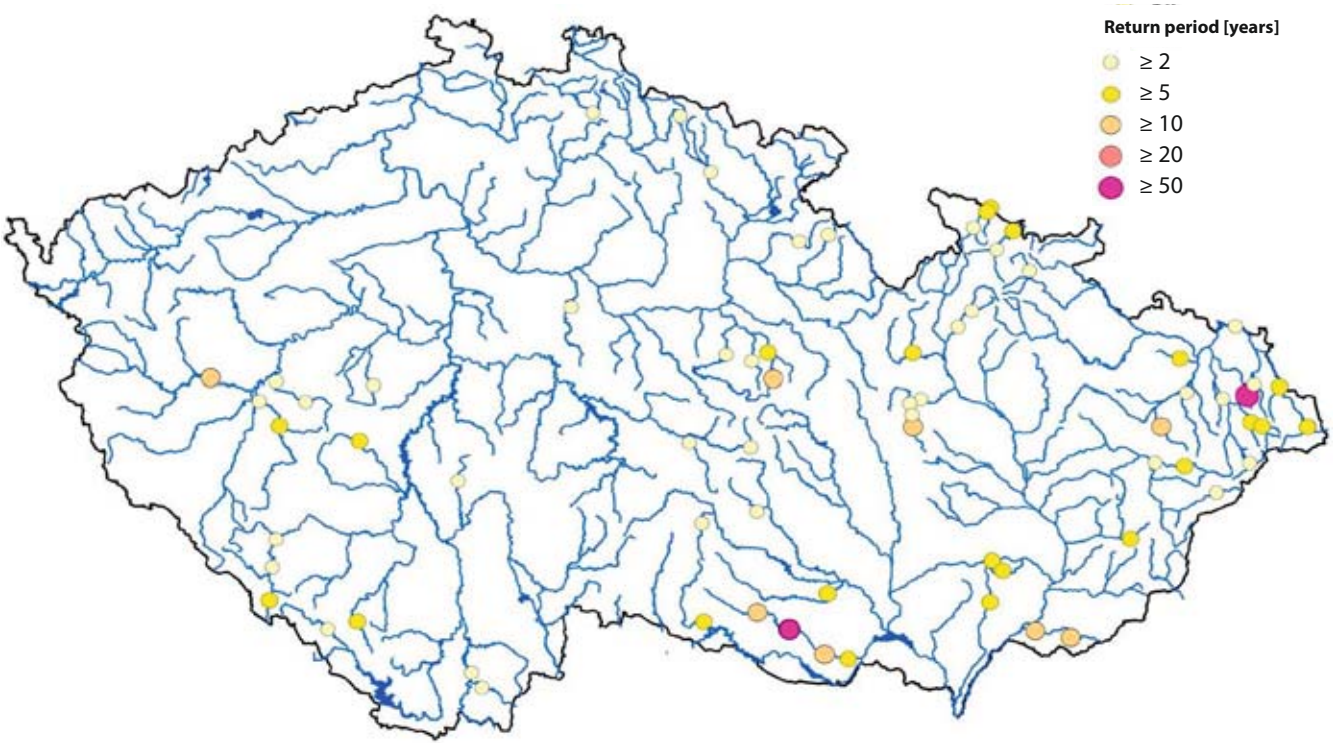
In July, the exceedances of FAD were recorded on minor watercourses, depending on the occurrence of intense local storms. After abundant rain on 8 July in southern and southwestern Bohemia with 25 to 45 mm of rainfall, on 9 July at reaching Q_2 the level of FAD II was exceeded on the Smutná River in Božetice. The next significant precipitation occurred on 21 July in eastern Moravia and central Bohemia with 20 to 40 mm, sporadically up to 86 mm of rainfall. On the Ostravice River in Staré Hamry, FAD II was exceeded at reaching Q_{2-5}, the following day (22 July) FAD II was exceeded on the Klabava River in Hrádek (Q_{1-2}). On 27 July, after rainfall in northern Bohemia (up to 42 mm) FAD II was reached on the Lužická Nisa River in Proseč. At the end of July, heavy rainfall hit the south and east of the country, with up to 40 mm, sporadically up to 80 mm having fallen in storms. As a result of rainfall and overall saturation, on 31 July FAD III was exceeded on the Blanice River in Blanický mlýn (Q_5), the Zlatý stream in Hracholusky (Q_{10}) and the Lutoninka River in Vizovice (Q_5). FAD II at reaching Q_{1-2} was exceeded on the Stěnava River in Meziměstí, the Blanice River in Podedvory, the Křemžský stream in Brloh and the Polečnice stream in Český Krumlov.

Flood situations due to intense rainfall continued in early August, with abundant rain having fallen on 3 August. Rainfall occurred throughout the country, the highest values were recorded at the Českomoravská upland and in the south of Moravia, with up to 60 mm of rainfall. The Novohradka River peaked at the level of FAD III at the Luže profile (Q_5), the flow at the level of Q_{10-20} was reached on its tributary, the Krounka River in Otradov. On 3 August, flows at the level of Q_2 were also recorded on the Sázava River in Žďár nad Sázavou and the Březná stream in Hoštejn.

Most significant flood situations of the year occurred in mid-September. At the beginning of the month, abundant rainfall of 40 to 70 mm was recorded in northern Moravia and Silesia. On the night of 2 September, at reaching Q_{2-5}, FAD II was exceeded on the Černý stream in Velká Kraš and the Jevíčka River in Chornice. On 6 September, as a result of saturation there occurred again water level rises on the Úsobrnský stream and the Jevíčka River, when the rainfall did not exceed 20 mm and the flows ranged around the level of Q_{10-20}, and Q_{2-5}, respectively. The most significant flood situation occurred on 11 to 14 September, when several rainfall waves progressed through the territory of the country. Daily precipitation totals reached 10 to 25 mm, having been enriched with intense storm rainfall, which on 11, 13 and 14 September was the heaviest in southern Moravia and reached 50 to 70 mm. As a result of this situation there occurred rapid rises of water levels, with most markedly rising figures for watercourses draining the Českomoravská upland, particularly its eastern part, and left-hand tributaries of the Morava River. During 12 September, rapid rise of water level above FAD III was recorded on the Velička River in Velká nad Veličkou and Strážnice, at both hydrometric profiles at reaching the level of Q_{10-20}. On 12 September, FAD II was exceeded again on the Jevíčka River in Chornice, the Třebůvka River in Hraničky, the Kyjovka River in Koryčany and Kyjov, the Úsobrnský stream in Jaroměřice, the Litava River in Brankovice, during 13 to 15 September also on the Lomná River in Jablunkov, the Želetavka River in Vysočany and in Bohemia on the Klabava River in Nová Huť, at reaching Q_{1-5}. The most significant runoff situation occurred on 14 September on the Jevišovka River, which reached at all profiles FAD III and the flows corresponded to Q_{5-10}, downstream of the Jevišovice reservoir up to Q_{50}.

On 1 October, exceedance of FAD II was recorded on the Litava River in Brankovice (Q_{5-10}). Major flood waves occured in the Vltava River basin on 22 October in the Šumava Mountains and the Novohradské Mountains (on average, 20 to 50 mm of rainfall), and also at the Českomoravská upland and the Brdy Mountains (15 to 30 mm). On 23 October, exceedance of FAD III at reaching Q_{2-5} was recorded on the Otava River at the Sušice profile, and at reaching Q_2 on the Černá River in Ličov. The level of FAD II was reached on the Malše River in Pořešín, the Vydra River in Modrava, the Křemelná River in Stodůlky, the Otava River in Rejštejn, the Blanice River at the Blanický mlýn profile and the Klabava River in Hrádek and Nová Huť. The highest flows reached on these rivers ranged around the level of Q_{1-5}.

Figure 2.1.1.
The maximum peak flows reached in 2014



Source: Czech Hydrometeorological Institute

2.2 Remedying flood damages

Ministry of Agriculture

In 2014, the programme of remedying flood damage to state-owned water management property II as well as the programme of remedying flood damage to infrastructure of water supply systems and sewerage systems continued.

The programme 129 270 „Remedying flood damage to state-owned water management property II" continued in 2014 through the sub-programme:

129 272 „Remedying the impacts of floods in the year 2013", which was prepared in response to flood situations that occurred in 2013. Its implementation was launched on 11 September 2013. The applicants for support are the River Boards, s. e., and the Forests of the Czech Republic, s. e.

Remedying the impacts of the floods in 2013, the Javorka River in Lázně Bělohrad

The programme 129 140 „Support for remedying flood damage to infrastructure of water supply systems and sewerage systems" continued in 2014 through the sub-programme:

129 144 „Support for remedying flood damage caused by floods in 2013" – this sub-programme was prepared in response to flood situations that occurred in 2013 and was launched on 17 September 2013, the expected date of completing this sub-programme is 31 December 2015. The applicants for support for remedying flood damage to infrastructure of water supply systems and sewerage systems are municipalities and water management joint-stock companies with majority shareholdings of towns and municipalities.

The objective of the above-mentioned programme is to remedy flood damage to state-owned water management property in order to ensure the function of stream channels and water management structures.
The financial performance of the above-mentioned sub-programmes is included in chapter 9.1 of this report.

Ministry of the Environment

Floods and overflowing watercourses in May and June 2013 on the territory of the Czech Republic caused damage that is of concern to the Ministry of the Environment in the amount of CZK 568.62 million.

In 2014, documentation of the MoE sub-programme „Floods 2013" and the rules for the allocation of funds from this sub-programme were approved. During 2014, applications for registration in the sub-programme were accepted and supporting information and documents for individual projects were assessed by the Agency for Nature Conservation and Landscape Protection of the Czech Republic, the Czech Geological Survey and the Department of Water Protection of the Ministry of the Environment.

The measures which can be implemented under this sub-programme are as follows:

1. Reconstructions and repairs of waste water treatment plants,
2. Decontamination of land,
3. Decontamination of surface water and groundwater sources,
4. Recovery of migration passability and ecological stability of the landscape,
5. Recovery of natural function of watercourses,
6. Remedying damage to state-owned property administered by the MoE department organizations.

2.3 Completion of the project „Evaluation of the floods in June 2013“

By the end of November 2013, preliminary report on the project was prepared and submitted by the Ministry of the Environment to the Government of the Czech Republic for information. Work on individual sub-tasks continued until the end of 2013, work on the analysis of anthropogenic effects on the flood regime continued in the first half of 2014. Reports on all other sub-tasks were submitted by the end of March 2014 and made available to the public on the website of the Czech Hydrometeorological Institute (CHMI). Reports on individual sub-tasks in printed form are stored in the Department of Water Protection of the Ministry of the Environment and the library of the CHMI. A copy of each report is also kept by all its authors.

The final summary report „Evaluation of the floods in June 2013“, including proposals for measures to improve flood protection resulting from this report was submitted by the Ministry of the Environment after consultation with other relevant departments at the end of June 2014 to the Government for discussion. The Government by its Resolution No. 570 of 14 July 2014 adopted the report and imposed to carry out the necessary measures to improve flood protection, which are attached to the Government Resolution and are listed in the Annex to this summary evaluation report. Information on the implementation of the imposed measures was submitted to the Government in June 2015.

The Čistá stream in Rudník, remedying the impacts of the floods in 2013

Klára Pösingerová – Helping African Children - 4th class, Školní primary school, Horní Slavkov, Karlovarský Region

3. Quality of surface waters and groundwaters

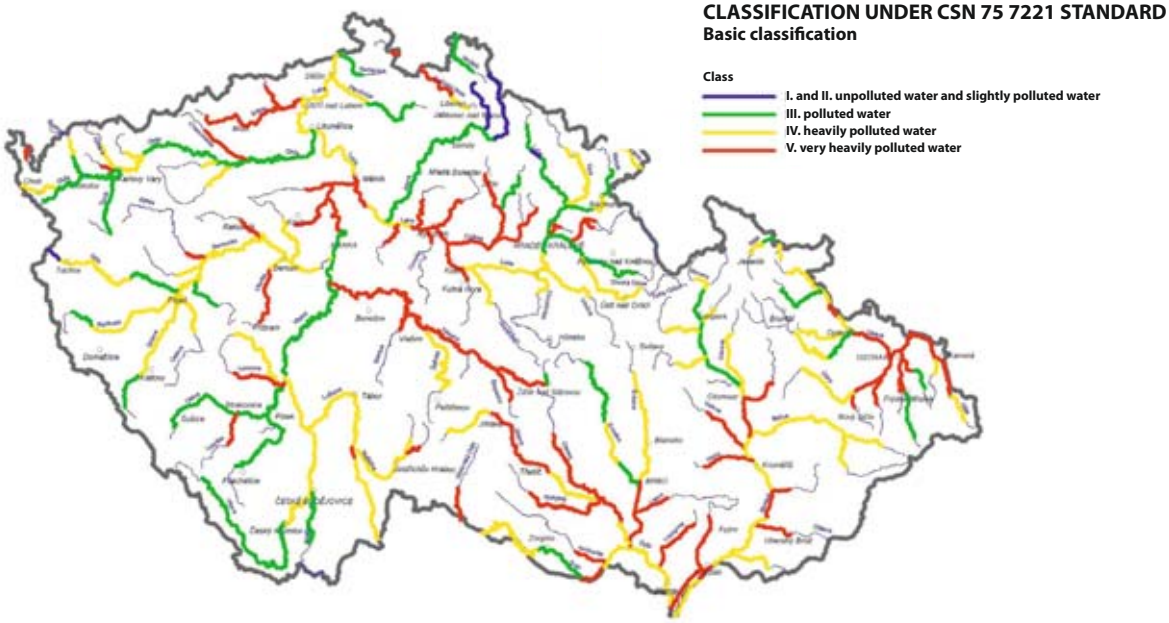
3.1 Surface water quality

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

The map of the quality of waters in selected watercourses of the Czech Republic was produced with regard to both the 1991–1992 two-year period and the 2013–2014 period, under CSN 75 72221 standard Water Quality – Classification of Surface Water Quality.

Every year the Report on Water Management in the Czech Republic compares the current status of water quality to the status of water quality in the 1991–1992 two-year period. With regard to the scope of indicators monitored at that time, only a basic classification could be used for this comparison. Figure 3.1.2 shows that despite significant improvement of water quality, some river stretches (though very short ones) in the Czech Republic are still classified in water quality Class V.

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



Source: T. G. Masaryk Water Management Research Institute, public research institution, based on the data from the Czech Hydrometeorological Institute

Figure 3.1.2
Quality of water in watercourses in the Czech Republic in 2013–2014

Source: T. G. Masaryk Water Management Research Institute, public research institution, based on the data from River Boards, s. e., and the Czech Hydrometeorological Institute

To produce the presented map of quality of water in watercourses of the Czech Republic for the period 2013–2014, the resulting evaluation fom 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 that do not exceed values corresponding to the natural standard background in 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 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 the existence of a rich, balanced and sustainable ecosystem,

Class IV heavily polluted water – surface water status that was affected by human activity to such an extent that water quality indicators attain values that are conducive to conditions allowing the existence of only an unbalanced ecosystem,

Class V very heavily polluted water – surface water status that was affected by human activity to such an extent that water quality indicators reach values that are conducive to conditions allowing the existence of only a heavily unbalanced ecosystem.

Radioactivity

In surface waters radiological indicators are monitored on a long-term basis in selected hydrometric profiles of the national 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.

In 2014, the annual average volume activity of tritium in surface waters of the Vltava River in the hydrometric profile Vltava Solenice (downstream of the outlet of waste waters from the Temelín nuclear power plant) reached the value of 28.9 Bq/l, in the hydrometric profile Vltava Praha the value of 16.5 Bq/l and upstream of the confluence with the Elbe in the hydrometric profile Vltava Zelčín the value of 14.1 Bq/l. The detected values are in compliance with environmental quality standards for tritium in surface waters according to the Government Decree No. 61/2003 Coll., as amended. Total volume activity alpha and beta was also detected in values fully meeting environmental quality standards. Other activation and fission products produced during nuclear power plant operations were not detected. Low volume activities of strontium 90 and cesium 137 corresponding to the residual contamination after atmospheric tests of nuclear weapons and the Chernobyl Nuclear Power Plant accident in last century were detected.

In the vicinity of uranium ore deposits in the Příbram area, in surface waters of the Kocába River at the Višňová hydrometric profile and in the Drásovský stream at the Drásov profile, increased values of radiological indicators are every year repeatedly detected (under the CSN 75 7221 standard, surface water quality values corresponded to Quality Class V).

The average volume activity of tritium for the period 2013–2014 downstream of the outlet of waste waters from the Dukovany nuclear power plant in the hydrometric profile Jihlava Mohelno reached the value of 112.4 Bq/l and in the hydrometric profile Jihlava Ivančice the value of 60.4 Bq/l. The detected values are in compliance with environmental quality standards (EQS), namely EQS-annual average and EQS-limit values for tritium in surface waters according to the Government Decree No. 61/2003 Coll., as amended. Total volume activity beta was also detected in values fully meeting environmental quality standards. Acording to CSN 75 7221 standard, the resulting statistically calculated characteristic values of the total volume activity beta (and also beta activity after correction) in both profiles were classified to belong to Class I, while tritium values classified the watercourse to belong to water quality Class II.

With regard to the evaluation of monitoring radioactivity in surface waters in the area (in the Ploučnice River basin) downstream of the uranium ore deposit in Stráž pod Ralskem it can be stated that for the total volume activity alpha and the total volume activity beta the values of environmental quality standards set by the Government Decree No. 61/2003 Coll., as amended, were not exceeded. Based on the evaluation according to CSN 75 7221 standard, the hydrometric profile Ploučnice – Česká Lípa can be classified to belong to water quality Class I. Characteristic values of total volume activity beta exceeding the limit value for classification in water quality Class V – very heavily polluted water (according to CSN 75 7221 standard) were detected in the area of the uranium ore deposit Stráž pod Ralskem in the Mlýnský náhon stream. In surface water of the Ploučnice River there were sporadically detected high activities of isotope of radium 226.

Water quality in water supply reservoirs and other reservoirs

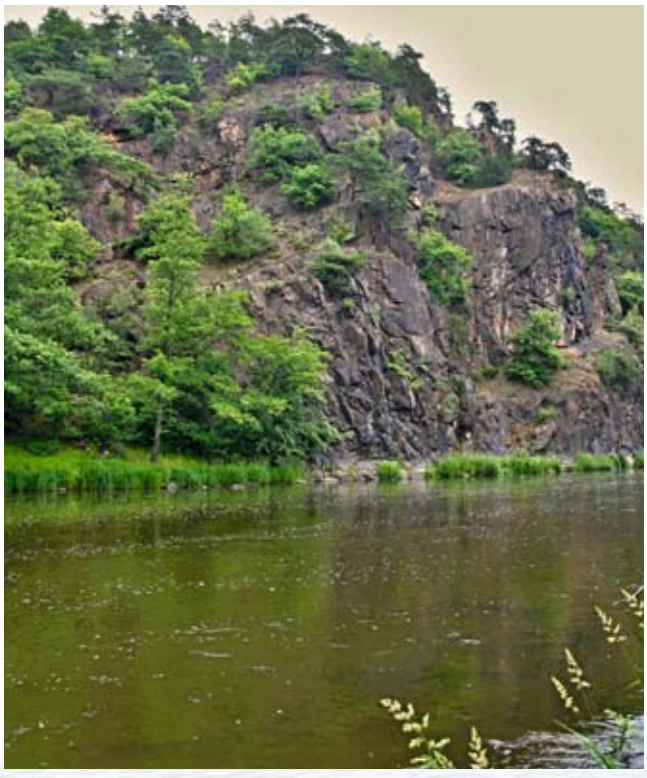
On the territory of the Czech Republic, the year 2014 with the mean annual air temperature of 9.4 °C showed markedly above-average values. The average precipitation amount on the entire territory of the Czech Republic reached 656 mm, which represents 97% of the long-term precipitation average. A number of water reservoirs, similarly to previous years, showed the eutrophication of water (i.e. the process caused by increased contents of mineral nutrients, especially phosphorus compounds, and to a smaller extent also nitrogen compounds in waters).

As regards water reservoirs administered by the Elbe River Board, s. e., it can be stated that low precipitation in 2014 caused water levels of some reservoirs (Souš, Rozkoš, Seč) to decrease markedly. Unusually small amounts of melting spring snow in the river basin did not cause any changes in water quality at Souš reservoir, therefore, regular aerial application of fine-ground limestone at this reservoir was not carried out in 2014. After rainfall-richer period from April to June, water balances in most reservoirs were stabilized. Satisfactory status remained until the end of the calendar year. For all monitored water supply reservoirs, at the beginning of the growing season the quality of water was affected by warm and dry winter season – water level temperatures exceeding 12 °C were recorded already in April. Several rainfall-richer episodes in the summer season caused at Hamry water reservoir increased concentration of organic compounds according to COD_{Mn}

(18 mg/l in September). Increased concentration of total phosphorus (50–60 µg/l) caused intensive development of algae and cyanobacteria. To improve the quality of raw water, regulatory catch of accompanying fish species associated with the long-term ichthyological survey was carried out at Hamry reservoir. Also at Křižanovice water supply reservoir the quality of water was impaired (44 mg/l chlorophyll-a, transparency 50 – 140 cm in September). Similarly problematic was also Vrchlice water reservoir. Concentrations of chlorophyll-a exceeding 40 mg/l were detected in inflow part and also in the vicinity of abstraction. Problems of treatability of raw water were not reported. At Josefův Důl water supply reservoir, again in the second half of the year unusually high numbers of picocyanobacteria of the Merismopedia family were found. In the autumn, however, compared to the previous three years, there was a significant reduction of these undesirable organisms for water supply purposes. Also at Souš water supply reservoir these cyanobacteria were detected for the first time. Certain problems occurred at reservoirs of significance to water supply purposes. At Labská reservoir the quality of water deteriorated in the spring (transparency in mid-May was 170 cm), the maximum concentrations of chlorophyll-a in May exceeded the value of 20 mg/l. In the remaining period, the transparency ranged above 200 cm (maximum 460 cm). At Seč reservoir, considerable development of cyanobacteria occurred in the summer. As regards other water reservoirs (used or not used for recreational purposes), it is possible to conclude the development of phytoplankton, which in some cases complicated their use for bathing. At Rozkoš water reservoir there was an extreme development of cyanobacteria. At Pastviny reservoir, holiday season proceeded without major problems. Regarding Mšeno water reservoir (Jablonec nad Nisou), it can be said that the water throughout the monitored period was of very good quality. At Harcov reservoir there were minor problems associated with the occurrence of cyanobacteria. Water at Bedřichov reservoir (higher altitude) was traditionally of excellent quality. Water quality at Fojtka reservoir was impaired (transparency for most of the period below 100 cm, the maximum concentrations of chlorophyll-a reached 50 mg/l). The poorest water quality was traditionally at reservoirs with frequent replacement of water (Les Království and Pařížov water reservoirs).

In 2014, water quality in reservoirs administered by the Vltava River Board, s. e., was affected by low spring inflows, which also meant a low input of nutrients – the initial development of phytoplankton was generally weaker, so the quality of water abstracted by waterworks in the first half of the year was better. In the course of the growing season, mainly in the Berounka River basin the achieved quality of water in reservoirs was better than usual, because also the input of phosphorus into the reservoirs was lower and thus the development of algae and cyanobacteria (Lučina, Hracholusky, Klíčava, Nýrsko water reservoirs). For most of the reservoirs, however, there were no changes beyond the bounds of the year-to-year variability (Lipno, Římov, Orlík, Slapy water reservoirs). The presence of humic substances annually deteriorates the quality of water at Římov water supply reservoir and at other reservoirs situated in catchment areas, where acidification withdrew: Lučina near Tachov, Pilská, Láz and Obecnice near Příbram, Karhov in Jindřichův Hradec area. In terms of threats to water quality by pesticidal substances, constantly unfavourable situation is at Švihov water supply reservoir and especially in its tributaries (triazine herbicides), due to the intensive cultivation of mainly corn and rapeseed for technical purposes in systematically drained areas. Water quality in the majority of standing waters has not been deteriorating, but also not improving (in last 5–10 years in tributaries there does not occur a reduction of concentrations of phosphorus). Stagnation is due to the application of existing provisions of Government Decree No. 61/2003 Coll., as amended, where uncrossability of the best available technologies (BAT) was codified, as well as the absence of restrictions on phosporus content in detergents. Treatability of water is regularly worsened by eutrophication at Lučina and Žlutice water supply reservoirs, less at Římov and Karhov reservoirs, significantly threatened is Švihov water supply reservoir, where improvements are expected only after the completion of the reconstruction of the waste water treatment plant in Pelhřimov. Recreational use is worsened by eutrophication at other water reservoirs, namely Orlík, Lipno, Hracholusky and České Údolí. Overall, we can say that the year 2014 was within the bounds of the usual annual variability of water quality. Earlier water quality problems persist and new ones have not appeared. Sustained trend is expected, with the dominant factor deteriorating water quality being excessive input of phosphorus via tributaries (emissions from point sources). The exception in a sustained trend should be Švihov water supply reservoir, where the risk of progressing eutrophication could be reduced after the completion of the reconstruction of the waste water treatment plant in Pelhřimov (in 2015).

The quality of water in reservoirs administered by the Ohře River Board, s. e., was continuously monitored and according to the results of zonal measurement there were no threats to drinking water supply due to quality or quantity. In the period from August to October, desludging consisting in the discharge of anoxic layer was carried out at Mariánské Lázně, Křímov, Jirkov and Stanovice water supply reservoirs. At the end of August, inflow to Újezd water reservoir was strengthened and in cooperation with SčVK, a. s. (Northern Bohemia Water Supply and Sewerage Company) measures were taken at urban waste water treatment plant in Jirkov. The reason for this action was the mass development of cyanobacteria water bloom that caused an exceedance of pH=9 in the water. Due to the content of ammonia nitrogen (waste water discharges from the urban waste water treatment plant in Jirkov), at higher pH there was a danger of its conversion into ammonia, which would be fatal to fish stock in the reservoir.



The Ohře River - Želina

As regards water reservoirs administered by the Morava River Board, s. e., first mentioned will be water supply reservoirs. After exceptionally warm and dry winter phytoplankton developed much earlier than is usually the case. Oligotrophic status in this year was only corresponded to by Slušovice and Koryčany water reservoirs. Previously the highest quality reservoir of Karolinka this year moved to the boundary between oligotrophic and mesotrophic status. Boskovice, Bojkovice and Opatovice water reservoirs could be assessed as mesotrophic in 2014. Nová Říše, Hubenov and quite unusually Landštejn (formerly the second best water supply reservoir in the Morava River basin) adversely moved to eutrophication in the autumn). Mostiště and Znojmo water supply reservoirs can be assesed as typically eutrophic; hypertrophic status was approached by some parameters shown at Vír and Fryšták reservoirs. It can therefore be concluded that there continues to persist a period when no mass water bloom formed by the Microcystis family species occurs. The strongest development of algal bloom formed by filamentous cyanobacteria able to fix atmospheric nitrogen was recorded at Landštejn and Vír reservoirs; also worth mentioning is water bloom formed by cyanobacteria Woronichinia naegeliana at Nová Říše reservoir. As regards water reservoirs used for recreational purposes, the growing season was strongly influenced by mild winter 2013/2014. This was followed by the occurrence of exceptionally strong vegetation turbidity caused by green flagellates Tetraselmis cordiformis in March and April at Plumlov reservoir as well as the spring mass development of cryptophytes Plagioselmis lacustris at Brno reservoir. Significant improvements were recorded at Oleksovice, Mohelno and Dalešice water reservoirs. A certain positive turning point occurred also at Horní Bečva and Letovice reservoirs that corresponded to the boundary between mesotrophic and better eutrophic status. Plumlov, Podhradský rybník and Luhačovice reservoirs after their sluicing have not shown major changes and, to assess them, for the time being it is necessary to wait (after the elapse of several years after their filling). Bothersome and dangerous cyanobacteria of the Microcystis family developed in 2014 only at Vranov reservoir, in its upper part, where the chemical and biological parameters corresponded to hypertrophic status. Filamentous cyanobacteria affected mainly the system of Nové Mlýny reservoirs, where the mass occurrence of cyanobacteria of the Aphanizomenon family was recorded as early as in July. Most affected was the lower Nové Mlýny reservoir, where mass algal bloom remained until October. The entire system due to the occurrence of cyanobacteria experienced extreme trophic influence and corresponded to the degree of hypertrophy. Hypertrophic, although without strong development of cyanobacteria, was Výrovice reservoir, where mainly dinoflagellates of the Ceratium family strongly developed in 2014.

The quality of raw water in the area administered by the Oder River Board, s. e., at the Šance, Kružberk and Morávka water supply reservoirs in 2014 was very good and did not require more complex treatment to achieve drinking water. In none of these water reservoirs massive development of phytoplankton was observed. Total phytoplankton biomass at all water supply reservoirs was quite low. The numbers of organisms reached tens, sporadically hundreds of organisms per millilitre. At Morávka water reservoir, the occurrence of cyanobacteria of the Aphanizomenon family was recorded, which is not typical of this reservoir. During the season, the limit of 3,000 organisms in 1 millilitre of water was exceeded at none of the water supply reservoirs. As regards reservoirs used for other than water supply purposes, we can generally say that the quality of water in 2014 in most reservoirs was very good, in some cases even extraordinarily good (Žermanice reservoir). Only at Baška water reservoir fairly massive occurrence of cyanobacterial cells was recorded in the second half of the bathing season, it was therefore necessary to restrict its use for recreational purposes.

Quality of water used for bathing during the bathing season 2014

The most frequent problems with water quality are connected with a huge presence of cyanobacteria, which every year results in imposing ban on bathing in some localities.

The Act No. 258/2000 Coll., on the protection of public health, as amended, regulates the rights and obligations of natural and legal persons, which must be met in the area of protection and promotion of public health; the Act further establishes a system of public health protection bodies, their scope of activity and authority. One of the areas that is protected by this Act, is outdoor bathing, operation of outdoor bathing pools,

Revitalization of the Tichá říčka stream in Karlov near Josefov

artificial bathing pools, swimming pools and saunas. Decree No. 238/2011 Coll. regulates the equipment of outdoor bathing pools and the requirements for the sampling method and frequency of inspection and also bathing water quality requirements.

Under current legislation, the list of outdoor bathing sites to be subjected to the monitoring of the quality of water used for bathing is annually, before the start of summer recreational season, published, updated and complemented (mainly on the basis of comments made by the public) on the website of the Ministry of Health (list of outdoor bathing sites on surface waters where the bathing service is offered by operator, and other surface waters used for bathing in 2014: www.mzcr.cz → public health → outdoor bathing → outdoor bathing – general information à list of monitored outdoor bathing sites in 2014). Important role in this area is played by an amendment to the Water Act, because one of the major changes compared to the former Directive 76/160/EEC is that Member States should not only monitor the quality of water and inform the residents, but where the quality of water used for bathing is not satisfactory, the country must take active measures to remedy the situation. For each bathing site that is included in the list of the monitored outdoor bathing sites there must be prepared the so-called „bathing water profile", in which, among other characteristics sources of pollution, proposals for remedial measures in the river basin, etc. are described. A related legislative regulation to the Water Act is Decree No. 155/2011 Coll., on profiles of surface waters used for bathing.

According to the website of the Ministry of Health, ban on bathing was imposed on 10 bathing sites in 2014 (Hnačov pond, Ostrá Lake, Vranov water reservoir – Bítov, Kopaninky, Velký pond, Rosnička pond, Orlík water reservoir – Vojníkov, Orlík water reservoir – Podolsko, Sedlice water reservoir, Řeka pond).

Salmon and carp waters

Salmon and carp waters are designated by legislation as surface waters which are suitable for the life and reproduction of the indigenous fish species and other aquatic animals (pursuant to the Government Order No. 71/2003 Coll., on the designation of surface waters which are suitable for the life and reproduction of indigenous species of fish and other aquatic animals and on detecting and assessing the status of quality of these waters, in the wording of the Government Order No. 169/2006 Coll.).

In the last Report on Water Management in the Czech Republic we failed, due to lack of time, to make an evaluation of those waters until the deadline of this report. Therefore, we now present the results. 587 hydrometric profiles were assessed for the period 2012–2013, i.e. as of the date of transition of fish waters issues within the EU under the Water Framework Directive. 82% of the assessed profiles meet pollution limits under Directive 2006/44/EU on freshwater.

According the Government Order No. 71/2003 Coll., based on the available data collected in hydrometric profiles demarcating the designated waters it was established that in the period 2012–2013 pollution limits under the order were met for 86% of these waters (86% of salmon waters and 83% of carp waters). For most of the assessed hydrometric profiles failing to meet pollution limits for fish waters this is caused by excessive values of ammonia ions or ammonia. Given that that the target levels of this indicator are even by an order of magnitude more stringent, target levels are met only by 11 designated waters, i.e. 5% of all fish waters in the Czech Republic.

The resulting compliance with the limits of good ecological status under the Water Framework Directive for profiles of fish waters, which are based on the statistical value of median, is close to evaluation according to indicators for fish waters. Very good ecological status in the indicator of ammonia ions is failed to be met by 340 of all assessed profiles; in the indicator of BOD_5 by 210 profiles.

Quality of suspended matter and sediments

An integral part of a complex assessment of the quality of surface water and chemical status of surface water bodies is information on the quality of solid components of the aquatic ecosystem, such as suspended matter, sediments and biotic components. The constant matrix is preferably bound to by a number of pollutants, whose detection in water samples is problematic and analysis of an aqueous sample so does not provide reliable information on the presence or absence of the pollutant in watercourses. Sediments, suspended matter and biota are important matrices for the monitoring of mainly substances with significant accumulation potential. Directives of the European Union recommend to replace the monitoring of water quality in selected indicators with the monitoring in solid matrices.

In the previous Report on Water Management in the Czech Republic the results of the monitoring of the quality of suspended matter and sediments in 2013 were not published. The Czech Hydrometeorological Institute was obliged to select (according to the Act No. 137/2006 Coll. on public procurement) the contractor for the required chemical analyses of collected samples in the regime of open procedure. A range of specialized analyses in these difficult matrices could be ensured by only a very small number of analytical laboratories which, with respect to covering the full range of analyses, had to submit a joint bid. Consequently, this resulted in the cancellation of an open tender because of an insufficient number of bids, its repetition and ultimately awarding the contract to one bidder (a consortium of laboratories) – the results of chemical analyses were not available as of the dates required for submission and publication of the previous Report on Water Management in the Czech Republic. The results are therefore presented in the current report evaluating the year 2014.

Monitoring of the chemical status of solid abiotic matrices was carried out in 2013 at 49 hydrometric profiles. Monitoring of stream sediments in the field and analytical laboratories was ensured in cooperation with river basin administrators. The monitored indicators included contents of heavy metals, metalloids and specific organic substances, including the majority of priority pollutants with relevance to solid matrix. Monitored as well were other potentially hazardous substances with possible endocrine and toxic effects. At the selected profiles, monitoring also included new priority hazardous substances under Annex X of Directive 2013/39/EU (hexabromocyclododecane, dioxins and compounds with dioxin effect).

The sediments were analyzed for standard full range of indicators, i.e. 122 substances in a set of 20 samples (the sampling frequency was two times a year). Other samples were analyzed for at least heavy metals and PAH group substances (also data from the operational monitoring carried out by river basin administrators were taken over for evaluation). Suspended matter was analyzed for the same range of indicators as in previous years (94 substances) in a set of 143 samples (the sampling frequency of four times a year). Sedimentable suspended matter was collected by passive sampler at ten profiles in monthly cycles (usually six

times a year). The assessment of the results of monitoring the quality of solid matrix and their chemical status in 2013 was carried out under the Government Order No. 61/2003 Coll., as amended (i.e. No. 23/2011 Coll.). The assessment mainly included the comparison with qualitative limits for selected substances in sediments and suspended matter, with the so-called environmental quality standards (EQS). Given the relatively small number of EQS limits for solid matrix set by the above-mentioned Government Order No. 23/2011 Coll. while also taking into account keeping the continuity of assessment in the past years, there was also used the assessment based on classification of measured values into load categories under the Guidance Document„Criteria for Soil and Groundwater Pollution" from 1996 in accordance with the Guidance Document of the Ministry of the Environment for the Contaminated Land Risk Assessment No. 9/2005. The exceedance of category B limit is assessed as increased pollution which may be of negative effect on human health and individual environmental compartments, the exceedance of category C limit represents pollution which may pose a significant risk to human health and other environmental compartments.

Environmental quality standards, similarly to the previous years, were most often exceeded by PAH group substances. As regards other organic substances, EQS were exceeded by concentrations of hexachlorobenzene (in sediments, suspended matter and sedimentable suspended matter) in the Bílina River in Ústí nad Labem, the Elbe downstream of Děčín and the Lower Morava River in Lanžhot (in sedimentable suspended matter). Above-limit concentrations of gamma HCH pesticide were newly recorded in sediments at three profiles (on the Ohře River and the Ploučnice River). Cation of tributyltin, observable only in sedimentable suspended matter, failed to meet the EQS value at six profiles (in extremely high multiples of the limit).

As regards the contents of metals, taking into account natural concentrations – a global geogene background, the EQS were most often exceeded by concentrations of lead, mercury, followed by cadmium and nickel. The annual comparison shows a slight increase in exceedances of EQS for lead in sediments and a decrease of exceedances of EQS for cadmium and mercury in sediments and suspended matter. With the exception of long-term contaminated profiles such as on the Bílina River in Ústí nad Labem, the Ohře River in Želina, the Lužická Nisa River in Hrádek nad Nisou, multiples of the EQS exceedances are low.

The highest number of indicators exceeded the EQS limit in sub-catchment areas of the Ohře River and the lower Elbe (cadmium, lead, nickel, mercury, tributyltin, hexachlorobenzene, fluoranthene, anthracene, the sum of 5 substances of the PAH group, gamma HCH) and the Lužická Nisa River (nickel, lead, tributyltin, anthracene, the sum of PAHs, fluoranthene). In the sub-catchment area of the upper and the middle Elbe a significantly lower number of indicators with above-limit concentrations was recorded, with the exception of the profile on the Elbe downstream of Pardubice (lead, mercury, the sum of 5 PAHs, anthracene, fluoranthene) and the profile in Obříství (mercury, tributyltin, the sum of 5 PAHs, anthracene, fluoranthene). In the lower Vltava River sub-basin district, the EQS limit failed to be met by lead, tributyltin, anthracene, fluoranthene and the sum of 5 PAHs. Typical of the sub-catchment area of the Morava River, catchment area of the Dyje River and catchment area of the upper Oder is a long-term observation (in solid matrix) of especially flat distribution of exceedances of the EQS by the PAH group (anthracene, fluoranthene, the sum of 5 PAHs), while for other substances the exceedances are local (on the Svratka River in Židlochovice for tributyltin, the Morava River in Lanžhot for hexachlorobenzene and the Jihlava River in Ivančice for nickel). The highest contamination load was again shown by the Bílina River profile in Ústí nad Labem (the EQS was exceeded in solid matrix by a total of seven indicators).

Based on the assessment according to the Guidance Document „Criteria for Soil and Groundwater Pollution" it can be stated that contents of the monitored substances in solid matrix, similarly to the preceding years, largely corresponded to the level of natural values or moderate pollution of A category. Potential risk level was reached only locally for arsenic, beryllium and nickel, more flat distribution was recorded for concentrations of the PAH group substances. In the category of increased pollution and risk posing pollution, for the above mentioned substances except for PAHs mostly only their highest measured values occurred. In suspended matter, as regards heavy metals, increased pollution and risk posing pollution (B, C categories) was indicated for arsenic in the Bílina River in Ústí nad Labem and sporadically for nickel in the Lužická Nisa River in Hrádek nad Nisou. In sediments, increased pollution and risk posing pollution (B, C categories) was detected for arsenic in samples from the Bílina River in Ústí nad Labem, the Lužická Nisa River in Hrádek nad Nisou, the Ohře River in Želina and for beryllium also in samples from the Ohře River in Želina. Contamination of the above-mentioned profiles is long-term and comes from contaminated sites.

The highest number of exceedances of the limit for increased pollution and risk posing pollution was recorded, similarly to the years 2009–2012, for the PAH group substances, mainly benzo(a)pyrene and sporadically also benzo(b)fluoranthene. In 19 samples of suspended matter, concentrations of benzo(a) pyrene exceeding the limit were repeatedly detected, most often in the Svitava River, the Oder River, the Lužická Nisa River, the middle Morava River and the Bečva River. In sediments, the limit for increased pollution was exceeded by concentrations of benzo(a)pyrene at five locations in the Morava River, the Oder River and the Dyje River basins and also in the Jizera River in Předměřice and the Vltava River in Zelčín. The distribution of sites contaminated with PAHs has a very close relationship with air pollution with these substances.

It is also necessary to draw attention to the presence of hazardous substances that were not classified in 2013 as exceeding the limit or substances for which limits have not been defined, but episodically occur in high concentrations. These are especially organochlorinated pesticides from old contaminated sites (DDT and hexachlorobenzene). In 2013, increased concentrations of DDT were episodically recorded, mainly in the Elbe downstream of Děčín (in sediments up to 560 $\mu g.kg^{-1}$, in suspended matter up to 440 $\mu g.kg^{-1}$ and in sedimentable suspended matter up to 770 $\mu g.kg^{-1}$) and sporadically in suspended matter of the Bílina River (up to 180 $\mu g.kg^{-1}$). Also hexachlorobenzene was detected in the highest concentrations in sediments (300 $\mu g.kg^{-1}$) and sedimentable suspended matter (760 $\mu g.kg^{-1}$) in the Elbe downstream of Děčín. As regards other monitored priority substances, the presence of di-(2-ethylhexyl) phthalate (DEHP) was detected in suspended matter in all profiles. The highest concentrations of DEHP occurred in the Bílina River in Ústí nad Labem and the Lužická Nisa River in Hrádek nad Nisou. The EQS value was exceeded in none of the monitored profiles. Chloroalkanes C10–13 which are categorized in priority hazardous substances were detected in 50% of samples. The highest concentrations (500–700 $\mu g.kg^{-1}$) were measured in the Oder River in Bohumín, the Ostravice River in Ostrava and the Bílina River in Ústí nad Labem (exceedances of the EQS value were not recorded). Contamination with these substances is caused by waste water from leather processing, footwear manufacturing, rubber industry and metal

working. PBDE (polybrominated diphenylethers) in the majority of suspended matter and sediment samples did not exceed the detection limit. Measurable contents were detected only in three profiles. Tributyltin (cation) was measured only in sedimentable suspended matter samples from ten hydrometric profiles on major watercourses. In contrast to the year 2012, tributyltin in most cases was recorded in values above the detection limit. The EQS value was exceeded in six profiles (in all cases with extreme multiples). The priority substances also include 4-nonylphenol and 4-terc octylphenol from the alkylphenol group. The presence of 4-nonylphenol exceeding the detection limit was found only in sediment sample from the Ohře River upstream of Nechranice water reservoir. Hexabromocyclododecane was observed only in newly monitored profiles and in the Elbe border profile (the substance is persistent, bioaccumulative and toxic, in the Czech Republic is used in the production of polystyrene). The mixture of isomers was detected only in sediment samples from the Elbe in Hradec Králové (the relatively high value of 1,400 $\mu g.kg^{-1}$) and also in the Mže River profile in Plzeň. Another newly monitored priority hazardous substances include polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyls with dioxin effect (PCB–DL). Many of these substances are highly toxic even at low concentrations. They were monitored in sediments at a total of 10 selected locations in newly monitored profiles and in the Elbe border profile. PCDD were detected in the highest summary concentrations in the Vltava River profile in Hluboká nad Vltavou. PCDF occurred in the highest concentrations in the Elbe downstream of Děčín, in the Mže River profile in Plzeň and the Vltava River profile in Vrané. PCB–DL were monitored in the range of 12 congeners. The highest concentrations were detected for PCB 126 in the Vltava River profile in Vrané. Maximum values of toxic equivalent of the sum of all congeners were recorded in the Elbe downstream of Děčín.

As regards other potentially hazardous substances, the presence of triclosan was detected at most profiles mainly downstream of larger conurbations. Triclosan in the highest concentrations (100 to 340 $\mu g.kg^{-1}$) was detected in suspended matter of the Olše River in Věřňovice, the Bílina River in Ústí nad Labem, the Lužická Nisa River in Hrádek nad Nisou and the Svratka River downstream of Brno. The occurrence of methyltriclosan – the metabolite of triclosan was detected in lower (by the magnitude of the order) concentrations. Bisphenol A was identified in most of the monitored profiles, usually in amounts of up to 50 $\mu g.kg^{-1}$. The highest concentrations were repeatedly detected in suspended matter (300 to 4,000 $\mu g.kg^{-1}$) in the Bílina River in Ústí nad Labem, the Lužická Nisa River in Hrádek nad Nisou and the Elbe downstream of Děčín.

In terms of the negative effects on the aquatic ecosystem and human health, persisting occurrence of high contents of heavy metals, arsenic and some organochlorinated pesticides from old contaminated sites, especially in watercourses in regions with a high concentration of industry and long-term anthropogenic load, i.e. in the Bílina River, the Ohře River, the Lužická Nisa River and the Elbe border profile as well as high contents of the PAH group substances (benzo(a)pyrene), mainly in the Morava River, the Oder River and the Dyje River basins can be assessed as a serious status. In terms of achieving good chemical status of waters, the most problematic appear to be exceedances of the EQS values not only in the Ohře River and the lower Elbe sub-basin areas, but also in all other river sub-basin areas.

The data trend was assessed using the method set out in Annex 12 of the MoE and MoA Decree No. 98/2011 for time series in the period 2007–2013 (for 14 priority substances in profiles with typically higher concentrations and in the closing profiles).

In sediments, concentrations of all three monitored metals (Cd, Pb, Hg) show a generally upward trend or a stagnation. A long-term decline was detected in none of the sites. Polycyclic aromatic hydrocarbons (PAHs) are more abundant on the Morava River, the Orlice River in Nepasice, the Sázava River in Nespeky, the Dyje River in Pohansko and the Ohře River in Želina, where the concentrations of individual PAHs constantly show a slight, but statistically significant upward trend. In the Cidlina River profile in Sány, almost all of the PAH group substances show a downward trend. In the Oder River profile in Bohumín, high concentrations of benzo(a)pyrene are regularly measured, but the trend has not been established.

The concentrations of cadmium in suspended matter at most sites show a downward trend, only in the Svratka River in Židlochovice they show a significant upward trend. At a lower number of locations concentrations of cadmium stagnate. Concentrations of lead and mercury are either stagnant or slightly increasing, with the exception of mercury in the Oder River profile in Bohumín and lead in the Ploučnice River in Březiny and the Sázava River in Zruč, where there is a downward trend. The development of PAH concentrations in suspended matter is not definitely clear. While anthracene, benzo(a)pyrene, benzo(b)fluoranthene and benzo(k)fluoranthene show rather upward trends or stagnate, concentrations of remaining PAHs, i.e. fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd) pyrene are largely stagnant. At several locations (the Olšava River in Havřice, the Loučná River in Dašice, the Elbe in Prostřední Žleb and the Sázava River in Zruč) even a statistically significant

Kamenička hydraulic structure

decrease was observed. The Svratka River profile in Židlochovice is the only profile, where the concentrations of all monitored substances in suspended matter show a statistically significant upward trend (where concentrations exceed the LQ).

Lindane (gamma HCH) shows long-term occurrences below the LQ or slightly above it, both for sediments and suspended matter. This also applies to pentachlorobenzene (PeCB) and hexachlorobenzene (HCB). At the sites with concentrations of HCB higher than the LQ the measured values are close to the LQ and remain long-term unchanged. The exceptions are the Morava River profiles in Kroměříž and Lanžhot and the Elbe profiles in Valy and Vestřev, they show a downward trend for suspended matter. In the Bílina River profile in Ústí nad Labem and the Elbe profile downstream of Děčín, high concentrations of HCB are regularly measured, but the trend has not been established. The Bílina River since 2010 has been showing a noticeable increase in the concentrations of HCB in suspended matter. The concentration of hexachlorobutadiene (HCBD) has long been below the quantification limit both in sediments and suspended matter at all sites.

Radioactivity of isotopes in sediments in 2013 was monitored at a limited number of ten profiles. Increased activities of the isotope of uranium 238 indicating very heavy pollution were detected in the Ploučnice River profile in Březiny, the Otava River profile in Topělec, the Lužnice River profile in Veselí, the Ohře River profile in Želina and the Ohře River profile in Terezín. In both monitored Ohře River profiles and the Mže River profile in Plzeň there were also detected increased activities of the isotope of radium 226 indicating contamination with radioisotopes.

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 of biota in the Czech Republic, since these sites have not yet been investigated within the framework of bio-accumulation monitoring. Directive 2008/105/EC allows to use for monitoring not only the fish and the fry, but also other suitable matrices involved in the programme, i.e. macrozoobenthos, biofilm and mussel Dreissena polymorpha. These matrices differently accumulate pollutants in the context of the method of feeding and the type of habitat. The use of alternative matrices allows comprehensive monitoring of the ecosystem, all components of the food chain and various forms of hazardous substances occurring in the ecosystem.

Similarly to sediments and suspended matter, the results of the chemical analyses were not available at the time of preparing the previous Report on Water Management in the Czech Republic in 2013, for this reason they are presented in the current report evaluating the year 2014.

In the year 2013, similarly to the previous years, the contamination of aquatic organisms with harmful substances was monitored. In the framework of cyclical monitoring there were selected for the next three years 22 new profiles on rivers in the Czech Republic, which are part of the surveillance monitoring of surface waters. Again, the following biotic matrices were analyzed: Dreissena polymorpha (7 monitoring sites), biofilm (22 sites), fish – Leuciscus cephalus (European chub – 15 sites), juvenile stages of fish – the fry (22 sites) and benthic organisms (Hydropsyche sp., Erpobdella sp., Gammarus sp. – 22 sites).

Karolinka

The assessed pollutants are substances with very low solubility in water (in water samples they are mostly below the detection limit) and they easily accumulate in fats. Among heavy metals the monitored pollutants were lead, cadmium, mercury, chromium, zinc, copper, nickel and arsenic. Among specific organic substances the monitored pollutants included the sum of PCB (PCB-28, PCB-52, PCB-101, PCB-138, PCB-153, PCB-180), chlorinated pesticides (o,p and p,p DDT isomers and HCH isomers), HCB, HCBD, the sum of PBDE (congeners 28, 47, 99, 100, 153 and 154), polyaromatic hydrocarbons PAHs (fluoranthene, benzo(a) pyrene), bis(2-ethylhexyl)phthalate (DEHP) and perfluorooctane sulfonte acid (PFOS). For the assessment there were selected fish and fry and those indicators for which environmental quality standards (EQS) under Directive 2013/39/EU are defined.

As regards the group of PAHs (fluoranthene and benzo(a) pyrene), these pollutants were assessed in the fry and benthos. For fluoranthene in biota the maximum level of 30 $\mu g.kg^{-1}$ of wet weight is established in Directive 2013/39/EU. The values detected were significantly higher in benthic organisms than in fry. The maximum concentration was found in the Elbe in Hradec Králové (85 $\mu g.kg^{-1}$).

For benzo(a)pyrene the measured values in benthos in more than half of the monitored profiles exceeded the EQS (the maximum level of 28 $\mu g.kg^{-1}$ was detected in the Vltava River profile in Vrané). In fry the limit concentration was exceeded in one case only (in the Dyje River profile in Podhradí). To monitor PAHs, clearly preferable matrix is benthos.

Perfluorooctane sulphonate acid (PFOS) belongs to the group of perfluorinated compounds (PFC) that are used in many industrial sectors (coolant mixtures, components of pharmaceuticals, lubricants, fire retarders, substances influencing the surface tension – protective coatings, etc.). They are persistent substances that have a strong ability to accumulate in the bodies of organisms. The detected concentrations in fish muscle tissue exceeded the EQS in none of the monitored profiles, the

maximum (8.3 µg.kg^{-1}) was measured in the Morava River profile in Blatec. Much higher values at all of the monitored sites were found in the blood of adult fish.

The sum of DDT (indicator congeners o,p´ and p,p´) was assessed in fry and muscle tissue of adult fish. The maximum level for fry was detected in the Ploučnice River profile in Březiny (30 µg.kg^{-1}), for fish the highest concentration was found in the Elbe profile in Křešice (103 µg.kg^{-1}), the EQS for DDT is not available.

Brominated diphenylethers (PBDE) are persistent substances, insoluble in water and harmful to health (they are applied as fire retarders). The detected values significantly exceeded the EQS (0.0085 µg.kg^{-1}). In fish they ranged from 0.07 to 6.8 µg.kg^{-1} with the maximum having been detected in the Elbe profile in Křešice. The levels of mercury in fish muscle tissue in all profiles exceeded the EQS (0.020 mg.kg^{-1}). The maximum concentration was detected in the Malše River profile in Roudné (0.32 mg.kg^{-1}). In connection with monitoring of fish it has to be mentioned that concentration levels obtained from adult fish may not precisely indicate the contamination of the profile, where fish was caught. Should the information be needed from a specific place, it is more appropriate to use benthos or fish fry for the analysis.

The maximum concentration of hexachlorobenzene (HCB) in fish (2.6 µg.kg^{-1}) was measured in the Elbe profile in Křešice. The EQS specified by the European Directive is 10 µg.kg^{-1}. This level was exceeded at none of the monitored sites.

The results of bio-accumulation monitoring in 2013 clearly show that the aquatic ecosystem contains (often in high concentrations) priority hazardous substances, which in mere water samples cannot be detected. The monitoring of the pollutants in several matrices confirms the complex contamination of the aquatic environment and shows that values detected in one matrix only often do not provide sufficient information on the status of contamination of the entire aquatic ecosystem.

3.2 Groundwater quality

In the year 2014, a total of 666 sites were monitored in the national groundwater quality monitoring network. They comprised 174 springs (the monitoring of springs documents natural drainage of groundwaters particularly in the Crystalline complex and local drainage of Cretaceous structures), 224 shallow wells (the wells are largely located in alluvial plains of the Elbe, Orlice, Jizera, Ohře, Dyje, Morava, Bečva, Oder and Opava Rivers – these groundwaters are highly vulnerable with a rapid pace of pollution) and 268 deep wells (the wells are concentrated mainly in the Bohemian Cretaceous Basin, the České Budějovice Basin and the Třeboň Basin and monitor the quality of groundwater in deep aquifers – direct vulnerability of these waters is not very high). In total, 293 indicators were analyzed; the national water quality monitoring network sites were sampled twice in 2014 (in the spring and the autumn). In the spring of 2014, the second part of extensive surveillance monitoring was carried out (it is always carried out in two sampling cycles after a three-year period of operational monitoring); therefore, in the spring, relevant indicators were monitored at all monitoring sites. After surveillance monitoring carried out in the autumn of 2013 and the spring of 2014 then based on the assessment of occurrence of hazardous substances less extensive operational monitoring was prepared in the autumn of 2014.

Evaluation of the results of groundwater quality in the year 2014 due to the requirements of Directive 2000/60/EC focused especially on hazardous substances. The measured values of the groundwater quality indicators were compared with the reference values for grpoundwater under Decree No. 5/2011 Coll., defining groundwater zones and groundwater bodies, the method of groundwater status assessment and the requirements of the programmes of groundwater status assessment. This decree establishes reference values of indicators as limits for the groundwater quality assessment. Prior to the below-mentioned evaluation it is also necessary to mention that in addition to the limits for monitored indicators in the form of numeric values (whose exceedances indicate poor groundwater status) there were mandatorily established reference values directly equalling to the quantification limits of the analyzed indicators (such limits are often unreasonably strict – they may be different for different laboratories carrying out analyses of these substances).

In 2014, in terms of inorganic ions, most frequently found in concentrations exceeding the limit values was manganese (40.8% of samples above the limit values), followed by ammonia ions (13.5% of samples above the limit values), nitrates (11.6% of samples above the limit values), sulphates (2.9% of samples above the limit values), chlorides (2.7% of samples above the limit values), fluorides (2.4% of samples above the limit values) and sodium (2.1% of samples above the limit values). Increased concentrations of above-mentioned inorganic substances are more frequently found in shallow wells, except for sodium and fluorides that are more frequently found in deep wells. For manganese, where the largest number of samples exceeding the limit values were found, it is necessary to point out the relatively strict reference value of 0.05 mg/l.

In terms of indicators showing generally the presence of organic substances, those found in concentrations exceeding the limit values mainly included chemical oxygen demand by permanganate (12.3% of samples above the limit values) and dissolved organic carbon (6.0% of samples above the limit values). Chloroalkanes $C_{10–13}$ in concentrations exceeding the limit values were found at three monitoring sites. Generally, it can be stated that the presence of above-limit values for organic substances is more frequent for samples collected from shallow wells.

Regarding the group of metals, it is necessary to mention in particular barium (47.5% of samples above the limit values), arsenic (4.3% of samples above the limit values), cobalt (4.3% of samples above the limit values), nickel (2.2% of samples above the limit values), cadmium (1.5% of samples above the limit values) and aluminium (1.1% of samples above the limit values).

As regards the numerous group of pesticidal substances, the limits for groundwater are often exceeded not by directly active substances in pesticides, but their metabolites. Therefore, it is necessary to include in the extensive range of the monitored indicators also substances, which the pesticides by interactions with the environment are converted to. Extensive surveillance monitoring carried out in the autumn of 2013 and in the spring of 2014 also included so far not monitored pesticidal substances, including metabolites of herbicide chloridazon that with great frequency exceeded (within this group of organic substances) the limit values in collected samples of groundwater, namely chloridazon desphenyl (26.0% of samples above the limit values) and chloridazon methyl desphenyl (9.4% of samples above the limit values). The percentage of samples

above the limit values for chloridazon desphenyl is even more important because of the fact that the reference value of 0.1 µg/l for groundwater was also exceeded in 40% of monitoring sites located in water supply resources that are part of the monitoring network of groundwater quality. As regards the frequency of exceeding the limits for groundwater, the above mentioned substance was followed by a large group of metabolites of the herbicides alachlor, metholachlor, acetochlor and newy also metazachlor (chloroacetanilides). These were namely alachlor ESA (13.6% of samples above the limit values), metazachlor ESA (10.2% of samples above the limit values), metholachlor ESA (10.2% of samples above the limit values), acetochlor ESA (5.9% of samples above the limit values), metazachlor OA (3.8% of samples above the limit values), metholachlor OA (2.6% of samples above the limit values) and acetochlor OA (2.3% of samples above the limit values). They are followed by other also frequently occurring triazine pesticides, especially metabolites of the herbicide atrazine, such as hydroxyatrazine (2.0% of samples above the limit values) and desethylatrazine (1.7% of samples above the limit values). Also bentazone (1.4% of samples above the limit values) and hexazinone (1.0% of samples above the limit values) were found. Other pesticides showing concentrations above the limit values occurred only sporadically. Groundwater samples with pesticide concentrations exceeding the limit values were most frequently collected from shallow wells.

As regards polycyclic aromatic hydrocarbons, in terms of limits for groundwater, more significant occurrences were shown by phenantrene (16.0% of samples above the limit values), chrysene (4.3% of samples above the limit values), pyrene (1.7% of samples above the limit values) and fluoranthene (1.5% of samples above the limit values).
As regards the group of volatile organic compounds, concentrations exceeding the limit values occurred most markedly for 1,2-cis-dichloroethene (4.9% of samples above the limit values), toluene (3.0% of samples above the limit values), dichloromethane (2.5% of samples above the limit values) and 1,1-dichloroethene (1.2% of samples above the limit values). For all these substances the reference value is identical with the criterion A under the MoE Guidance Document of 15 September 1996„Criteria for Soil and Groundwater Pollution". Exceedances of the reference values were also recorded for the sum of m-xylene and p-xylene (4.3% of samples above the limit values) and for 1,2-trans-dichloroethene (2.0% of samples above the limit values).

Radiochemical properties of groundwater were monitored using a single general indicator, the total volume activity alpha (9.2% of samples above the limit values). Since the limit for indicator of the total volume activity alpha is according to Decree No. 307/2002 Coll. an indicative and not a limit value, it is appropriate also for the reference value according to Decree No. 5/2011 Coll. to understand an exceedance of the limit as a recommendation to carry out the supplementary analysis of the volume activities of individual radionuclides.

A typical and also most frequently occurring representative of the group of synthetic complexing agents in groundwater is ethylenediaminetetraacetic acid EDTA (5.0% of samples above the limit values). Because of its wide use in industry and agriculture this acid gets to the environment in large quantities. Di(2-ethylhexyl)phthalate DEHP (0.7% of samples above the limit values) is a substance used as a softening agent in plastic products. The reference value of 1.3 µg/l for this indicator was exceeded only at five groundwater monitoring sites.

The occurrences of above-limit concentrations of most of organic substances from the group of polycyclic aromatic hydrocarbons and volatile organic compounds can be described as scarce to sporadic and correspond to the areas affected by industrial pollution. The exception, however, includes p+m-xylene (VOC), isomers of 1,2-dichloroethene (VOC), dichloromethane (VOC), phenantrene (PAH) and chrysene (PAH), whose concentrations exceeding the limit were detected at a larger number of sites.

Overall, it can be summarized that most problematic monitored indicators of groundwater pollution (with respect to the reference values established by Decree No. 5/2011 Coll.) there appear inorganic substances (manganese, nitrates and ammonia ions), metals (barium, arsenic, cobalt and nickel), VOCs (isomers of xylene, isomers of 1,2-dichloroethene, dichloromethane and toluene), PAHs (phenantrene and chrysene), pesticides (metabolites of chloridazon, chloroacetanilides and triazines) and EDTA. Overall, indicators exceeding the limit values are more frequently found in the groundwaters of shallow wells situated in alluvial plains of the rivers that are more affected by anthropogenic activity.

The summary of the number of sites where exceedances of the limit values for groundwater were analytically found for at least one indicator is presented in table 3.2.1.

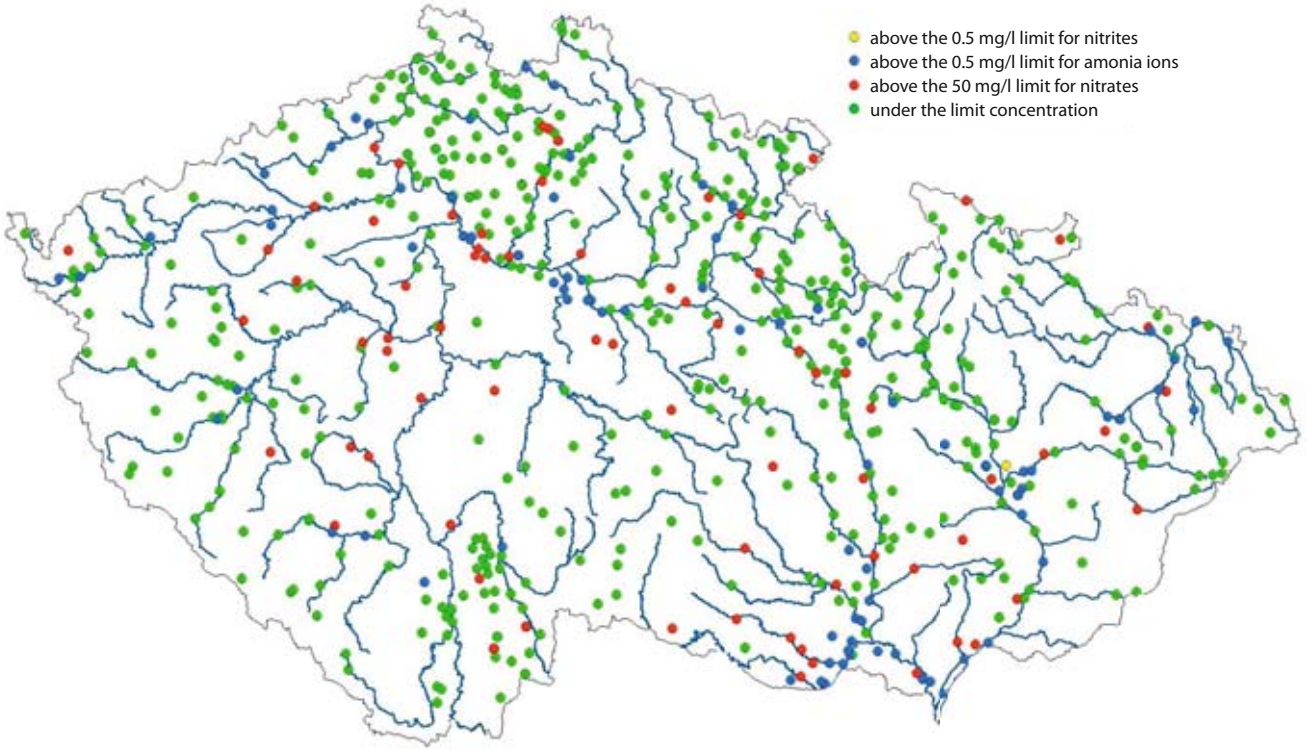
Table 3.2.1
Numbers of sites with exceedances of the limit values for groundwater in at least one indicator for the year 2014 (compared to 2013 and 2012)

Sites	Number of sites	Number of sites with exceedances of limit values for groundwater	% of sites with exceedances of limit values for groundwater		
			2012	2013	2014
Shallow wells	224	214	94.8	94.1	95.5
Deep wells and springs	442	344	78.1	75.8	77.8
All sites	666	558	83.6	82.0	83.8

Source: Czech Hydrometeorological Institute

The table shows that the number of sites with exceedances of the limit values for groundwater in at least one indicator in 2014 is slightly closer to the figures for 2012 than the figures for 2013. The reason may be that, unlike 2013, when only one monitoring stage was carried out, in the years 2012 and 2014 groundwater sampling was carried out without any problems both in the spring and the autumn (the number of samples analyzed was almost double, compared to the year 2013).

Figure 3.2.1.
Concentrations of nitrogenous substances in groundwaters in the year 2014 (exceedances of reference values under Decree No. 5/2011 Coll.)



Source: Czech Hydrometeorological Institute

Skalník water reservoir

Anežka Mildová – Water City - 1st place in the competition according to the jury 5th class, Šumavská primary school, Šumperk, Olomoucký 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 compiling and on the water balance data.

Pursuant to the provision in Section 10 of this Decree, the scope of reported data changed after 2001, so that now the registered abstractions (as well as waste water and mine water discharges) only include abstractions exceeding 6,000 m^3 per year or 500 m^3 per month. The source documents for retrieving the data are the reports submitted to the Czech Statistical Office by the respective river basin administrators before the deadline of 31 March of the following year. The data for the year 2012 were classified based on the NACE according to Eurostat (incomplete acronym of the French expression „Nomenclature statistique des activités économiques dans la Communauté européenne"). Before 2008, older classification according to the so-called SCEA (sector classification of economic activities by the Czech Statistical Office, Prague 1998) was used. Similarly to the preceding years, with a view to integrating the data provided by the individual River Boards, s. e., no water transfers and waters abstracted for fishpond systems were included in surface water abstractions. The comparison of data for the years 2013 and 2014 was based on final official data of the Czech Statistical Office (www.czso.cz).

Table 4.1 shows detailed information on the NACE classification of surface water abstractions and groundwater abstractions and discharges of waste water and mine water into surface waters based on user groups. The classification applies to the tables below 4.1.1, 4.2.1 and 4.3.1.

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)	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: Czech Statistical Office

4.1 Surface water abstractions

The Reports on Water Management in the Czech Republic in the past decade largely stated that a year-to-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 the previous year 2013. In 2014, in contrast, there occurred again a stagnation or only an insignificant growth of the total amount of surface water abstractions. The reported amount of 1,278.6 million m^3 in 2013 increased only to 1,288.7 million m^3 in 2014, i.e. an increase by 0.8%.

Certain, rather insignificant growth, compared to the year 2013, was recorded in industry (including extraction). Most of the assessed categories, i.e. public water supply systems, energy sector and other consumers of surface water (including construction industry), compared to 2013, showed a stagnation or decrease of abstracted amounts of surface water throughout the country. For agriculture (including irrigation), a slight growth again can be recorded. It should be noted, however, that the category of agriculture is difficult to assess exactly. The problem is mainly the fact that the reported amounts do not fully correspond to the real situation in the individual sub-basins, such as Blšanka in the Ohře River Basin. This fact is indirectly associated with the provision of Section 101 of the Act No. 254/2001 Coll. (balancing water deficit of agricultural crops – only part of abstracted water is charged, nevertheless, for the purposes of Decree No. 431/2001 Coll., all abstracted water must be reported and must meet the relevant quantity limits).

As regards surface water abstractions for public water supply networks, it can be concluded that in 2014, compared to 2013, there was an insignificant decrease by 1.7% (a decrease from 314.8 million m^3 to 309.6 million m^3). Similarly to the previous year 2013, a decrease is recorded for the group of other consumers (including construction industry), from 8.0 million m^3 to 7.7 million m^3. Energy sector showed virtually a stagnation (statistically not detectable decrease from 710.5 million m^3 to 710.4 million m^3). In industry (including extraction of mineral resources) in 2014, compared to 2013, an insignificant increase from 214.2 million m^3 to 225.8 million m^3, i.e. by 5.4% was recorded. The highest increase (but statistically rather problematic with regard to the above-mentioned provision of Section 101 of Act No. 254/2001 Coll.) occurred in agriculture (including irrigation), from 31.1 million m^3 to 35.2 million m^3, i.e. by 13.2%.

As regards surface water abstractions registered by the individual River Boards, s. e., three of them reported a decrease in 2014, compared to 2013: the Vltava River Board, s. e. (by 1.7%), the Ohře River Board, s. e. (by 2.5%) and the Oder River Board, s. e. (by 1.2%); an increase was reported by the Elbe River Board, s. e. (by 1.8%) and the Morava River Board, s. e. (by 4.5%).

As regards surface water abstractions for public water supply network, a slight increase was reported by the Elbe River Board, s. e. (by 0.8%) and the Morava River Board, s. e. (by 2.5%), compared to 2013. All other River Boards, s. e. reported a decrease, compared to 2013, as follows: the Vltava River Board, s. e. (by 3.2%), the Ohře River Board, s. e. (by 3.8%), the Oder River Board, s. e. (by 0.6%). As regards surface water abstractions for agriculture, an increase (insignificant in absolute figures, however, a marked increase in percentage), compared to 2013, was reported especially by the Vltava River Board, s. e. (from 0.5 million m^3 to 0.8 million m^3); an increase in absolute figures was also reported by the Elbe River Board, s. e. (by 2.0 million m^3). An increase was also shown by the Morava River Board, s. e. (from 17.9 million m^3 to 19.8 million m^3, i.e. by 10.6%). Abstractions for the energy sector decreased most significantly in the Vltava River Board, s. e. (by 5.7%) and the Ohře River Board, s. e. (by 3.4%). As regards surface water abstractions for industry (including extraction of mineral resources), almost all River Boards, s. e., reported rather a stagnation; a significant increase was reported only by the Vltava River Board, s. e. (by 15.2%).

The total charged abstractions in 2014, compared to 2013, remained virtually unchanged, having increased from 1,228.0 million m³ to 1,236.3 million m³. The proportion of charged abstractions in 2014 amounted to 95.9% of the registered abstractions in total. The structure of the registered surface water abstractions in the respective river basins is shown in table 4.1.1. The overall development of surface water abstractions since the year 1980 is shown in chart 4.1.1. After the year 1990 the improvement of price ratios in water services provided and also the change in the structure of industrial and agricultural production resulted in a significant decrease of water resources use in all water use areas. For example, we can see that surface water abstractions for public water supply networks decreased, compared to the year 1990, from 744.9 million m³ to 314.8 million m³. Thus, the abstractions in the year 2014 amounted only to 41.6% of the volume abstracted in 1990. The most significant decrease occurred in the industrial sector, from 830.1 million m³ in the year 1990 to 225.8 million m³ in the year 2014, i.e. to no more than 27.2% of the volume abstracted in 1990. Less significant decrease can be observed for energy sector, surface water abstractions decreased from 1,060.9 million m³ to 710.4 million m³, i.e. to 67.0%; in agriculture, surface water abstractions decreased from 97.2 million m³ to 35.2 million m³, i.e. to no more than 36.2% of the volume abstracted in 1990. This fact does not mean, however, that water resources would always and clearly be less exposed to anthropogenic impacts. On the contrary, in the energy sector, for example, there was an increase (with respect to continuously increasing electric energy generation in the Czech Republic) in consumptive water use (the difference between abstraction and discharge, caused primarily by evaporation in the cooling towers of thermal and nuclear power plants).

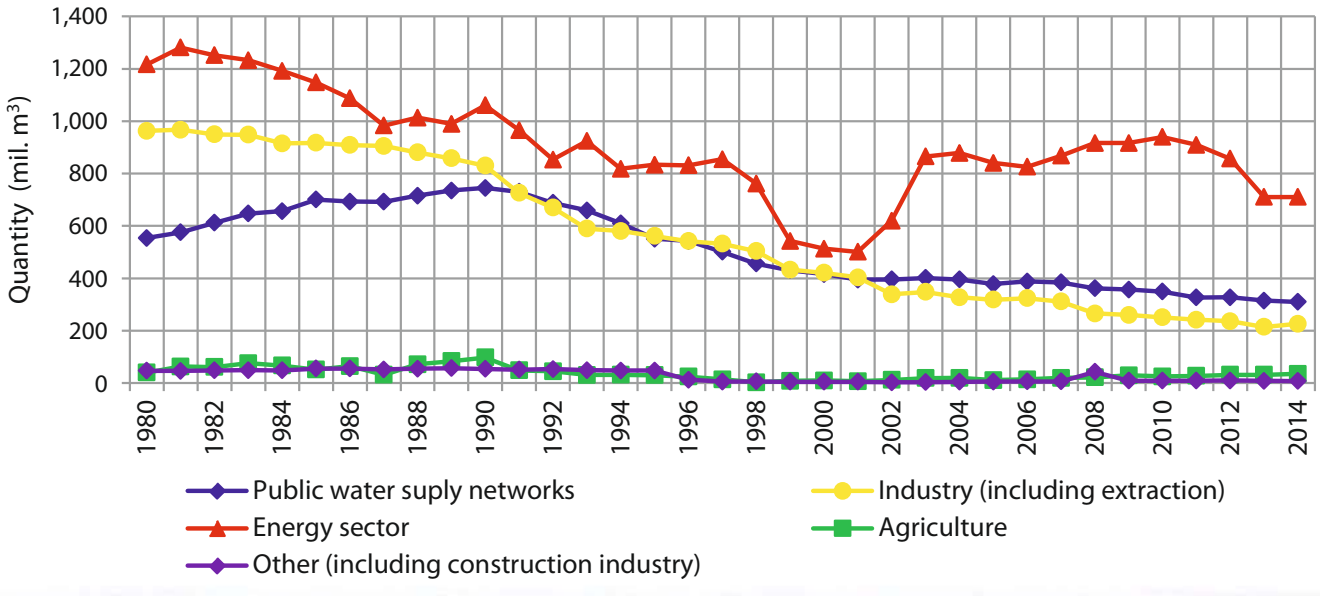
Every year the impacts on water resources are regularly evaluated within the water balance, compiled under Decree No. 431/2001 Coll., on the content of water balance, the method of its compilation and the water balance data. The principle of water management evaluation through water balance is the aggregated evaluation of the requirements for maintaining the minimum discharge with the respective flow rates in control profiles. They involve all water management activities.

Table 4.1.1
Surface water abstractions in the year 2014 exceeding 6,000 m3/year or 500 m3/month in millions of m³

River Board, s. e.	Public water supply networks		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. construction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe River Board, s. e.	36.1	27	8,3	47	482.3	12	91.2	69	1.8	61	**619.7**	**216**
Vltava River Board, s. e.	131.7	42	0.8	17	49.8	16	30.4	65	4.3	46	**217.0**	**186**
Ohře River Board, s. e.	40.8	20	6.3	17	42.8	9	36.6	54	0.3	17	**126.8**	**117**
Oder River Board, s. e.	68.1	25	0,0	0	14.5	1	57.3	52	0.4	30	**140.3**	**108**
Morava River Board, s. e.	32.9	36	19.8	44	121.0	2	10.3	75	0.9	37	**184.9**	**194**
Total	**309.6**	**150**	**35.2**	**125**	**710.4**	**40**	**225.8**	**315**	**7.7**	**191**	**1,288.7**	**821**

Source: MoA, River Boards, s. e.

Chart 4.1.1
Surface water abstractions in the Czech Republic in the years 1980–2014



Source: MoA, River Boards, s. e

4.2 Groundwater abstractions

In Reports on Water Management in the Czech Republic assessing the years 2011 and 2012 it was stated that the increase in the pace of decline in this category of abstractions reached its maximum, i.e. a state when the abstractions tend to stagnate. Data for 2013 partially raised doubts about these conclusions. A similar situation occurred also in 2014, when the total groundwater abstractions, compared to 2013, again decreased (although not dramatically) from 371.2 million m³ to 361.0 million m³, i.e. by 2.7%.

The pattern of registered water abstractions in the respective river basins in the year 2014 is shown in table 4.2.1. In the year 2014, in total 4,378 groundwater abstractions, amounting to 361.0 million m³ were registered (this figure includes only abstractions exceeding 6,000 m³ per year or 500 m³ per month). As regards groundwater abstractions for public water supply networks, it can be stated that in 2014, compared to the year 2013, there was a decrease from 303.5 million m³ to 292.4 million m³, i.e. by 3.7% (somewhat different situation was /before 2013/ in the years 2011 and 2012). As regards industry (including extraction of mineral resources) in the year 2014 the abstractions slightly increased, compared to the year 2013, from 34.3 million m³ to 35.9 million m³, i.e. by 4.7%. In agriculture, compared to the year 2013, the abstractions increased from 12.9 million m³ to 13.3 million m³, i.e. by 3.1%. The energy sector showed rather a stagnation (2.5 million m³ in 2013 and 2.6 million m³ in 2014). The overall trend of groundwater abstractions from 1980 is presented in chart 4.2.1.

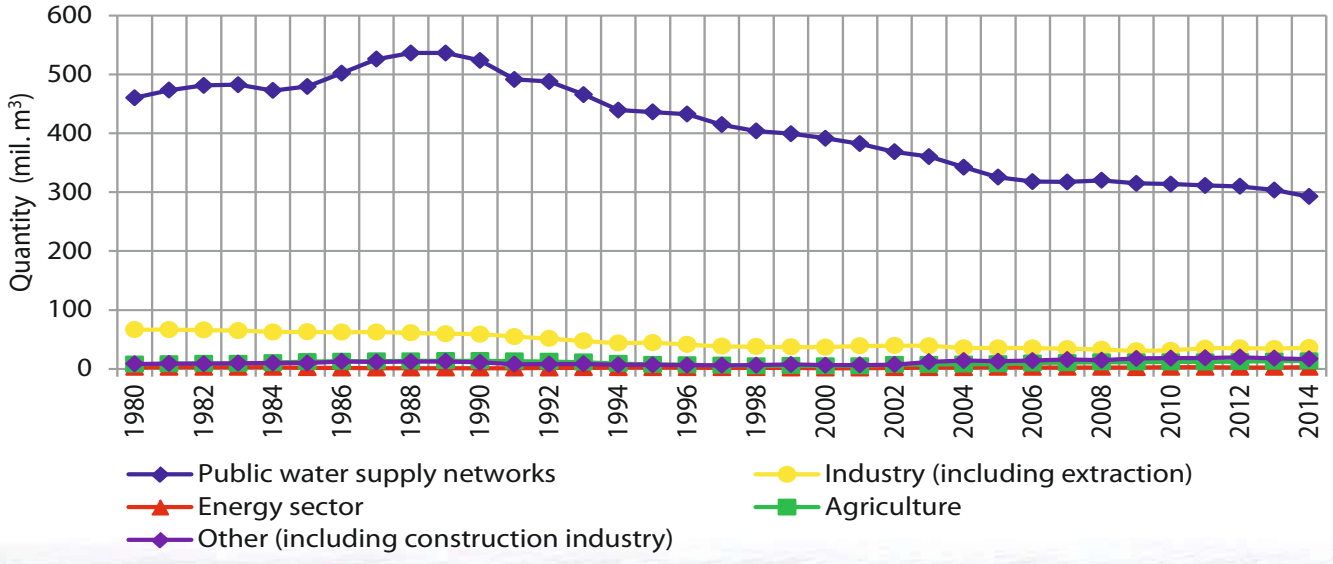
In the individual river basins the highest percentage of the total groundwater abstractions was recorded in the river basins administered by the Morava River Board, s. e. (33.6%); the lowest percentage of groundwater abstractions was recorded in the river basins administered by the Oder River Board, s. e. (4.9%). Looking at the territorial pattern, the registered groundwater abstractions in total decreased in the following river basins administered by: the Oder River Board, s. e. (by 14.8%), the Elbe River Board, s. e. (by 3.0%), the Vltava River Board, s. e. (by 2.4%) and the Morava River Board, s. e. (by 2.3%). A slight increase was recorded only by the Ohře River Board, s. e. (by 0.6%).

Table 4.2.1
Groundwater abstractions in the year 2014 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, s. e.	Public water supply networks		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. construction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volumeí	Number
Elbe River Board, s. e.	91.7	646	2.7	187	0.9	8	7.7	120	3.0	78	**106.0**	**1,039**
Vltava River Board, s. e.	31.3	571	4.7	330	0.6	11	8.2	120	8.0	381	**52.8**	**1,413**
Ohře River Board, s. e.	49.1	312	0.7	20	1.0	5	10.3	116	2.0	24	**63.1**	**477**
Oder River Board, s. e.	16.1	138	0.4	24	0.0	0	1.0	28	0.3	21	**17.8**	**211**
Morava River Board, s. e.	104.2	689	4.8	288	0.1	6	8.7	161	3.5	94	**121.3**	**1,238**
Total	**292.4**	**2,356**	**13.3**	**849**	**2.6**	**30**	**35.9**	**545**	**16.8**	**598**	**361.0**	**4,378**

Source: MoA, River Boards, s. e.

Chart 4.2.1
Groundwater abstractions in the Czech Republic in the years 1980–2014



Source: MoA, River Boards, s. e.

4.3 Waste water discharges

In the year 2014, in total 1,716.9 million m³ of waste waters and mine waters were discharged into surface waters. Compared to the year 2013, this represented a decrease of 7.0%. Similarly to the preceding years, with regard to the integration of data provided by the individual River Boards, state enterprises, these water discharges did not include waters discharged from fishpond systems.

Evaluation of the quantity and quality of discharged waste waters until the year 2001 was based on the data reported by water users under Directive No. 7/1977 of Official Journal issued by the former Ministry of Forestry and Water Management, on registration and evaluation of the balance of the resources and the quality of surface waters and groundwaters. Since 2002 this evaluation has been carried out under Decree No. 431/2001 Coll., on the content of water balance, the method of its compilation and on data for water balance. Pursuant to the provision in Section 10 of this Decree, the scope of reported data changed so that now the registered abstractions (as well as waste water and mine water discharges) include abstractions exceeding 6,000 m³ per year or 500 m³ per month. This resulted in an increased number of the registered entities. This data, which is reported and registered every year, includes information on the quantity of waste waters, including waters specified pursuant to the provision in Section 4 of the Act No. 254/2001 (Water Act), which were originally called special waters. These waters were pursuant to Section 2 of the Act No. 138/1973 Coll. (in force until 31 December 2001) mine waters and mineral waters. The obligation to report the above data related only to such cases where the discharged water quantity exceeded 15,000 m³ per year. Since the year 2003, the data on the quantity of waste waters discharged into surface waters has been taken only from the statistics of the Czech Statistical Office. The structure and the total amounts identifed from waste water discharges registered by River Boards, s. e., are presented in table 4.3.1. The overall trend of waste water discharges from 1980 is shown in chart 4.3.1.

The largest percentual decrease in the quantity of discharged waste waters, compared to the year 2013, was observed in the category of public sewerage systems (by 12.3%). This variation of the annual discharged amount is related to the fact that the year 2013 might be described (with respect to the entire territory of the Czech Republic) as to have received much more precipitation amounts, compared to the dry year 2014 (see table 1.1.1 – annual runoff from the territory of the Czech Republic in 2014 amounted to only 10,661 million m³, in 2013 to 19,885 million m³, therefore, also the proportion of rainwater and ballast water significantly decreased in 2014). In the energy sector, in contrast, virtually a stagnation was shown (a decrease only by 0.4%). In industry (including extraction of mineral resources) a decrease of the discharged amounts by 3.6% was recorded. A significant decrease by 7.1%, compared to the previous year 2013, was recorded in the category „other" (including construction industry).

Table 4.3.1
Discharges of waste waters and mine waters into surface waters from sources exceeding 6,000 m³/year or 500 m³/month in the year 2014 in millions of m³

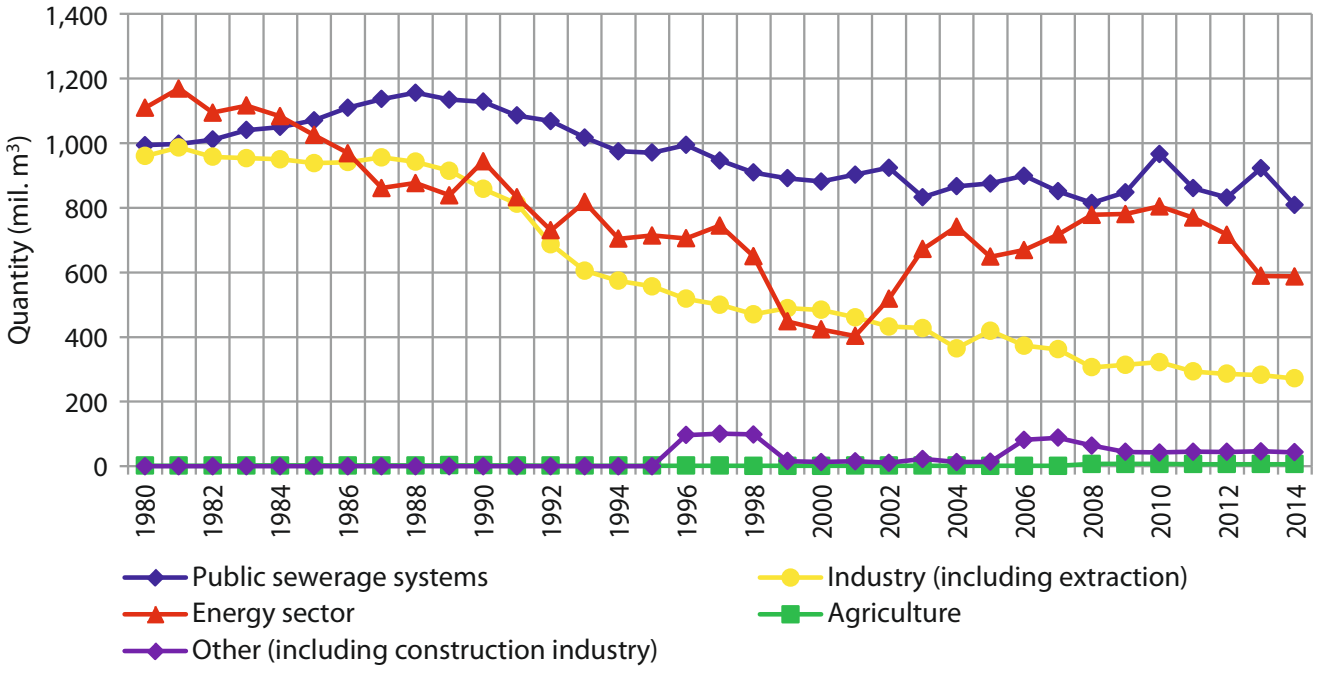
River Board, s. e.	Public sewerage systems		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. construction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe River Board, s. e.	167.7	657	0.0	3	453.1	23	84.4	171	3.3	61	**708.5**	**915**
Vltava River Board, s. e.	260.5	675	0.1	2	17.9	24	37.2	145	28.2	683	**343.9**	**1,529**
Ohře River Board, s. e.	73.2	280	6.1	3	23.2	24	74.1	161	2.6	24	**179.2**	**492**
Oder River Board, s. e.	99.8	313	0.0	0	8.8	1	58.3	55	5.9	123	**172.8**	**492**
Morava River Board, s. e.	206.7	1,068	0.3	8	84.2	3	18.1	139	3.2	76	**312.5**	**1,294**
Total	**807.9**	**2,993**	**6.5**	**16**	**587.2**	**75**	**272.1**	**671**	**43.2**	**967**	**1,716.9**	**4,722**

Source: MoA, River Boards, s. e.

The Čejna weir by Jarošov nad Nežárkou

The Křemelka weir in Strakonice

Chart 4.3.1
Discharges of waste waters in the Czech Republic in the years 1980–2014



Source: MoA, River Boards, s. e.

Ema Štětinová – Water for Africa - Winner of the public vote - 1st class, Šumavská primary school, Šumperk, Olomoucký 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.

Produced pollution means the quantity of contamination contained in produced (untreated) waste waters. In the context of the EU and OECD requirements, increased attention in the Czech Republic in the recent years has been paid to the collection of the data and the analyses of the produced pollution development. In the first place the extended scope of the measured data collection from a larger number of entities is being ensured within the framework of the so-called water management balance, in line with the requirements set by Decree No. 431/2001 Coll., on the content of water balance, the method of its compilation and on data for the water balance.

Production of pollution in the year 2014, compared to the year 2013, did not change significantly. In organic pollution, BOD_5 indicator (biochemical oxygen demand in 5 days) in 2014, compared to 2013, decreased by 5,569 tonnes (i.e. by 2.2%), the COD_{Cr} indicator (chemical oxygen demand by dichromate) also decreased by 22,038 tonnes (i.e. by 3.8%), similarly, the SS indicator (suspended solids dried at 105 °C) decreased by 9,176 tonnes (i.e. by 3.5%). Most significant decrease was shown by the DIS indicator (dissolved inorganic salts /solute annealed at 550 °C/), by 43,218 tonnes (i.e. by 5.1%). Most significant decrease in this indicator was shown by the Ohře River Board, s. e. (by 32,488 tonnes). The reported level of production of pollution indicated by $N_{inorganic}$ (total inorganic nitrogen) in the whole of the country decreased, compared to the year 2013, by 229 tonnes (i.e. by 0.8%). An insignificant increase was shown by the P_{total} indicator (total phosphorus), by 55 tonnes (i.e. by 0.9%). Discharged pollution is the contamination contained in waste waters discharged to surface waters. Compared to the year 2013, the discharged pollution significantly decreased in the year 2014 by 739 tonnes (i.e. by 12.2%) in the BOD_5 indicator and by 3,539 tonnes (i.e. by 8.8%) in the COD_{Cr} indicator. Regarding the SS indicator, there can also be observed a significant decrease by 1,742 tonnes (i.e. by 15.3%). Similarly, the DIS indicator showed a marked decrease by 82,838 tonnes (i.e. by 9.4%), compared to 2013. This fact is directly related to a year-on-year variation in produced pollution in this indicator (see above). The $N_{inorganic}$ indicator showed a decrease by 1,543 tonnes (i.e. by 13.1%). Similarly, a decrease was shown by the P_{total} indicator (a decrease by 100 tonnes, i.e. by 8.0%). The development since the year 1990 in the discharged pollution and pollution on which charges are imposed is shown in chart 5.1.1.

Between the years 1990 and 2014 the discharged pollution decreased in the BOD_5 indicator by 96.4%, in the COD_{Cr} indicator by 91.0% and in the SS indicator by 94.9%.

In the 1990–2014 period, 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 the intensified waste water treatment plants apply the focused use of biological removal of nitrogen and biological or chemical removal of phosphorus.

Hejlovka gauging station in Kojčice

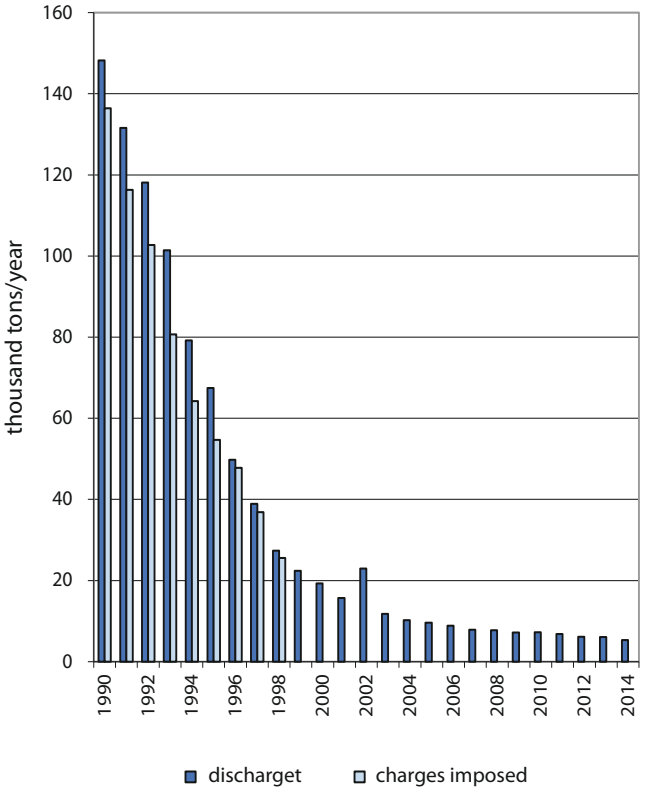
Table 5.1.1
Produced and discharged pollution in the year 2014

River Board, s. e.	Produced pollution in tonnes/year						Discharged pollution in tonnes/year					
	BOD_5	COD_{Cr}	SS	DIS	N_{inorg}	P_{total}	BOD_5	COD_{Cr}	SS	DIS	N_{inorg}	P_{total}
Elbe River Board, s. e.	47,876	112,199	49,423	193,582	6,846	1,249	1,258	9,327	2,293	186,981	2,224	247
Vltava River Board, s. e.	88,311	188,439	88,194	147,025	9,167	2,098	1,645	10,422	2,381	144,066	3,638	295
Ohře River Board, s. e.	17,869	53,072	19,384	106,562	2,234	729	397	3,787	1,401	106,156	1,241	243
Oder River Board, s. e.	35,335	68,082	27,965	226,526	3,472	660	688	5,350	1,678	226,526	1,127	154
Morava River Board, s. e.	60,940	141,457	68,544	135,916	7,190	1,505	1,322	7,675	1,874	133,035	2,003	218

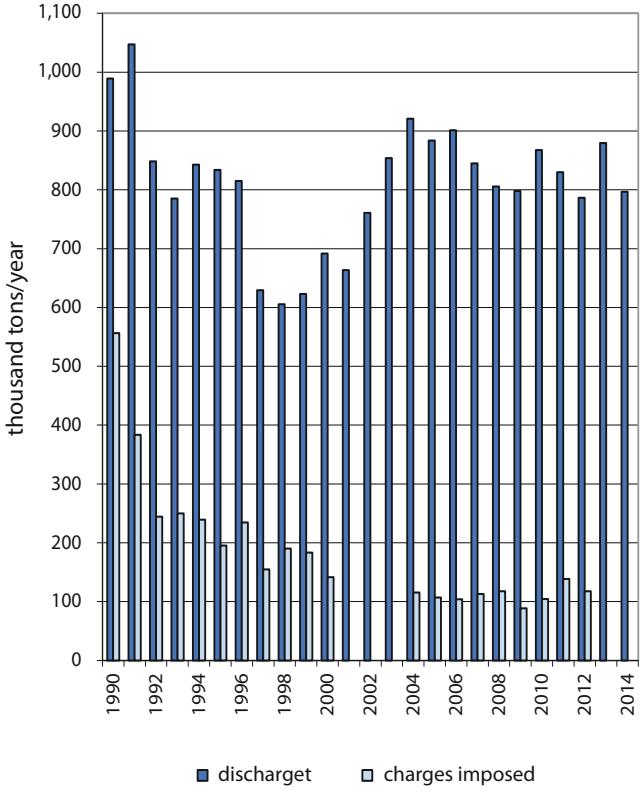
Source: T. G. Masaryk Water Management Research Institute, public research institution, based on the data from the Czech Statistical Office and the River Boards, s. e.

Chart 5.1.1
Discharged pollution and pollution on which charges were imposed in the years 1990–2014

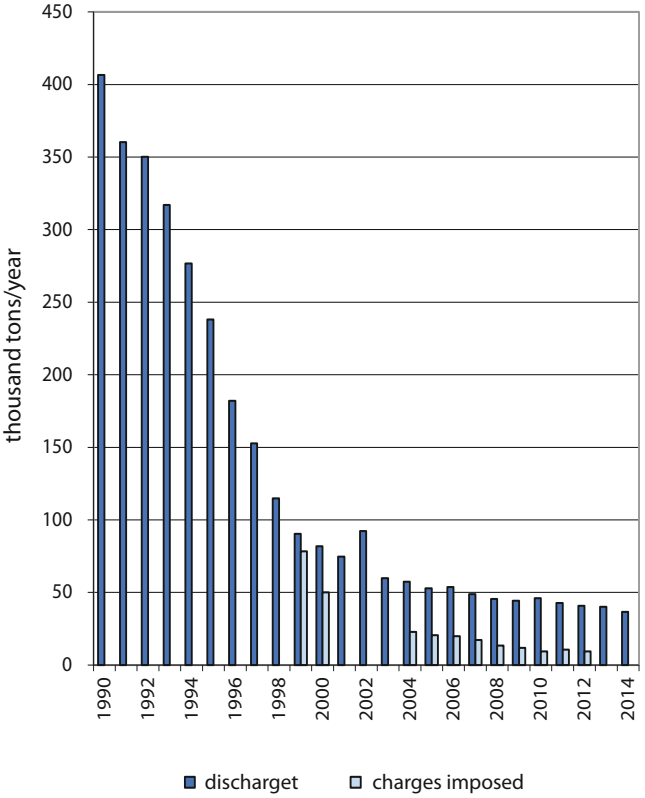
BOD_5 indicator



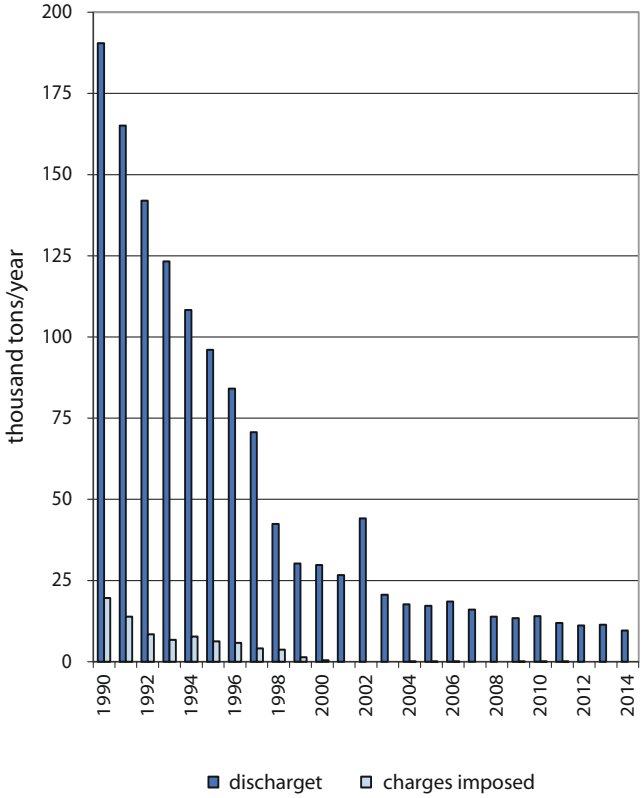
Dissolved inorganic salt



COD_{cr} indicator



Suspended solids



Source: T. G. Masaryk Water Management Research Institute, public research institution, based on the data from the Czech Statistical Office and the River Boards, s. e.

5.2 Area sources of pollution

Surface water and groundwater quality is also significantly affected by area sources of pollution, in particular the pollution from farming, atmospheric depositions and erosive runoff in the landscape. The importance of area pollution is increasing in parallel with the continued decrease in point source pollution. The proportion of area pollution is substantial especially as regards nitrates, pesticides and acidification, while it is less important as regards phosphorus.

The main measures aimed at reducing area pollution of waters from agricultural sources include the Government Order No. 262/2012 Coll., on delimitation of vulnerable areas and action programme, as amended. This government order defines (revises) the „vulnerable areas" and declares an action programme.

5.3 Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In the year 2014 the Czech Environmental Inspection registered in total 112 events of accidental releases into surface waters and 3 releases into groundwaters.

Pursuant to Act No. 254/2001 Coll., the Czech Environmental Inspection keeps central records of accidents since 2002. In 2003, the Czech Environmental Inspection started to cooperate with the Fire Rescue Department, particularly in reporting information on accidents. In the year 2014, the Czech Environmental Inspection registered in total 178 accidents which in facts of the case met the definition of accident under Section 40 of the Act No. 254/2001 Coll. Additional accidents were reported to the Czech Environmental Inspection during 2014, but due to their inconsiderable extent with no effect on the water quality they were not registered in the central records of accidents.

The most common accidents continue to be those caused by transport. In 2014 there were registered 41 such accidents, which represents 23% of the total number of accidents. In terms of frequency, they are followed by accidents occurring in agricultural activities (9.6%). In total 26 accidents were accompanied by fish kill, which represents 15% of the total number of accidents. The accidents resulted in groundwater pollution in 3 cases. The cause (inflictor) of the accident was known in 113 events. In 69 cases the Czech Environmental Inspection investigated the accident or participated in the investigation. Fire Rescue Department units intervened in 115 accidents that are registered by the Czech Environmental Inspection.

Kostelní island - Nové Mlýny hydraulic structure

The most numerous group of pollutants were oil and oil products: 53.4% of the total number of registered events, followed by waste waters (11.8%) and chemical substances excl. heavy metals (7.3%). The character of the pollutants was not identified for 25 accidents (8.4%).

Classified by the cause (inflictor) of the accident (NACE), the most numerous group were accidents caused by land transport and pipeline transport (10.1%), followed by accidents in the area of agriculture, game management and related activities (9.5%) and accidents associated with waste water and solid waste disposal (2.2%). The inflictor was not identified in 57.3% of all events.

In terms of breach of legal regulations in the field of water management, in 2014 the Czech Environmental Inspection imposed in total 533 penalties, of which 455 penalties became fully effective (as of 31 December 2014) and the total sum of penalties (455 penalties) amounted to CZK 30,749 million.

5.4 Erosion of agricultural land

Currently, the Czech landscape is increasingly exposed to the action of hydrological extremes (floods, droughts). Farming is one of the key factors that can mitigate the effects of climate change. Areas affected by hydrological extremes caused by climate change will significantly expand in the Czech Republic.

Erosion of agricultural land

Conditions for the occurrence of water erosion in the Czech Republic are specific – we have the largest size of land parcels within the EU states and for growing of erosion risk crops (formerly known as wide-row crops) there is used partial soil erosion protection, which is in the Czech Republic addressed using mainly GAEC 2 (Good Agricultural and Environmental Condition of Soil) standard. Compliance with GAEC 2 is among other things a key to obtaining grants in full. To improve the efficiency of soil erosion protection under GAEC 2, it seems necessary to increase the range of areas in which it is mandatory to comply with soil conservation measures, due to the fact that expert estimate of areas threatened by water erosion exceeds this range and simultaneously strengthen and extend the conditions for soil conservation measures that are required under GAEC 2. Moreover, the intensification of agricultural production in the past led to large-scale elimination of hydrographic and landscape features (ploughing hedgerows, grassed thalwegs, dirt roads, elimination of scattered vegetation, etc.) that would effectively prevent accelerated erosion.

The main manifestation of water erosion is the loss of soil. Water erosion eliminates the most fertile part of agricultural land – topsoil. Soil particles released by water erosion are displaced on land due to the drag of surface runoff and deposited in the lower parts of the land block or farther in the catchment area, where they cause more damage in urban areas, line structures and in the water bodies through silting of river beds and reservoirs. Silting of river beds, amelioration structures (main and detailed drainage facilities) and water reservoirs with products of water erosion causes mainly a reduction of flow capacity of river beds and storage space in the reservoirs, reduces the capacity of the

reservoirs and affects their hydraulic function, which results in reduced retention time, increased rate of flow through the reservoir, reduced pace of water abstractions, etc. Generally, this leads to a reduction of accumulation of water in the area. Conversely, in the event of decline of water level in the reservoir (e.g. prolonged drought), large areas of deposited material are exposed and direct contact of these deposits with air causes their accelerated mineralization and the quality of water in the reservoir after re-flooding rapidly deteriorates. Moreover, the sediments contain significant amounts of nutrients and hazardous substances. Soil comes into contact with a large number of chemical substances of various kinds and various degrees of toxicity (fertilizers, pesticides, various agricultural wastes and industrial wastes deposited on land or in soil). Along with the soil particles there are brought into watercourses, amelioration structures and reservoirs large amounts of nutrients and other chemical substances that adversely affect the quality of water and cause the eutrophication, and through the infiltration into surface water and groundwater threaten their possible use. Eroded soil usually contains a higher concentration of nutrients than the original soil as nutrients are found in larger amounts in the upper layers of soil and fine soil fractions are easily washed out.

GAEC (Good Agricultural and Environmental Condition) standards ensure farming in accordance with environmental protection. Farming in accordance with GAEC standards is one of the conditions for granting the full amount of direct payments, some types of support under Axis II of the Rural Development Programme and some types of support under the common organization of the market in wine. Compliance with GAEC standards so applies to all applicants for direct payments and the above mentioned support. Checks on compliance with GAEC standards are performed by the State Agricultural Intervention Fund. The issues of soil protection from water erosion are addressed under GAEC by GAEC 1 and GAEC 2 standards.

The aim of GAEC 2 standard is mainly to protect soil from water erosion and efforts to reduce the negative effects of erosion, such as damage to municipal and private property caused by flooding or silting with washed-out soil. For the purposes of this standard there were defined areas seriously and mildly endangered by soil erosion and the requirements for the method of growing selected major crops. Apart from professional point of view, this definition also takes into account economic aspects, in particular the cost of implementation of soil conservation technologies in areas endangered by erosion. For this reason, the Ministry of Agriculture under GAEC 2 standard accepts erosion reaching approx. 40 t/ha/year. The effectiveness of setting limits under GAEC 2 is regularly evaluated with a possibility to gradually expand these areas, if necessary. Classification of soils by erosion risk is shown in table 5.4.1.

Table 5.4.1
Soil erosion risk categories under GAEC 2 – representation of categories in the Czech Republic

Soil erosion risk categories	Factor of the protective influence of the vegetation (C_p)	Percentage (%)	Area (ha)
seriously endangered by erosion	up to 0.02	0.42	10,494
mildly endangered by erosion	0.02 – 0.10	10.06	252,017
not endangered	over 0.10	89.52	2,242,547
Total		**100.00**	**2,505,058**

Source: Research Institute for Soil and Water Reclamation, public research institution

The applicant, on a land block or part thereof which is designated in the land register from 1 July of the relevant calendar year to 30 June of the following calendar year as:

a) seriously endangered by erosion, shall ensure that erosion risk crops of maize, potatoes, beet, sown beans, soy, sunflower and sorghum are not grown; cereals and rapeseed crops are to be planted on such areas using soil protective technologies; in the case of other cereals, the condition of soil protection technology need not be adhered to only if they are to be sown with a clover or clover-grass mixture under-sow.

b) mildly endangered by erosion, shall ensure that erosion risk crops of maize, potatoes, beet, sown beans, soy, sunflower and sorghum are to be planted on such areas only using soil protective technologies.

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 land, about the causes of this condition, the accuracy of targetting existing policies in the fight against erosion and about the effectiveness or ineffectiveness of some of erosion control measures. The subject of monitoring are 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 Reclamation, public research institution. Obtained information is further used in the design of effective erosion control measures and in drafting new policies in this area. Erosion events by regions of the Czech Republic are shown in table 5.4.2.

Soběnice

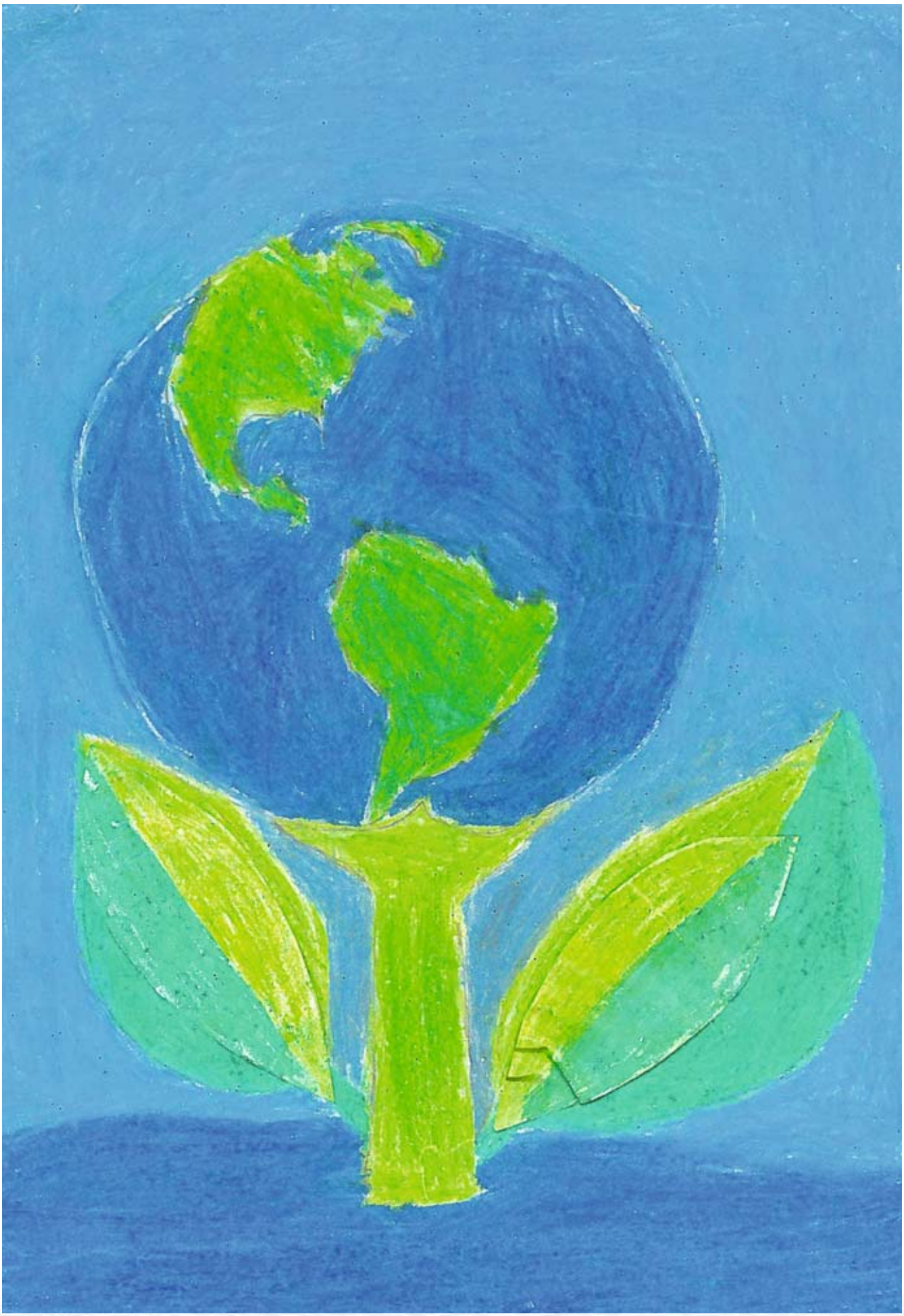
Weir on the Upa River near Zlíč

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 2014
City of Prague	0	0
Jihočeský region	72	30
Jihomoravský region	48	15
Karlovarský region	4	1
Královéhradecký region	72	11
Liberecký region	22	13
Moravskoslezský region	6	1
Olomoucký region	12	3
Pardubický region	19	5
Plzeňský region	55	9
Středočeský region	75	27
Ústecký region	6	0
Vysočina region	116	73
Zlínský region	10	3
Czech Republic	**517**	**191**

Source: Research Institute for Soil and Water Reclamation, public research institution

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 are threatened by water erosion and about 10% by wind erosion. Over the last 30 years, land degradation due to erosion dramatically accelerated. The main reason is particularly the intensification of agriculture and change in the preferences of growing some crops.



Barbora Šimonová – Nothing Grows Without Water, Water Is Not Granted - 3rd class, Pardubice primary school, nábřeží Závodu míru, Pardubický Region

6. Management of watercourses

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 according to the Central Register of Watercourses is constituted by approx. 100,400 km of watercourses (with both natural and regulated stream channels). Watercourses on the territory of the Czech Republic are divided according to the Water Act into two categories: significant watercourses and minor watercourses. Professional management of watercourses in 2014 was 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. From 1 January 2011, they are also responsible for the management of minor watercourses transferred from the Agricultural Water Management Administration. State-owned River Boards, s. e., and Forests of the Czech Republic are responsible for the management of about 94.2% of the total length of watercourses in the Czech Republic. Other entities involved, including the Ministry of Defence, the National Park Administrations and other natural and legal persons are responsible for less than 6% of watercourse management.

Professional management of watercourses broken down to the individual watercourse administrators is shown in table 6.1.1.

Table 6.1.1
Professional management of watercourses

Category	Administrator	Length of watercourses in km	
		2013	2014
Significant watercourses	Elbe River Board, s. e.	3,667	3,667
	Vltava River Board, s. e.	5,418	5,493
	Ohře River Board, s. e.	2,377	2,377
	Oder River Board, s. e.	1,111	1,111
	Morava River Board, s. e.	3,753	3,748
	Total	**16,326**	**16,396**
Minor watercourses	Forests of the Czech Republic, s. e.	38,260	38,491
	River Boards, s. e., in total	41,888	39,657
	Other administrators [1)]	5,961	5,857
	Other [2)]	444	5
	Total	**86,553**	**84,010**
Watercourses in total		**102,879**	**100,406**

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.

The Čejna weir, the Nežárka River

All significant watercourses are listed in Annex 1 of the 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 16,396 km, are administered under the provision in 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 total length of minor watercourses according to the Central Register of Watercourses is 86,553 km. 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, subsection 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, subsection 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 form and the content of the application for establishment of the administration of a certain minor watercourse is published and specified in detail in the above mentioned Decree No. 178/2012 Coll. The total length of minor watercourses according to the Central Register of Watercourses is 84,010 km. A decrease in the

total length of minor watercourses is due to refining the mapping of the designated minor watercourses and reclassifications. This process of reassessment continues to be underway.

The public administration bodies and the general public 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 portal 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 the year 2014 to CZK 51.12 billion. Compared to the previous period, the value of the non-current tangible assets shows a year-on-year growth of CZK 0.39 billion.

The year-on-year growth is mainly caused by the increase in the non-current tangible assets generated by the renewal and planned development of entrusted property in the form of routine capital investment construction and by consecutive entries of the assets taken over, and the completed hydraulic structures in the accounting records. In 2014, any of the administrators of watercourses did not complete, approve and take over to the use a hydraulic structure that would significantly influence the indicators expressing the acquisition value of the non-current tangible assets. The non-current tangible asset values in purchase prices and the year-on-year development (increase in the non-current tangible assets) for the individual watercourse administrators are shown in table 6.1.2.

Table 6.1.2
Acquisition value of non-current tangible assets relating to watercourses in billions of CZK

Watercourse administrators directly responsible to the Ministry of Agriculture	2013	2014
Elbe River Board, s. e.	10.16	10.28
Vltava River Board, s. e.	10.71	10.85
Ohře River Board, s. e.	9.77	9.85
Oder River Board, s. e.	6.01	6.02
Morava River Board, s. e.	8.54	8.59
River Boards, s. e., in total	**45.19**	**45.59**
Forests of the Czech Republic, s. e.	5.54	5.53
Total	**50.73**	**51.12**

Source: MoA

Auditing activities in the individual River Boards, state enterprises, are carried out by the respective controlling bodies. As every year, comprehensive and selective audits were carried out in the year 2014. Their overview and results are shown below.

Ministry of Agriculture

Ministry of Agriculture carried out ongoing public inspections focusing on compliance with the conditions, on the use of public funds and on economy of the relevant enterprise. In total thirteen audits were carried out in 2014, at least one for every River Board, s. e. Audits were carried out by several departments of the Ministry of Agriculture (Department of Water Management Policy and Flood Control Measures, Department of Water in Landscape and Rehabilitation of Flood Damage, Department of Audit and Supervision, Establishment Policy Department). In two cases several shortcomings were found and based on the recommendation measures were taken to remedy the situation. All other audits showed no defects. The minutes of the audit carried out at the Vltava River Board, s. e., were not received until the closing date of this report.

Tax Authorities

Tax authorities in 2014 carried out three inspections. There were two tax audits and audit of the use of public financial support granted by the Ministry of Agriculture as part of flood control measures. Two audits were carried out at the Ohře River Board, s. e., one of them having started already in 2013. One audit was carried out at the Morava River Board, s. e., based on the initiative of the Ministry of the Environment. This audit also started in 2013. Any of the audits found no shortcomings.

Regional Public Health Offices

The Regional Public Health Offices carried out in 2014 a total of eleven audits focusing on compliance with laws and regulations concerning safety and the protection of public health. The audits were carried out at the Vltava River Board, s. e., the Elbe River Board, s. e., the Ohře River Board, s. e., and the Morava River Board, s. e., with no major shortcomings found. Only one audit found minor shortcomings which were remedied within the time limit laid down.

Czech Social Security Administration

In 2014, the district branches and the municipal branches of the Czech Social Security Administration carried out in total three audits at the Elbe River Board and the Vltava River Board, s. e. They focused on the fulfilment of the obligations in sickness and pension insurance. The audits showed no shortcomings.

Health Insurance Company

The obligation of the employer in the field of health insurance payments and adherence to other obligations of insurance payer was audited only at two River Boards, s. e. (the Morava River Board, s. e., and the Oder River Board, s. e.). All audits were carried out with no shortcomings found.

Czech Environmental Inspection

In 2014, the Czech Environmental Inspection carried out in total six audits at the Morava River Board, s. e., the Ohře River Board, s. e., and the Vltava River Board, s. e., with focus on compliance with

Křímov hydraulic structure

the law in connection with the management and performance of activities on watercourses and compliance with the law on nature conservation and water management. The audits found no shortcomings. The check on Kadaň hydraulic structure regarding oil spill into a watercourse was carried out on the initiative of citizens, with no contamination found.

Supreme Audit Office

The Supreme Audit Office carried out one audit for each of the Morava River Board and the Ohře River Board, s. e. Audits focused on the management of state-owned assets. In both cases, shortcomings were found. The Morava River Board, s. e., provided the clarification and took corrective measures. The Ohře River Board, s. e., raised objections, two of them were partially upheld by the auditing body, one not. The Ohře River Board, s. e., did not file an appeal to the college of the Supreme Audit Office.

Ministry of Finance

Ministry of Finance carried out two control audits in 2014. In the case of audit at the Morava River Board, s. e., public procurement was found to be in breach with Act No. 137/2006 Coll., subsequently, measure was taken for the general public procurement procedure for author´s supervision. The latter audit was carried out without any negative findings.

Fire Rescue Department

The Fire Rescue Department carried out in 2014 two checks on compliance with the obligations under the regulations on fire protection. Corrective measures were imposed and shortcomings were remedied.

Regional Labour Inspectorate

In 2014, a total of two checks on compliance with the obligations of occupational safety with six negative findings were carried out. All the measures imposed were fulfilled.

Other government authorities

Agency for Nature Conservation and Landscape Protection of the Czech Republic, the Czech Accreditation Institute, public benefit company and the municipality of Krumsín carried out one audit each at the Morava River Board, state enterprise. All audits were carried out with no negative findings. The State Environmental Fund of the Czech Republic, the Regional Veterinary Administration, the statutory town of Ostrava and the State Office for Nuclear Safety carried out one audit each at the Oder River Board, state enterprise. In the first three cases the audits resulted in no negative findings, in the latest case there were found formal shortcomings in quality assurance, which were subsequently remedied. A check on compliance with obligations in operation of hydraulic structures was carried out by the Municipal Council Chomutov at the Ohře River Board, state enterprise, with no shortcomings found.

Trade Union of Workers of Wood Processing Industries in Forest and Water Management of the Czech Republic and the State Regional Archive in Prague carried out one audit each at the Vltava River Board, s. e., with no shortcomings found. Similarly to 2013, external audits requested by Deloitte Advisory s. r. o. were carried out there. The audits focused on public procurement and cost assessment of the project realized. In the first case, minor optimization measures in the public procurement system were adopted, in the latter case the audit was carried out with no negative findings.

Resting place at Klinská water reservoir, the Kyčerov stream in Staré Hamry

6.2 River Boards, state enterprises

In 2014, the total revenues generated by the River Boards, state enterprises, compared to 2013, reached annual increase amounting to 5%, i.e. in absolute figures an increase in the total revenues by CZK 226.5 million. This increase was generated by three items of the revenue structure, namely non-investment grants from the state budget, payments for surface water abstractions and other revenues.

Annual increase in total revenues of the River Boards, s. e, was mainly due to a significant increase in non-investment grants from the state budget by almost CZK 174 million, which corresponds to an annual increase of 125.2%. Non-investment grants are used for remedying flood damage. In 2014, flood damage caused by the major floods in 2013 were remedied, which influenced the increase in non-investment grants in all River Boards, s. e., concerned. Revenues from payments for surface water abstractions increased by CZK 134 million, representing an annual increase of 4.2%. Other revenues increased by almost CZK 13 million (annual increase of almost 3%). Annual decrease, on the contrary, was recorded for all other indicators. The highest annual decrease of 31.6%, although in the absolute figures only of CZK 2.8 million, was shown by other operating grants. The revenues from payments for the use of impounding structures decreased significantly, having recorded an annual decrease of 21.3%, which in absolute figures represents the amount of CZK 32.5 million. Similarly, the revenues from electric power generation showed an annual decrease of 9.7% (a decrease of CZK 59.1 million). In the Ohře River Board, s. e., also solar energy sources are to a smaller extent involved in generating revenues, other River Boards, s. e., generate electric energy in their own power plants.

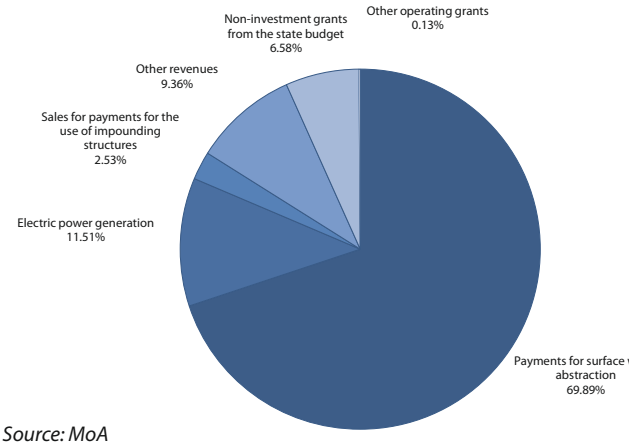
The structure of the revenues of the River Boards, s. e., in the year 2014 is shown in table 6.2.1. Chart 6.2.1 illustrates the proportion of the individual revenue types in the overall revenues of the River Boards, s. e. The development of the overall surface water supplies charged for in technical units in a longer time series is shown in table 6.2.2. Prices for the individual types of surface water abstractions are shown in tables 6.2.3 and 6.2.4.

Table 6.2.1
Structure of the revenues of the River Boards, state enterprises, in the year 2014 in thousands of CZK

Indicator	River Board, s. e.					Total
	Elbe River Board, s. e.	Vltava River Board, s. e.	Ohře River Board, s. e.	Oder River Board, s. e.	Morava River Board, s. e.	
Payments for surface water abstractions	882,120	738,622	513,813	553,062	638,807	**3,326,424**
Electric power generation	36,532	246,837	176,575	56,006	32,014	**547,964**
Sales from payments for the use of impounding structures	6,900	107,695	990	0	4,956	**120,541**
Other revenues	147,863	92,183	107,668	43,802	53,933	**445,449**
Non-investment grants from the state budget *)	104,491	91,495	38,996	0	78,004	**312,987**
Other operating grants	146	1,003	0	0	4,995	**6,144**
River Boards, s. e., in total	**1,178,052**	**1,277,835**	**838,042**	**652,870**	**812,709**	**4,759,508**

Source: River Boards, s. e.
*Note: *) This item includes non-investment grants that were provided from the state budget (Ministry of Agriculture, Ministry of the Environment, Operational Programme Environment, State Environmental Fund). Ministry of Agriculture in 2014 provided non-investment grants under the sub-programme 129 272 Remedying the Impacts of Floods in 2013 and further it provided a grant for the Morava River Board, s. e., for Specialized Flood Protection.*

Chart 6.2.1
Structure of the revenues of the River Boards, state enterprises, in the year 2014



Source: MoA

Weir in Osek - removing ice at the inlet sluice

Table 6.2.2
Surface water supplies charged for in the years 2008–2014 in thousands of m³

River Board, s. e.		2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	a)	807,073	800,772	817,645	775,223	723,608	600,131	609,118
	b)	36,031	36,787	38,843	37,892	34,838	35,782	36,022
Vltava River Board, s. e.	a)	252,659	243,528	238,582	230,817	234,579	214,195	211,473
	b)	153,131	146,670	144,164	140,087	140,596	134,750	130,214
Ohře River Board,s. e.	a)	150,115	148,330	141,308	135,730	131,659	121,167	118,390
	b)	51,514	50,299	49,550	46,162	44,954	42,212	40,583
Oder River Board, s. e.	a)	153,946	138,961	144,155	138,942	139,124	136,614	135,223
	b)	69,288	68,171	66,936	64,179	67,102	65,105	64,920
Morava River Board, s. e.	a)	179,833	174,398	173,661	182,361	180,835	155,848	162,058
	b)	32,553	31,233	31,063	31,861	33,427	30,951	32,262
River Boards, s. e., in total	**a)**	**1,543,626**	**1,505,989**	**1,515,351**	**1,463,073**	**1,409,805**	**1,227,955**	**1,236,262**
	b)	**342,517**	**333,160**	**330,556**	**320,181**	**320,917**	**308,800**	**304,001**

Source: River Boards, s. e.
Note: a) charged for in total,
b) of that for public water supply systems.

In the River Boards, state enterprises, the average price of other abstractions of surface water in the year 2014 ranged around CZK 4.25 per m³, this means an increase by 4.2%, compared to the previous year 2013. This price is the so-called factually regulated price, which may include only eligible costs, reasonable profit and the tax pursuant to the relevant tax regulations.

In addition to through-flow cooling, since the year 2003 abstraction levels and prices of surface water have also been identified for the purposes of charged agricultural irrigation and flooding of artificial depressions in the landscape. In 2014, similarly to 2013, the Elbe River Board, s. e., and the Vltava River Board, s. e., were the only river boards to abstract water for the purposes of agricultural irrigation in the amount of 232 thousand m³, which represents a decrease of 0.4%, compared to the year 2013. The Ohře River Board, s. e., similarly to the previous years, is the only one reporting surface water abstractions for flooding of artificial depressions in the landscape, in the amount significantly higher (by 5,000 thousand m³), compared to 2013.

Table 6.2.3
Price for abstractions used for through-flow cooling in the years 2008–2014 in CZK/m³

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	0.49	0.53	0.55	0.60	0.64	0.65	0.68
Vltava River Board, s. e.	1.00	1.03	1.10	1.13	1.22	1.22	1.25
Morava River Board, s. e.	0.67	0.67	0.67	0.67	0.72	0.89	1.15

Source: River Boards, s. e.
Note: Unit price for m³ is quoted excluding VAT.

Table 6.2.4
Price for other surface water abstractions in the years 2008–2014 in CZK/m³

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	2.93	3.16	3.35	3.63	3.97	4.09	4.29
Vltava River Board, s. e.	2.45	2.68	2.94	3.15	3.40	3.45	3.55
Ohře River Board, s. e.	3.01	3.16	3.31	3.53	3.88	4.14	4.34
Oder River Board, s. e.	2.89	3.10	3.35	3.58	3.80	3.99	4.09
Morava River Board, s. e.	4.19	4.65	4.97	5.47	5.88	6.16	6.39
Average price quoted by River Boards, s. e. *)	**2.67**	**3.13**	**3.32**	**3.61**	**3.94**	**4.08**	**4.25**

Source: River Boards, s. e.
Note: Unit price for m³ is quoted excluding VAT.
**) Calculated by means of weighted average.*

In the current approach the current prices reflect the price of the service, i.e. enabling the provision of supplies ensured by River Boards, s. e., to water users, they do not reflect the value of surface water.

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 Journal.

In the year 2014, the River Boards, s. e., reported in aggregate an increase in revenues from payments for surface water abstractions, in absolute figures amounting to CZK 134 million, which corresponds to a year-on-year increase in this revenue category by 4.2%, compared to the year 2013. All River Boards, s. e., reported an increase in revenues from these abstractions as follows: the Elbe River Board, s. e., and the Morava River Board, s. e., an increase of CZK 50 million, the Vltava River Board, s. e., an increase of CZK 14 million, the Ohře River Board, s. e., an increase of CZK 12 million and the Oder River Board, s. e., an increase of CZK 8 million. Received payments for surface water abstractions in a longer time series are shown in table 6.2.5.

The Nedakonice weir - The Morava River

Table 6.2.5
Payments for surface water abstractions in the years 2008–2014 in millions of CZK

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	735	785	833	846	890	832	882
Vltava River Board, s. e.	609	640	686	707	778	725	739
Ohře River Board, s. e.*)	450	469	468	479	511	502	514
Oder River Board, s. e.	445	431	483	497	529	545	553
Morava River Board, s. e.	440	457	481	543	608	589	639
River Boards, s. e., in total	**2,679**	**2,782**	**2,951**	**3,072**	**3,316**	**3,193**	**3,327**

Source: River Boards, s. e.
*Note: *) Excluding sales from transport and abstraction of water.*

In 2014, revenues from sales of electric power from small hydroelectric power plants owned by the River Boards, s. e., showed a decrease by almost CZK 60 million. The total revenues in this revenue category amounted to CZK 545.7 million.

Revenues from sales of electric power take the second place after the main source of revenues which are payments for surface water abstractions. Similarly to the previous two years, the total number of small hydroelectric power plants in operation is 91. The highest revenues from sales of electric power amounting to CZK 246.8 million are reported by the Vltava River Board, s. e., which operates 19 own small hydroelectric power plants. High revenues from sales of electric power amounting to CZK 174.3 million are also reported by the Ohře River Board, s. e., with 21 own small hydroelectric power plants.

Revenues from sales of electric power in 2014 decreased significantly, compared to the maximum in 2013 they decreased by CZK 59.6 million, which represents a decrease of almost 10%. Compared to 2013, significantly increased sales were reported by the Vltava River Board, s. e., the annual increase amounted to CZK 27.4 million. A slight increase (CZK 0.4 million) in revenues from sales of electric power was also reported by the Morava River Board, s. e., Other River Boards, s. e., reported a decrease in this revenue category. Although the Ohře River Board, s. e., remains in the volume of sales of electric power markedly at the forefront among the River Boards, s. e., in 2014 reported a significant decrease in revenues by CZK 55.2 million. The Oder River Board, s. e., reported an annual decrease in revenues by CZK 16.5 million and the Elbe River Board, s. e., reported a decrease by CZK 15.7 million. In more detail, the information on the total number of small hydroelectric power plants owned by the individual River Boards, s. e., their installed capacity, electric power generation and sales is shown in table 6.2.6.

Husinec water reservoir - repair of the dam

Table 6.2.6
Small hydroelectric power plants owned by River Boards s. e. in the years 2008–2014

River Board, s. e.	Indicator	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	Number of small hydropower plants	20	20	20	20	20	20	20
	Installed capacity in kW	5,892	5,892	5,892	5,892	6,108	6,438	6,438
	Electric power generation in MWh	18,325	20,356	23,589	20,871	19,293	23,509	16,349
	Sales in thousands of CZK	34,773	40,497	49,299	44,387	41,222	52,257	36,532
Vltava River Board, s. e.	Number of small hydropower plants	17	18	18	18	19	19	19
	Installed capacity in kW	18,400	21,200	21,200	21,341	21,607	21,816	22,016
	Electric power generation in MWh	82,039	89,239	106,141	93,459	96,937	86,749	92,102
	Sales in thousands of CZK	181,435	208,580	238,981	217,348	242,709	219,464	246,837
Ohře River Board, s. e.	Number of small hydropower plants	21	21	21	21	21	21	21
	Installed capacity in kW	16,949	16,930	16,930	16,930	16,930	16,930	16,966
	Electric power generation in MWh	94,056	90,027	106,168	81,134	77,422	102,642	67,371
	Sales in thousands of CZK	197,824	194,911	214,290	167,297	171,112	229,545	174,342
Oder River Board, s. e.	Number of small hydropower plants	16	16	16	16	16	16	16
	Installed capacity in kW	5,731	5,731	5,731	5,731	5,809	5 809	5,809
	Electric power generation in MWh	31,964	28,662	30,937	28,113	26,068	27,201	20,656
	Sales in thousands of CZK	68,710	60,937	60,568	65,682	66,000	72,506	56,006
Morava River Board, s. e.	Number of small hydropower plants	15	14	14	15	15	15	15
	Installed capacity in kW	3,522	3,482	3,482	3,495	3,497	3,497	3,497
	Electric power generation in MWh	14,281	14,252	14,365	12,607	11,323	12,228	12,343
	Sales in thousands of CZK	34,922	36,024	35,623	30,831	29,331	31,592	32,014
River Boards, s. e. in total	**Number of small hydropower plants**	**89**	**89**	**89**	**90**	**91**	**91**	**91**
	Installed capacity in kW	**50,494**	**53,235**	**53,235**	**53,389**	**53,951**	**54 490**	**54,726**
	Electric power generation in MWh	**240,665**	**242,536**	**281,200**	**236,184**	**231,043**	**252,329**	**208,821**
	Sales in thousands of CZK	**517,664**	**540,949**	**598,761**	**525,545**	**550,374**	**605,364**	**545,731**

Source: River Boards s. e.

Other revenues of the River Boards, state enterprises, comprise a sum of less significant items including in particular the lease of land, non-residential premises and water bodies as well as revenues from other business activities, among which the most significant ones are the revenues from sales of machinery services and automobile transport services, laboratory work and from design and engineering activities. Capital yields also contribute to the overall level.

This item is often significantly affected by a number of unplanned items such as insurance payments, increased interest rates received and in many cases also the amount of transfers of certain specified sales which relate to the past periods but were not materialized until the monitored year. With regard to these unplanned items and variations that may not always be anticipated, other revenues also may show considerable year-on-year variations. In 2014, the year-on-year increase in other revenues of the River Boards, s. e., amounted to CZK 12.9 million, having been significantly contributed to by the Elbe River Board, s. e., followed by the Ohře River Board, s. e., and the Oder River Board, s. e. Compared to 2013, a decrease was reported by the Vltava River Board, s. e. (a decrease of CZK 52.6 million) and the Morava River Board, s. e. (a decrease of CZK 20.6 million).

The summary of other revenues of the River Boards, s. e., in a longer time series is shown in table 6.2.7.

Table 6.2.7
Other revenues of River Boards s. e. in the years 2008–2014 in thousands of CZK

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	105,185	129,663	89,889	80,646	98, 258	83,184	147,863
Vltava River Board, s. e.	82,165	128,136	113,624	103,820	109,261	144,774	92,183
Ohře River Board, s. e.	110,493	117,623	101,250	109,694	94,847	90,474	107,668
Oder River Board, s. e.	61,628	58,163	108,667	93,210	48,316	39,639	43,802
Morava River Board, s. e.	78,966	69,306	56,000	50,719	62,345	74,491	53,933
River Boards, s. e., in total	**438,437**	**502,891**	**469,430**	**438,089**	**413,027**	**432,562**	**445,449**

Source: River Boards s. e.

Financial needs regarding the key activities of the River Boards, state enterprises, are every year supported by a number of grants of both operating and investment nature. Without the state subsidies it would have been impossible to remedy the impacts of floods in the previous years and to start systematic activities allowing to implement flood control measures, define inundation areas and produce a number of conceptual studies.

In the year 2014, the total amount of grants significantly decreased by 74.3%, compared to the year 2013, however, with a different proportion of the impacts of operating grants and investment grants. Grants of operating nature showed a significant year-on-year increase by CZK 171.1 million, while investment subsidies showed a very significant year-on-year decrease by CZK 2.5 billion. In total the grants in the year 2014 amounted to CZK 797.8 million. Grants were allocated for programmes focused on both prevention and remedying flood damages from previous years.

In addition to grants allocated through the budget of the Ministry of Agriculture, these subsidies also included support provided by the Ministry of the Environment through the funds of the Operational Programme Environment (OPE) and the EU. Flood control measures were also co-financed with the contribution of certain regional authorities. The total operating (non-investment) and investment grants allocated to the individual River Boards, s. e., in the year 2014 are shown in table 6.2.8.

Table 6.2.8
Grants used by River Boards, s. e., in 2014 in thousands of CZK

River Board, s. e.	Operating grants	Investment grants	Grants in total
Elbe River Board, s. e.	104,637	24,272	**128,909**
Vltava River Board, s. e.	92 498	83,141	**175,639**
Ohře River Board, s. e.*)	38,996	124,790	**163,786**
Oder River Board, s. e.	0	77,340	**77,340**
Morava River Board, s. e.	82,999	169,130	**252,129**
River Boards, s. e., in total	**319,130**	**478,673**	**797,803**

Source: MoA, River Boards, s. e.
*Note: *) Actual use of CZK 182,550 thousand (the difference of CZK 18,764 thousand is due to the realization in 2013 and financial settlement in 2014).*

The Elbe - renewal of signs - weir in Dolní Beřkovice

Compared to the year 2013, the total costs in 2014 increased by CZK 214.6 million, i.e. the year-on-year increase amounted to 4.8%. The most significant year-on-year increase by 51.7%, in absolute figures by CZK 126.5 million was shown by the item other costs. A significant increase in costs was also shown by the item repairs (an increase of 13.6%), compared to 2013. Items financing costs, services and costs of energy and fuels, on the contrary, showed a significant year-on-year decrease.

Annual increase in total costs was shown only by two River Boards, s. e., namely the Elbe River Board, s. e. (an increase of 19.5%, i.e. CZK 190.6 million) and the Morava River Board, s. e. (an increase of 5.9%, i.e. CZK 44.9 million), compared to 2013. All the remaining River Boards, s. e., showed a slight annual decrease in costs ranging between 0.2% and 1.1%, compared to 2013. The summary of costs in the year 2014 reported by the River Boards, s. e., and their comparison with the previous year 2013 is shown in table 6.2.9.

Table 6.2.9
Costs in 2013 and 2014 reported by River Boards, s. e., in millions of CZK

Type of cost	Year	River Board, s. e.					River Boards, s. e., in total
		Elbe River Board, s. e.	Vltava River Board, s. e.	Ohře River Board, s. e.	Oder River Board, s. e.	Morava River Board, s. e.	
Depreciation	2013	163.2	316.6	192.1	142.3	154.7	**968.9**
	2014	153.8	321.5	192.8	145.4	155.4	**969,0**
Repairs	2013	152.9	334.3	149.6	136.0	127.5	**900.3**
	2014	266.9	314.9	179.6	146.6	114.3	**1,022.3**
Material	2013	47.4	31.1	19.9	38.0	49.5	**185.9**
	2014	45.6	30.2	16.7	39.9	49.9	**182.3**
Energy and fuels	2013	44.5	45.8	45.4	6.4	15.5	**157.6**
	2014	40.5	40.1	35.2	5.8	13.0	**134.6**
Personnel costs	2013	469.9	419.9	327.2	229.9	296.8	**1,743.7**
	2014	479.3	427.3	327.8	234.4	306.2	**1,775.1**
Services	2013	87.9	90.1	30.6	34.0	33.5	**276.1**
	2014	66.6	81.5	32.3	33.1	26.4	**239.9**
Financial costs	2013	0.3	1.7	0.1	0.2	2.8	**5.1**
	2014	0.3	1.3	0.3	0.2	0.4	**2.5**
Other costs	2013	9.3	36.6	65.3	53.8	79.7	**244.7**
	2014	113.0	44.9	40.4	33.6	139.3	**371.2**
Total costs	**2013**	**975.4**	**1,276.1**	**830.2**	**640.6**	**760.0**	**4,482.3**
	2014	**1,166.0**	**1,261.8**	**825.0**	**639.2**	**804.9**	**4,696.9**

Source: River Boards, s. e.

In the year 2014, River Boards, s. e., expended on investments the amount of CZK 1.37 billion. Of this sum, almost 64% (CZK 869.3 million) were used from their own resources and over 36% (in absolute figures CZK 495.4 million) of investment funds were covered by external financial resources.

Compared to the previous year 2013, the total investments made by the River Boards, s. e., in 2014 significantly decreased by more than 64%, in absolute figures by CZK 2.47 billion. This significant decrease in investments was a result of both the termination of the programme „Flood Prevention II" in mid-2014 (the completion of the initiated measures), and the start of the programme „Flood Prevention III" in mid-2014 with a significantly lower initial investment. The summary of investment funds is shown in table 6.2.10 and chart 6.2.2.

Investment expenditures of River Boards, s. e., in 2014 covered by external financial resources amounted to a total of CZK 495.4 million, of which almost 71% were financial resources from the state budget and 29% were other resources. Other resources 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 reconstruction of hydraulic structures.

The largest volume of investment expenditures was shown by the Vltava River Board, s. e. (CZK 386.7 million), followed by the Ohře River Board, s. e. (CZK 306.7 million), the Morava River Board, s. e. (CZK 290.4 million), the Oder River Board, s. e. (CZK 248.4 million) and the Elbe River Board, s. e. (CZK 132.6 million). In terms of coverage of investment expenditures from external resources, the largest volume of funding was used by the Morava River Board, s. e. (CZK 169.1 million), followed by the Ohře River Board, s. e. (CZK 124.8 million), the Oder River Board, s. e. (CZK 85.2 million), the Vltava River Board, s. e. (CZK 83.1 million) and the Elbe River Board, s. e. (CZK 33.2 million). Chart 6.2.3 shows the structure of the use of investment funds by resource types in River Boards, s. e.

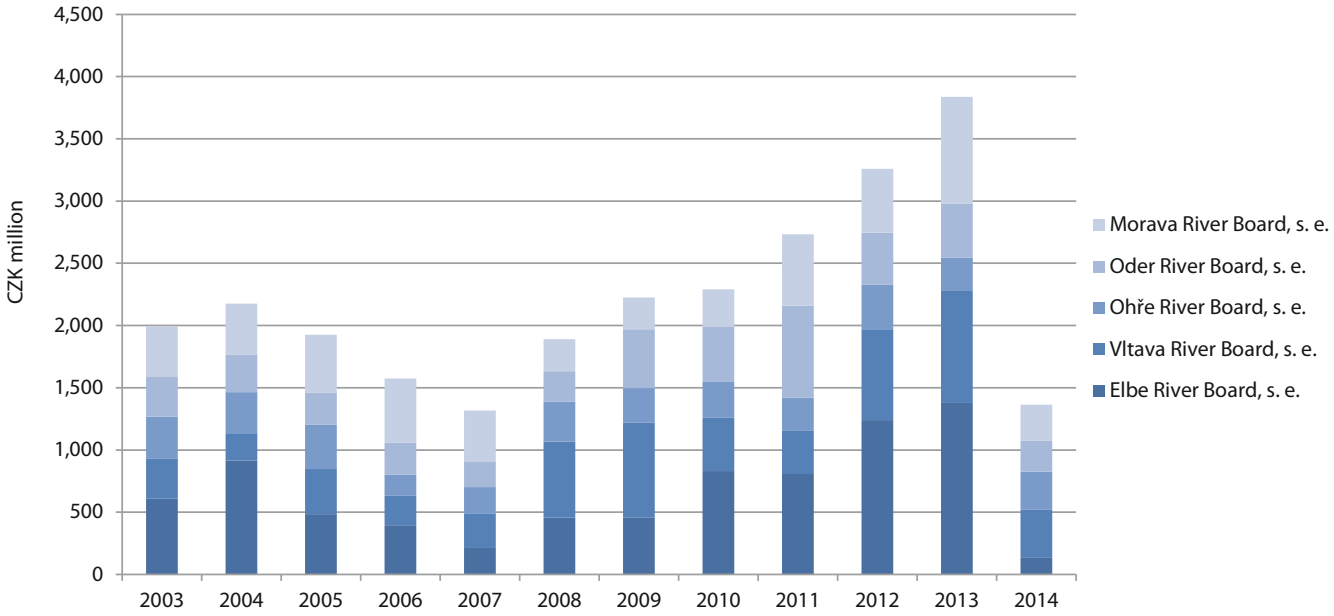
The Elbe River in Špindlerův Mlýn

Table 6.2.10
Investments made by the River Boards, s. e., in the years 2008–2014 in millions of CZK

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	455.0	459.0	829.8	806.7	1,240.8	1,378.3	132.6
Vltava River Board, s. e.	611.3*)	761.1*)	428.3	346.7	729.5	905.2	386.7
Ohře Rive Board, s. e.	322.5	277.5	287.4	265.8	357.1	262.5	306.7
Oder River Board, s. e.	244.2	473.5	443.4	741.2	419.7	435.4	248.4
Morava River Board, s. e.	257.8	254.5	302.6	571.9	512.0	856.0	290.4
River Boards, s. e., in total	**1,890.8**	**2,225.6**	**2,291.5**	**2,732.3**	**3,259.0**	**3,837.4**	**1,364.8**

Source: River Boards, s. e.

Chart 6.2.2
The development of capital construction in River Boards, s. e., in the years 2003–2014

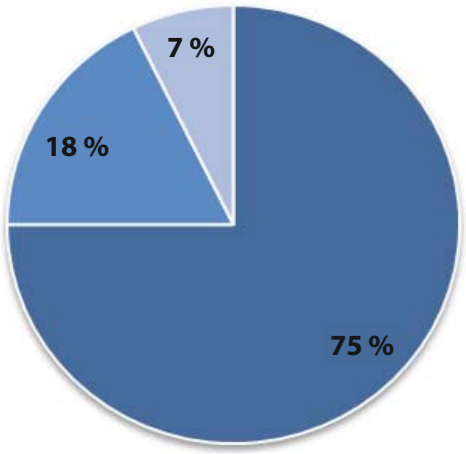


Source: MoA, River Boards, s. e.

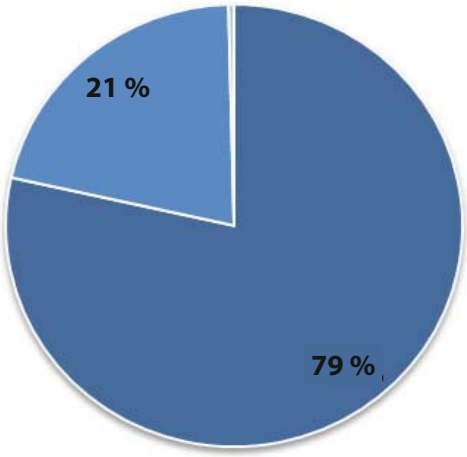
Husinec water reservoir

Chart 6.2.3
The structure of the use of investment funds by resource types in River Boards, s. e., in 2014

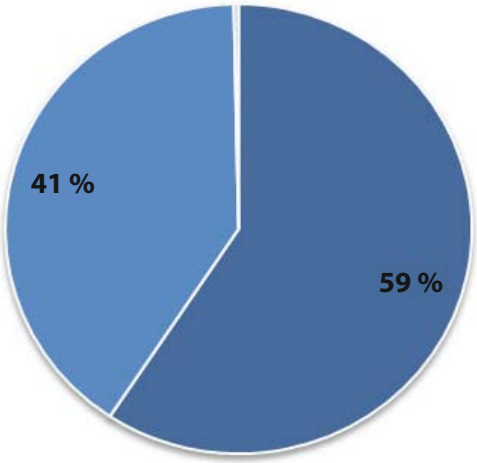
Elbe River Board, s. e.
CZK 132.6 mill.



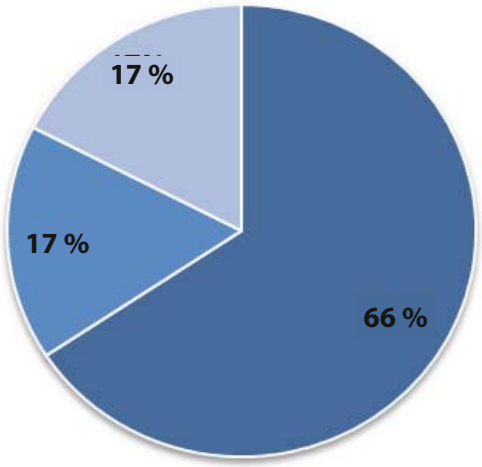
Vltava River Board, s. e.
386.7 mill.



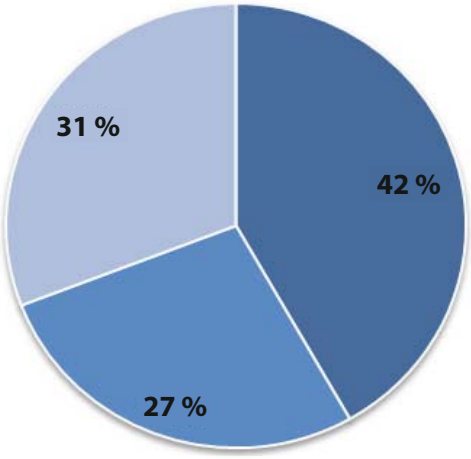
Ohře River Board, s. e.
306.7 mill.



Oder River Board, s. e.
248.4 mill.



Morava River Board, s. e.
290.4 mill.



Legend:

- Own resources
- External resources – state budget incl. National Property Fundo f the Czech Republic
- External resources – other resources

Source: River Boards, s. e.

The financial results reached by all River Boards, state enterprises, showed only a profit. The profit reached the total amount of over CZK 62.6 million.

The most striking increase in profit was reported by the Elbe River Board, s. e., compared to the previous year 2013, its profit increased by CZK 11.3 million. A decrease in profit, compared to 2013, was reported only by the Oder River Board, s. e. (a decrease of CZK 2.9 million). All the remaining River Boards, s. e., show an improvement, compared to 2013.

Profit/loss development over the recent seven years and the share of the individual River Boards, s. e., in the total profit/loss is documented in table 6.2.11. In more detail, a breakdown of profit into individual funds along with the proposals for covering losses in the respective River Boards, s. e., are shown in table 6.2.12.

Kamenička hydraulic structure

Table 6.2.11
Profit/loss of River Boards, s. e., in the years 2008–2014 in thousands of CZK

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	16,692	30,050	27,509	29,908	21,488	770	12,100
Vltava River Board, s. e.	23,375	30,265	13,530	12,702	25,088	14,495	16,022
Ohře River Board, s. e.	22,401	30,371	11,776	4,758	11,284	12,624	13,008
Oder River Board, s. e.	29,296	13,964	13,785	12,721	15,247	16,603	13,718
Morava River Board, s. e.	13,035	15,295	8,171	5,355	5,114	6,200	7,786
River Boards, s. e., in total	**104,799**	**119,945**	**74,771**	**65,444**	**78,221**	**50,692**	**62,634**

Source: River Boards, s. e.

Table 6.2.12
Allocation of profit of River Boards, s. e., for the year 2014 in thousands of CZK

River Board, s. e.	Profit	Allocation of profit or loss					
		Reserve Fund	Social Welfare Fund	Investment Fund	Social Fund	Remuneration Fund	Accumulated losses from previous years
Elbe River Board, s. e.	**12,100**	0	6,841	4,394	365	500	0
Vltava River Board, s. e.	**16,022**	2,022	8,000	0	0	6,000	0
Ohře River Board, s. e.	**13,008**	0	4,690	4,318	0	4,000	0
Oder River Board, s. e.	**13,718**	0	7,418	0	0	6,300	0
Morava River Board, s. e.	**7,786**	779	4,463	0	0	0	2,544

Source: River Boards, s. e.

The average recalculated number of employees in River Boards, state enterprises, increased in the year 2014 by 21 employees to a total of 3,552 persons.

Compared to 2013, only the Oder River Board, s. e., showed a decrease in the total number of employees (a decrease of 3 employees on average). The Vltava River Board, s. e., and the Morava River Board, s. e., showed a more significant increase in the number of employees (by approx. 10 employees). Table 6.2.13 shows the trend in the number of employees in the River Boards, s. e., in a longer time series.

Flood protection measures in Veselí

Table 6.2.13
The number of employees of River Boards, s. e. in the years 2008–2014 (average recalculated number)

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	942.8	943.7	939.7	947.1	927.5	920.7	924.8
Vltava River Board, s. e.	782.0	786.2	779.2	846.3	841.4	842.3	852.8
Ohře River Board, s. e.	605.5	605.2	604.9	620.7	616.1	617.5	617.7
Oder River Board, s. e.	458.9	461.7	457.2	464.3	463.5	467.1	464.2
Morava River Board, s. e.	736.4	706.9	673.9	698.0	694.0	683.3	692.7
River Boards, s. e., in total	**3,525.6**	**3,503.7**	**3,454.9**	**3,576.4**	**3,542.5**	**3,530.9**	**3,552.2**

Source: River Boards, s. e.

The average monthly salary in the River Boards, state enterprises, increased over the previous year by 1.2%, in the year 2014 amounted to CZK 29,932.

Compared to the previous year, the average monthly salary in the River Boards, s. e., increased by CZK 358, all River Boards, s. e., reported an increase in the average monthly salary. Relatively stable year-on-year increase in the salary of over CZK 600 is reported by the Oder River Board, s. e., and the Ohře River Board, s. e., an increase of over CZK 500 is reported by the Elbe River Board, s. e., Stagnant amount of salary can be stated for the Vltava River Board, s. e. The lowest average monthly salary continues to remain in the Morava River Board, s. e., like the highest average salary, which is repeatedly reported by the Ohře River Board, s. e. The average monthly salaries in a longer time series are shown in table 6.2.14.

Table 6.2.14
Average salaries reached in River Boards, s. e., in the years 2008–2014 in CZK/month

River Board, s. e.	2008	2009	2010	2011	2012	2013	2014
Elbe River Board, s. e.	25,778	27,283	28,209	28,350	29,540	30,293	30,823
Vltava River Board, s. e.	27,325	28,300	28,864	28,311	29,285	29,808	29,809
Ohře River Board, s. e.	26,794	28,620	29,759	30,148	31,335	31,698	32,312
Oder River Board, s. e.	25,534	26,104	27,190	28,105	28,714	29,458	30,083
Morava River Board, s. e.	23,823	25,778	25,310	25,812	25,756	26,479	26,668
Average monthly salary in River Boards, s. e. *)	**25,856**	**27,283**	**27,905**	**28,126**	**28,942**	**29,574**	**29,932**

Source: River Boards, s. e.
*Note: *) Calculated by means of 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. At present, the Forests of the Czech Republic carries out the management of more than 38 thousand km of watercourses.

Watercourse management carried out by the Forests of the Czech Republic, s. e., includes the management of non-current assets relating to watercourses, with an acquisition value of CZK 5.53 billion (in particular watercourse regulation, torrent and ravine control, flood control measures and water reservoirs). The watercourse management is carried out by six Watercourse Administrations, with territorial responsibility according to the respective river basin districts, which are methodically controlled by the Water Management Department at the Head Office of the Forests of the Czech Republic, s. e.

In 2014, the activities of the Forests of the Czech Republic in the field of water management were focused in particular on:

- remedying flood damage from the years 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 of documentation for the implementation of actions under the MoA subsidy programme Flood Prevention Stage III,
- 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.,
- keeping 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 financed 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 „Support for Remedying Flood Damages to State-owned Water Management Property" pursuant to Section 102 of the Water Act. In addition, the 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, the Forests of the Czech Republic, s. e., through its organizational units, the Watercourse Administrations, disbursed in 2014 in total CZK 471.9 million, including expenditures of capital investment nature amounting to CZK 144.4 million. Its own funds used for these investments amounted to CZK 97.9 million. In total CZK 327.5 million, including CZK 320 million of own funds were used to perform the management, repairs and maintenance of fixed assets. In total CZK 45.3 million, including CZK 32.2 million of own funds were expended on remedying flood damage. The above mentioned amounts include all costs relating to the management of watercourses. Funding structure is shown in table 6.3.1.

Table 6.3.1
Funding structure of watercourse management in 2014 in millions of CZK (full costs)

Action	Total	Own resources in total	Subsidies in total	Of that flood damage	
				Subsidies	Own resources
Investments	144.4	97.9	46.5	12.6	6.7
Non-investments	327.5	320.0	7.5	0.5	25.5
Total	**471.9**	**417.9**	**54.0**	**13.1**	**32.2**

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

Revenues obtained for surface water abstractions to cover the management of watercourses amounted to CZK 11.5 million in 2014. Revenues for surface water abstractions and unit prices are shown in table 6.3.2.

Table 6.3.2
Revenues obtained by the Forests of the Czech Republic, s. e., for surface water in the years 2008–2014 in thousands of CZK

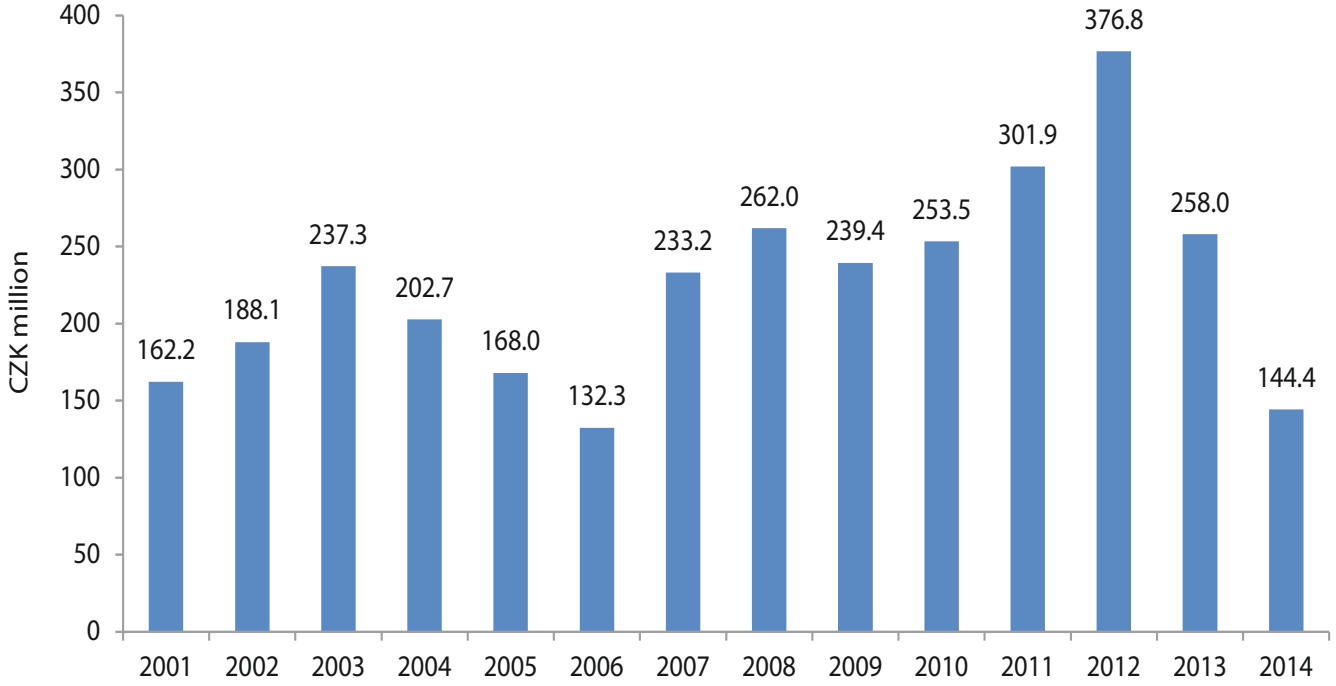
Year	2008	2009	2010	2011	2012	2013	2014
Revenues	10,380	10,542	11,239	12,969	13,679	12,211	11,544
Price per m^3 *)	1.50	1.55	1.6	1.9	1.96	2.00	2.05

Source: Forests of the Czech Republic, s. e.
*Note: *)Unit price per m^3 is quoted excluding VAT.*

The Charts 6.3.1 and 6.3.2 provide in a longer time series an overview of the overall annual capital expenditures and the funds spent on repairs and maintenance of property. Particularly noticeable is a decrease in capital expenditures in 2014, which is caused by the termination of the MoA subsidy programme Flood Prevention Stage II and also by a change in legislation laying down that the construction can be realized on the land, on which the Forests of the Czech Republic have the right of management. This means that the Forests of the Czech Republic, s. e., before the realization of the construction must buy all land affected by the construction, which in the case of line structures on watercourses is complicated and time consuming.

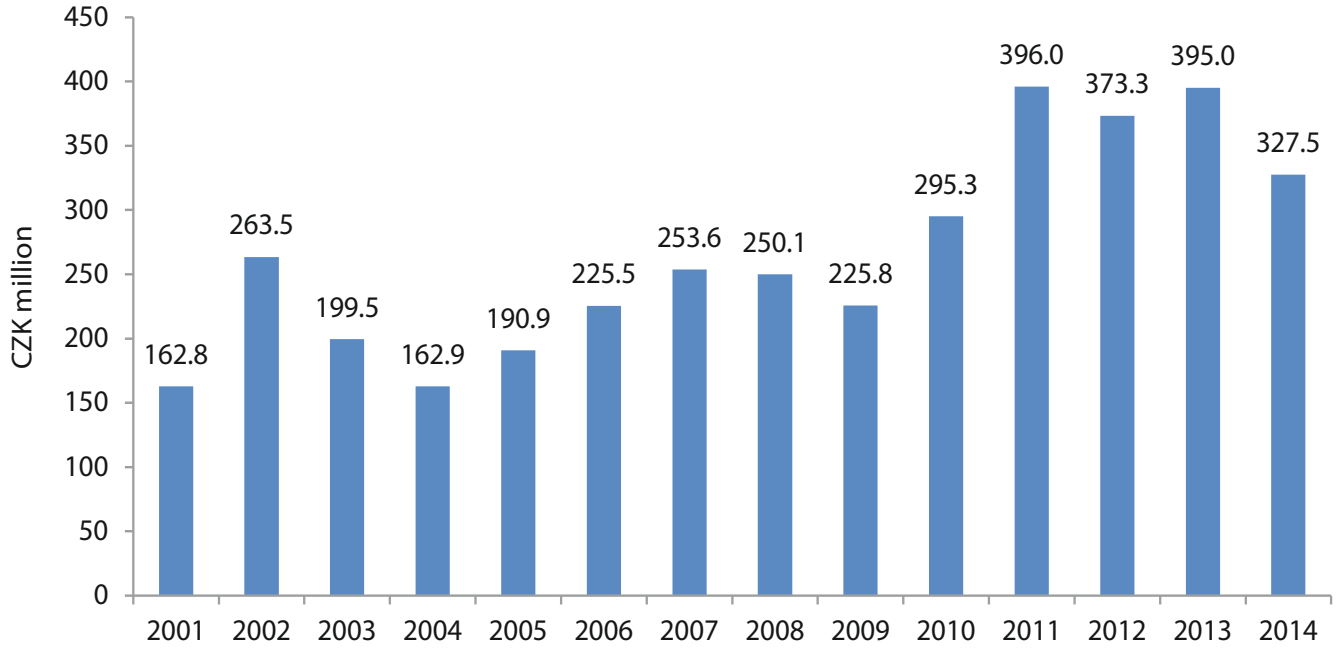
Václavský weir in Písek

Chart 6.3.1
Capital expenditures of the Forests of the Czech Republic, s. e., in the years2001–2014 in millions of CZK – watercourses



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

Chart 6.3.2
Expenditures of the Forests of the Czech Republic, s. e., in the years 2001–2014 in millions of CZK – repair and maintenance of watercourses (full costs)



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

Measures in river basins

The main activity for the Watercourse Administration for the Oder River basin district was remedying damage caused by the floods in May 2014. These floods hit the area of the Beskydy Mountains and the Jeseníky Mountains and necessitated immediate safety measures that were taken on the Olešnice River in Mikulovice and the Ondřejovický stream in Ondřejovice, the Raduňka stream in Raduň, at Sedlinka water reservoir in Nové Sedlice and on other watercourses.

Subsequently, work began to remedy flood damage. The most extensive actions in the area of the Beskydy Mountains include those taken on the Jičínka River in Nový Jičín, Životice, Mořkov and Veřovice, the Hluchová stream in Bystřice nad Olší, the Bystrý stream in Baška, the Stolovec stream in Čeladná and other. In the area of the Jeseníky Mountains, the remediation of flood damage was carried out on the Javorná stream in Zlaté Hory and the Lesní stream in Mikulovice near Jeseník.

In addition to these flood control measures there were completed actions aiming to stabilize riverbeds in order to ensure the flood

protection of surrounding properties, such as on the Prudník stream in Zlaté Hory, the Valštejnka River in Valštejn and Hynčice near Krnov and the Rychtářský stream in Stará Ves near Rýmařov. Reconstruction of the wall on the Opavice River in Heřmanovice and, last, but not least, consolidation and stabilization of the Račí stream bed in the area of Javorník and Uhelná were carried out.

Gauging station Lužnice, Rožmberk

As regards measures taken in the public interest pursuant to Section 35 of the Forest Act, crossbars were used to stabilize stream beds on the Vysutý stream in Morávka, the Lánský stream near Uhelná and the Keprnický stream near Bělá pod Pradědem. EU grants were used to complete the Satina stream bed in Malenovice and revitalization measures on the Jelení stream in Bruntál area.

The Watercourse Administration for the Dyje River basin district within the framework of remedying flood damage completed the project Besének in Brumov. In addition, repairs and maintenance of structures owned by the Forests of the Czech Republic, s. e., were carried out on the Mouřínovský stream near Brno, the Barácký stream in the area of Třebíč and the Zdravá Voda stream in the area of Kyjov.

In the territorial scope of the Watercourse Administration for the Dyje River basin district also projects of measures taken in the public interest pursuant to Section 35 of the Forest Act were completed, one of more important is the construction of a retention damming on the inflow to the Zavadilka stream near Letovice.

Construction of a retention reservoir Hostim I. in Znojmo district and stabilization of the Chlumský stream bed in the municipality of Slatinka near Letovice were completed, both projects obtained funding from the EU funds, namely the Operational Programme Environment. Funds from the Rural Development Programme were used to carry out measures on the Slavonický stream in Slavonice.

Forests of the Czech Republic, s. e., used their own funds to complete repair of Kralice water reservoir between the municipalities of Újezd near Rosice and Hluboká and reconstruction of Bojanovice – Hubert water reservoir near Bojanovice in the area of Znojmo.

In the Watercourse Administration for the Elbe River basin district, measures aiming to remedy flood damage from June 2013 in Studénka in Jičín area and on the left-hand tributary of the Javorka stream in Dolní Javoří were completed.

The local torrential floods in 2014 most affected the areas of Semily, Rychnov, Ústí nad Orlicí and Hlinsko. Most of the damage was remedied in the form of action to secure safety immediately after the flood.

In the territorial scope of the Watercourse Administration for the Elbe River basin district, the EU funds under the Operational Programme Environment were used for the revitalization of watercourses improperly regulated in the past, namely the Hadinec stream in Bartošovice, the Barovka stream in Libice, the Ošerov stream in Sedloňov and the Černý stream in the area of Liberec.

As regards measures taken in the public interest pursuant to Section 35 of the Forest Act, stabilization of the stream bed of the right-hand tributary of the Křížový stream in Bílý Kostel nad Nisou was completed.

Forests of the Czech Republic, s. e., used their own funds to complete regulation measures, e.g. on the Doubravický stream in Leština, the Novoveský stream in Nová Ves, the Olšanský stream in Třebešice, the Kunratický stream in Kunratice, the Kocbeřský stream in Choustníkovo Hradiště and the Veselka stream in Rovensko pod Troskami.

Similarly to 2013, the measures with the objective of the reintroduction of brook minnow (Phoxinus phoxinus) and rainbow trout were implemented in the Protected Landscape Area Jizerské hory Mountains. The reintroduction of crayfish (Astacus astacus) and maintenance of fish hiding places were carried out in the Broumovsko Protected Landscape Area.

The most important projects completed in 2014 by the Watercourse Administration for the Vltava River basin district include the revitalization of the Maňavský stream with its left-hand tributary, funded from the EU funds under the Operational Programme Environment.

Other major projects include the completed reconstruction of retention reservoir Kočičí rybníčky near Tachov, implemented in the public interest pursuant to Section 35 of the Forest Act.

Within the framework of remedying flood damage from 2012, projects of measures on the Dobrovodský stream and the Krásetínský stream in southern Bohemia were completed. Partly used for the remediation of flood damage from 2013 is the MoA programme, under which grants were used for four projects and other applications for the granting of support have been submitted. The impacts of flood flows in the Vltava River and the Sázava River basins in 2014 were remedied in the form of taking safety measures immediately after the flood.

Another project co-financed by the EU under the Programme for Cross-border Cooperation is the reconstruction of part of the Schwarzenberg Navigation Canal.

The Watercourse Administration for the Ohře River basin district completed in 2014 the preparation of documentation for remedying flood damage from 2013 on two tributaries of the Struhařský stream near Lubenec in Louny district.

As regards projects of measures taken in the public interest pursuant to Section 35 of the Forest Act, the construction of retention reservoir on the Lužnice River upstream of the municipality of Kalek in Chomutov area started and the damming of the Falcká ravine near Nečemice in Žatec area was repaired.

The EU funds under the Operational Programme Environment were used to carry out Stage I of the revitalization of the Bynovecký stream tributary in Nová Oleška in Děčín area. Own funds were used to complete the construction of the damming on the Studený stream to protect the municipality of Studený near Kundratice in Děčín area. Own funds were also used to excavate retention space on the Homolský stream, to repair damming upstream of the municipality of Velké Březno in the area of Ústí nad Labem and to carry out other maintenance and regulations of minor watercourses.

Also the Watercourse Administration for the Morava River basin district experienced in 2014 flood damage, namely on the Bratřejovský stream in the area of Vsetín. Minor actions to secure safety after the floods were taken in the catchment areas of the Moravská Sázava River, the Beskydy Mountains and the White Carpathians.

Within the framework of projects of measures taken in the public interest pursuant to Section 35 of the Forest Act, reconstructions of the stone damming on the Klepáčský stream and the Jelení stream in the Jeseníky Mountains and repairs of longitudinal and transverse reinforcement of the Bukový stream in the White Carpathians were completed.

The EU funds were used to complete the projects of repairs and extension of the damming on the Medůvka torrent and the Hornopasecký stream in Vsetín area, the Dražůvka stream in Šumperk area and the revitalization of the Borušovský stream in Svitavy area.
In addition, a number of measures to remove silt from river beds, maintenance and repairs of hydraulic structures were carried out, such as on the Stříbrný stream in Boršov in the area of Moravská Třebová, the Syrovínka stream in Zlín area, the Ratibořka stream and the Rokytenka stream in Vsetín area and repair of Blatnička water reservoir near Veselí nad Moravou.

Especially in the area of Uherské Hradiště, but also in other areas, the Watercourse Administration for the Morava River basin district must struggle with the activities of the European beaver on watercourses, which causes damage to riparian vegetation and riverbed regulations.

The Forests of the Czech Republic regularly keep the public informed of the completed measures through press releases.

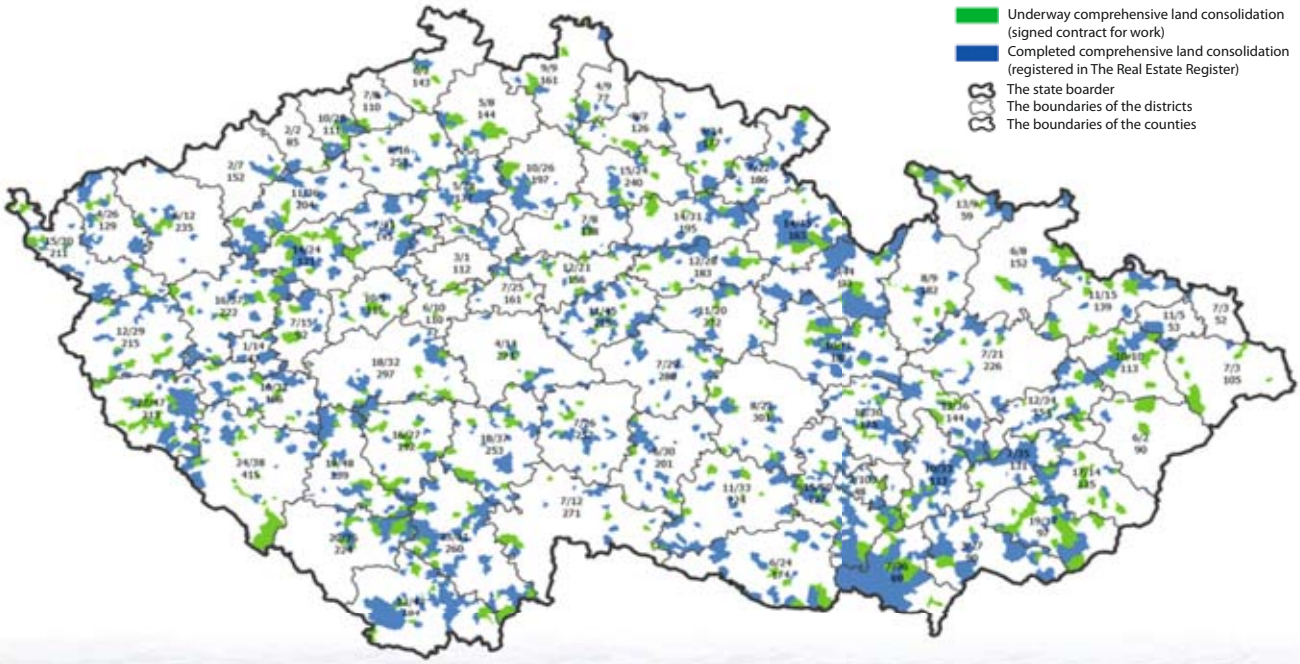
6.4 Land consolidation, structures used for amelioration

Land consolidation

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.

Land consolidation in public interest means spatial and functional reparcelling or fragmentation of properties in order to ensure the accessibility and utilization of land properties and settlement of their boundaries so as to create conditions for rational management of landowners. Land consolidation also provides the conditions for improving the quality of life in rural areas, improving the competitiveness of agriculture, improving the environment, protection and reclamation of land resources, water management, particularly in reducing the adverse effects of floods and addressing runoff conditions in the landscape and improving the ecological stability of the landscape. Land consolidation is carried out as comprehensive or simple consolidation and for some cadastral territories (municipalities) it may be the pre-requisite for their further development. Currently, simple and comprehensive land consolidation has been completed for more than 26.5% of area of agricultural land resources, for less than 9% of this area land consolidation is underway. An overview of land consolidation by the state of completion is shown in Figure 6.4.1.

Figure 6.4.1
Underway and completed comprehensive land consolidation as of 30 November 2014



Source: State Land Office

One of the main results of comprehensive land consolidation, in addition to the new digital cadastral map, is the plan of joint facilities. This plan through the package of measures forms a multifunctional backbone of the area in question. Under the plan of joint facilities there are drafted measures to make land properties accessible, erosion control measures to protect agricultural land resources, water management measures to safely drain surface water and protect the area against floods and measures to protect and improve the environment. Plan of joint facilities is closely connected with the municipal land-use plan and is subject to approval by the municipal council. Land properties designated for joint facilities are transferred by the plan to the municipal ownership. Given the clarified property rights, the State Land Office can begin construction of these facilities. Within the framework of implementation of joint measures, inter alia, erosion control measures in the area of 662 ha and water management measures in the area of 433 ha were completed as of 31 December 2014.

Funding for the design and implementation of the above mentioned measures is obtained from the state budget or these measures receive funding from the relevant EU funds,

Polder on the Antošovický stream in Ostrava

for example, the Rural Development Programme. In 2014, implementation of erosion control measures received funding in the amount of almost CZK 50.5 million, water management measures received funding in the amount of more than CZK 152 million. General overview of funds spent on land consolidation measures in 2014 is shown in table 6.4.1.

Table 6.4.1
The use of funds for land consolidation measures in 2014 (in thousands of CZK)

Non-investment activities *)		Implementation						Total
Total	of which	Total	of which					
	land consolidation proposals		roads	erosion control measures	water management measures	environmental measures	other	
381,446	259,994	1,792,429	1,550,617	50,468	152,411	13,697	25,235	**2,173,875**

Source: State Land Office
*Note: *) land consolidation, identification of parcels pursuant to Act no. 229/1991 Coll.*

Structures used for amelioration

The State Land Office carries out the management of structures used for amelioration of land properties and related hydraulic structures pursuant to Section 4, sub-section 2 of Act No. 503/2013 Coll., on State Land Office, and Section 56, sub-section 6 of the Water Act. The State Land Office thus ensures the management, maintenance, repairs and operation of main drainage and irrigation facilities taken over from the cancelled Agricultural Water Management Administration.

Dolánky hydraulic structure, reconstruction of the lock

The State Land Office, the Department of Water Management carries out the management of assets worth CZK 2.525 billion, the assets comprise 18,986 items, including 8,893.63 km of channels (5,125.711 km of open channels, 3,767.919 km of piped channels), 17 water reservoirs, 126 pumping stations (drainage and irrigation). In 2014, maintenance and repairs of these amelioration structures were carried out in the total amount of CZK 19.9 million and the amount of CZK 8.7 million was spent on ensuring the operation of pumping stations, including costs of electric energy.

Information about amelioration can be found in the Public Administration Information System – WATER.

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 regards 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 and its branch E 20-06 on the Vltava River, is a waterway of international importance. As defined in Regulation

of the European Parliament and of the Council No. 1315/2013 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 system TEN-T. In Annex 1, Part 1 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 with the highest level of importance. The necessity of increasing the parameters is also demonstrated by the Corridor Study from December 2014 prepared for the European Commission and the work plan of the European coordinator for this corridor, which for the Elbe Waterway and the Vltava Waterway identifies the critical point, namely, corridor-inadequate parameters for waterway class IV.

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 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 funds spent in the field of the development and modernization of waterways with significance to transport amounted in the year 2014 to CZK 263.1 million in total. Of this, the amount of CZK 260.7 milllion was allocated from the budget of the State Transport Infrastructure Fund.

To ensure trouble-free navigation on the Elbe-Vltava water way, the key point is the improvement of navigation conditions in 40 km stretch between Ústí nad Labem and the state border.

In 2014, significant amounts of funds were expended on the project „Sports Harbour Hluboká nad Vltavou", which aims to build a harbour for 73 small vessels and two passenger boats. The project was completed in 2014.

In 2014, the execution of the following capital investment projects started: modernization of the lock at Velký Osek hydraulic structure and modernization of the lock in Brandýs nad Labem. The aim of these capital investment projects is to eliminate the state of disrepair of these locks on the Elbe. Modernization of the locks will improve the reliability and, in particular, the safety of navigation.

Other capital investment projects have been launched with the aim of developing tourism in the locations of small ports and harbours. In 2014, the project of Petrov Leisure Harbour on the Bata Canal and the project of Purkarec Harbour on the Vltava River were launched. In 2014, there was completed the construction of small landing-places on the Elbe in the locations of Dolní Zálezly, Libochovany, Lovosice, Nučnice and Libotenice. From the perspective of recreational boating, the most important event was the completion of the tender and start of construction of a new lock at Hněvkovice weir along with riverbed regulations, representing the completion of the Vltava waterway in the stretch between Hněvkovice hydraulic structure and Týn nad Vltavou. In 2016, after its completion, České Budějovice will be connected via a continuous waterway in a length of 98 km to Orlík water reservoir.

Significant funds were also expended on intensive preparation of other capital investment projects for comprehensive development of the waterway network.

River Boards, s. e., in 2014 expended funds on repairs, maintenance, construction, reconstruction and modernization of wateways, having used MoA subsidies under the programme „Remedying the impacts of floods on state-owned water management property", sub-programme 129 272, or their own funds. In the Vltava River Board, s. e., these projects included, for example: the main navigation canal on the Vltava River between Troja and Podbaba, repair of reinforcement in km 3.15 (CZK 2.74 million), the Vltava River between km 43.4 and 43.7 in Klecany reservoir – removal of deposits beneath the ZOO (CZK 4 million), the Vltava River between km 227.20 and 227.60 in Hluboká nad Vltavou – repair of bank reinforcement (CZK 1.19 million), the Berounka River in Radotín port – removal of deposits (CZK 2.71 million). The Elbe River Board, state enterprise used funds from the MoA subsidy programme for the projects such as: hydraulic structure Dolní Beřkovice, reconstruction of the suspension of the lower gate of the small lock (CZK 723.0 thousand), hydraulic structure Klavary, repair of plastering in bypasses (CZK 1.96 million), hydraulic structure Čelákovice, protection against corrosion of the gate (CZK 2.01 million). The Morava River Board, state enterprise used its own funds for the following projects: the Bata Canal, cleaning of the locks Vnorovy I, II and the lock Nedakonice (CZK 248 thousand), repair of the lock Vnorovy II (CZK 294 thousand), the Bata Canal between Huštěnovice and Batice, Stage I, between km 37.527 and 39.150 – repair of reinforcement (CZK 1.9 million), the Bata Canal in km 6.941 – repair of sluice at Orlé Bridge (CZK 436 thousand).

Table 6.5.1. shows the funds that River Boards, s. e., spent in 2014 on water transport.

Table 6.5.1
Funds used in 2013 for repairs, maintenance, construction, reconstruction and modernization of waterways in thousands of CZK

River Board, s. e	Own funds	Operating grants	Investment grants	Grants in total	Own funds and grants in total
Elbe River Board, s. e.	11,151	23,391	0	**23,391**	11,151
Vltava River Board, s. e.	52,388	33,332	0	**33,332**	52,388
Morava River Board, s. e.	3,402	0	0	**0**	3,402
River Boards, s. e., in total	**66,941**	**56,723**	**0**	**56,723**	**66,941**

Source: River Boards, s. e.

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7. Public water supply and sewerage systems

7.1 Drinking water supply

In the year 2014 water supply systems supplied water to 9.917 million inhabitants in the Czech Republic, i.e. 94.2% of the total population.

All water supply systems produced in total 575.4 million m³ of drinking water. 468.7 million m³ of drinking water were supplied and charged for (invoiced), including 316 million m³ of drinking water for households. Drinking water losses amounted to 96 million m³, i.e. 16.6% of water intended for consumption.

The data provided by the Czech Statistical Office was collected on the basis of information provided by 1,395 reporting units, i.e. 274 professional water supply and sewerage system operators and a selected set of 1,121 municipalities operating the water management infrastructure on their own.

Trends and development of indicators in the field of drinking water supply are shown in table 7.1.1 and chart 7.1.1.

Table 7.1.1
Water supply from water supply systems in the years 1989 and 2008–2014

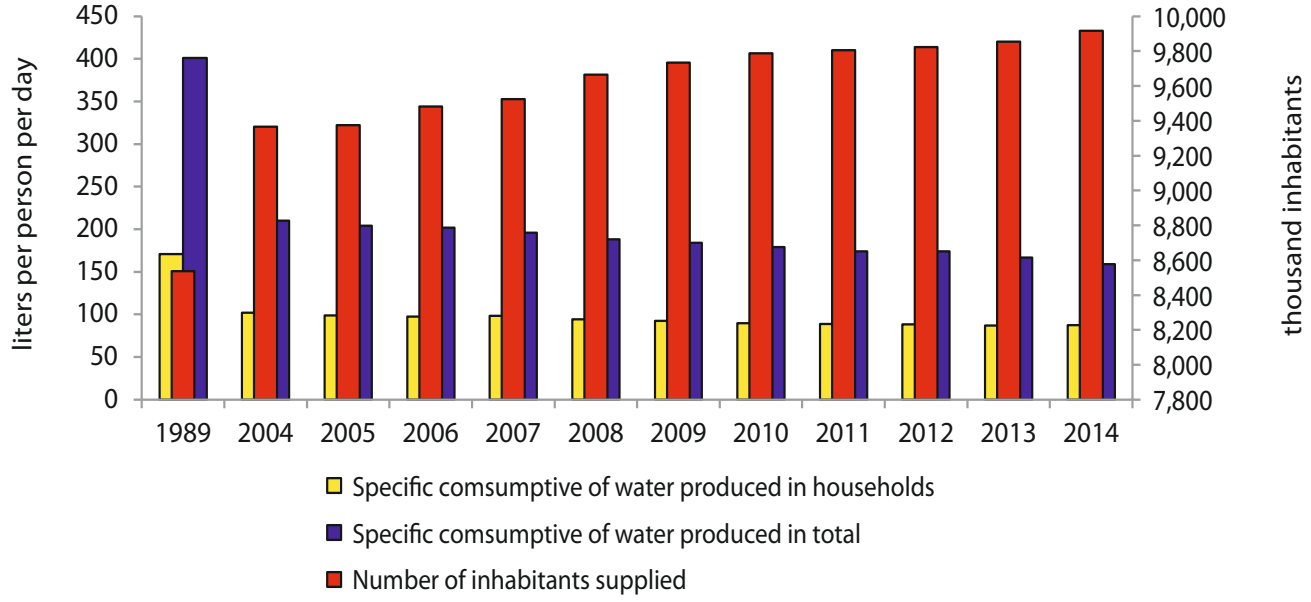
Indicator	Measurement unit	1989	2008	2009	2010	2011	2012	2013	2014
Inhabitants (mean)	thousand inhabitants	10,364	10,430	10,491	10,517	10,495	10,509	10,511	10,525
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537.0	9,664.2	9,733.0	9,787.5	9,805.4	9,823.1	9,854.4	9,917.2
	%	82.4	92.7	92.8	93.1	93.4	93.5	93.8	94.2
Water produced by water supply systems	million m³/year	1,251.0	667.1	653.3	641.8	623.1	623.5	600.2	575.4
	% as of 1989	100.0	53.3	52.2	51.3	49.8	49.8	48.0	46.0
Water invoiced in total	million m³/year	929.4	516.5	504.6	492.5	486.0	480.7	471.8	468.7
	% as of 1989	100.0	55.6	54.3	53.0	52.3	51.7	50.8	50.4
Specific consumptive use of water produced	l/person/day	401.0	188.0	184.0	180.0	174.0	173.8	166.8	158.9
	% as of 1989	100.0	46.9	45.8	44.8	43.4	43.3	41.6	39.6
Specific quantity of water invoiced in total	l/person/ day	298.0	146.0	142.0	137.9	135.8	134.1	131.1	129.4
	% as of 1989	100.0	49.0	47.7	46.3	45.6	45.0	44.0	43.4
Specific quantity of water invoiced for households	l/person/ day	171.0	94.2	92.5	89.5	88.6	88.1	87.1	87.2
	% as of 1989	100.0	55.1	54.1	52.3	51.8	51.5	50.9	51.0
Water losses per 1 km of water mains	l/km/day	16,842.0*)	4,889.0	4,705.0	4,673.0	4,220.0	4,351.0	3,856.9	3,417.2
Water losses per 1 inhabitant supplied	l/person/ day	90.0*)	37.0	35.0	35.0	32.0	33.0	29.5	26.5

Source: Czech Statistical Office
*Note: *) Data for water supply systems run by the main operators.*

Water consumption continued to show a downward trend in 2014. Similarly, specific quantity of water invoiced in total decreased. Specific quantity of water invoiced for households ranges around the same level as in the previous year 2013. The nationwide decline represents 1.7 l/person/day for water invoiced.

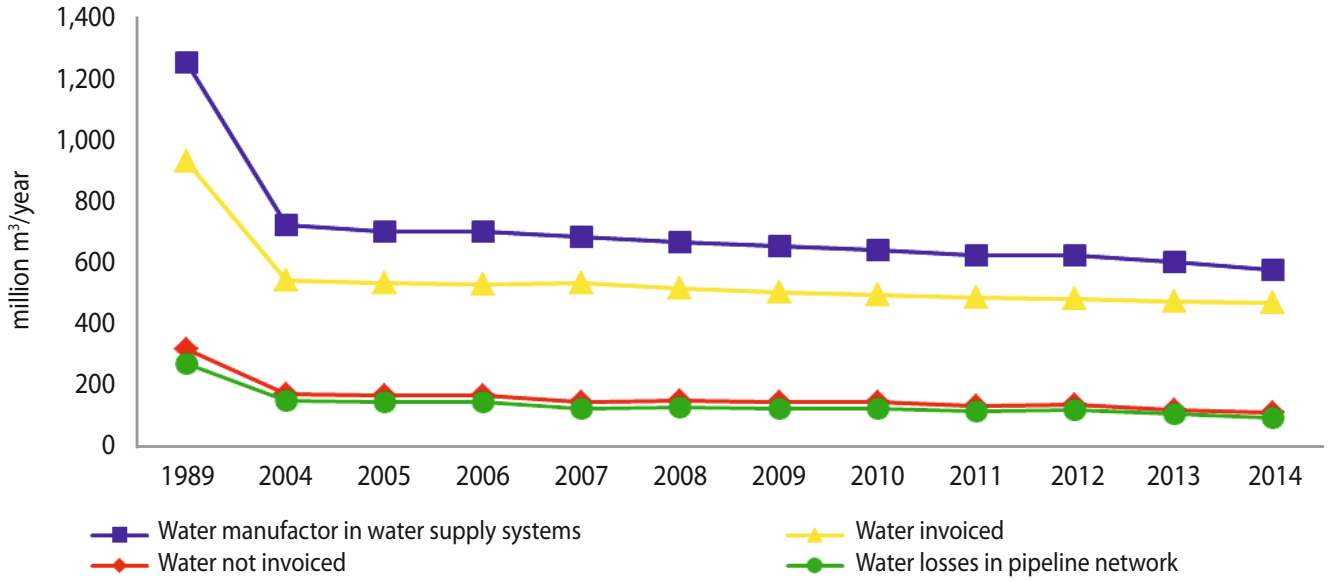
The Ohře River - Želina

Chart 7.1.1
Development in the number of inhabitants supplied and the specific consumptive use of water invoiced in the years 1989 and 2004–2014



Source: Czech Statistical Office

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 2004–2014



Source: Czech Statistical Office

The highest percentage of inhabitants supplied with drinking water from water supply systems in 2014 was recorded in the Karlovarský region (100%), in the City of Prague (100%) and in the Moravskoslezský region (99.9%), the lowest percentage of inhabitants supplied with drinking water was recorded in the Plzeňský region (84.1%) and the Středočeský region (85.4%).

As regards Karlovarský, Olomoucký and Moravskoslezský regions, the percentage of inhabitants supplied with water slightly decreased in the year-on-year comparison with the total number. This decrease is only due to a higher precision of the methodology of calculating the number of inhabitants connected.

In 2014, the length of water supply network was extended by the total of 1,467 km and reached the length of 76,948 km. New construction of new water supply systems and completion of the existing ones thus increased in 2014 the number of inhabitants supplied by 62,765. The length of water supply network per one inhabitant supplied was 7.76 m.

The number of water supply connections increased by 37,221 and amounted to 2,063,187. The number of water meters installed increased by 34,883 and amounted to 2,057,061. The number of connected inhabitants per one water supply connection is 5. Markedly shown in these figures are the results of the relatively intensive construction of family houses.

Table 7.1.2
Inhabitants supplied, production and supply of water from water supply systems in 2014

Region	Inhabitants		water produced in water supply systems	Water invoiced	
	actually supplied with water from water supply systems	percentage of inhabitants supplied with water of the total number		Total	for households
	(number)	(%)	(thousand m³)	(thousandm³)	(thousand m³)
City of Prague	1,251,075	100.0	97,452	76,436	48,397
Středočeský	1,118,222	85.4	44,903	48,250	33,828
Jihočeský	572,676	89.9	32,788	25,149	17,695
Plzeňský	482,765	84.1	28,397	24,181	15,389
Karlovarský	299,880	100.0	18,769	14,100	9,090
Ústecký	800,482	97.1	49,305	36,415	26,383
Liberecký	402,706	91.8	26,258	18,876	12,777
Královéhradecký	517,783	93.8	29,326	22,633	14,661
Pardubický	501,972	97.3	27,034	21,988	13,878
Vysočina	487,721	95.6	23,490	20,714	13,840
Jihomoravský	1,135,411	97.0	62,063	54,335	37,901
Olomoucký	575,533	90.5	28,048	24,730	17,334
Zlínský	551,921	94.2	28,036	22,841	15,258
Moravskoslezský	1,219,032	99.9	79,542	58,056	39,554
Czech Republic	**9,917,179**	**94.2**	**575,411**	**468,704**	**315,985**

Source: Czech Statistical Office

7.2 Discharge and treatment of municipal waste waters

In 2014, in total 8.828 million inhabitants in the Czech Republic lived in buildings connected to sewerage systems, which is 83.9% of the total population. In total 446.1 milion m³ of waste waters (excluding rain water charged for) were discharged into sewerage systems. Of this quantity, 96.9% of waste waters were treated (excluding rain water), which amounts to 432.3 million m³.

Development trends of discharge and treatment of waste waters from sewerage systems are shown in a longer time series in table 7.2.1 and chart 7.2.1.

The number of inhabitants connected to sewerage systems increased by 123,937 in comparison with the previous year 2013. The quantity of waste waters discharged to sewerage systems, without rain water, decreased in the year-on-year comparison by 9.2 million m³. The indicator of the percentage of the treated waste waters, without rain water, decreased in the year 2014 by 0.5%. This decrease is due to a change in methodology for monitoring the reporting of major operators.

Similarly to the previous year 2013, the highest percentage of inhabitants connected to sewerage systems in 2014 was recorded in the City of Prague (98.9%) and the Karlovarský region (95.7%), the lowest percentage was recorded in the Středočeský region (70.3%) and the Liberecký region (68.5%).

The number of inhabitants living in buildings connected to public sewerage systems increased in most of the regions, the decrease was recorded only in the Pardubický region. This decrease is due to a change in methodology for monitoring the reporting of major operators.

In the year 2014, the sewerage network was extended by 1,639 km and reached the total length of 45,257 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 2013 by 63 waste water treatment plants, i.e. to 2,445.

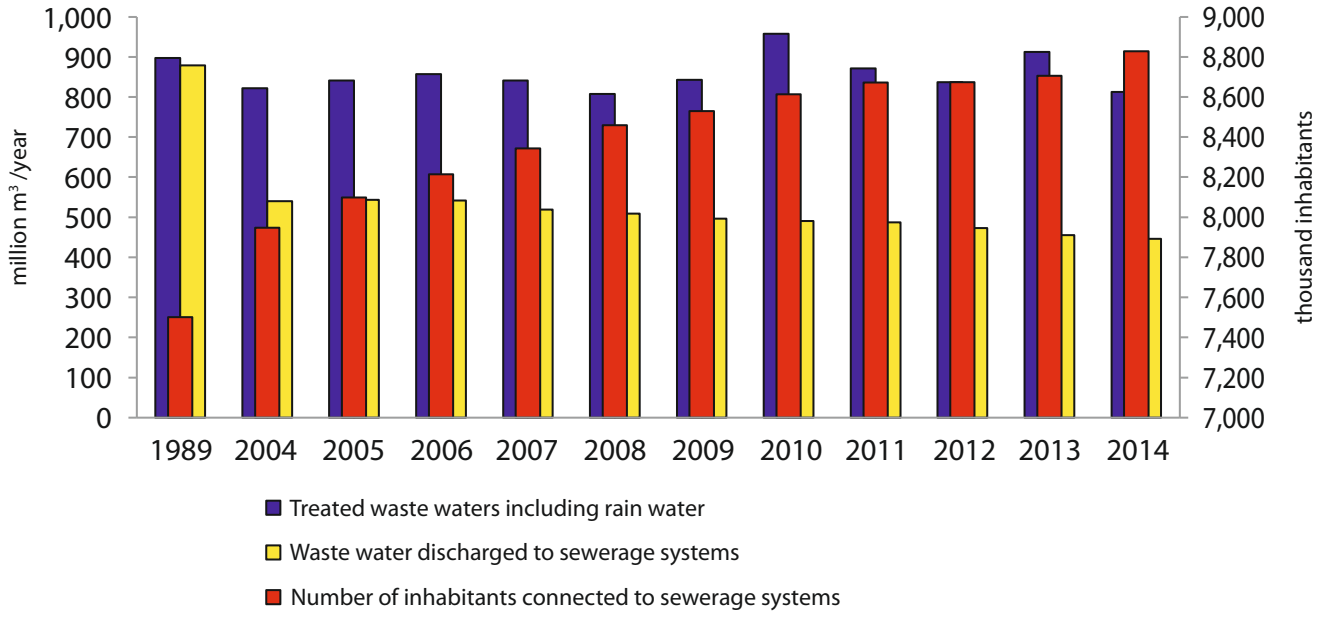
Brno Hydraulic structure

Table 7.2.1
Discharge and treatment of waste waters from sewerage systems in the years 1989 and 2008–2014

Indicator	Measurement unit	Year							
		1989	2008	2009	2010	2011	2012	2013	2014
Inhabitants (mean)	thousands of inhabitants	10,364	10,430	10,491	10,517	10,495	10,509	10,511	10,525
Inhabitants living in buildings connected to sewerage systems	thousands of inhabitants	7,501	8,459	8,530	8,613	8,672	8,674	8,705	8,828
	%	72.4	81.1	81.3	81.9	82.6	82.5	82.8	83.9
Waste waters discharged to sewerage systems (excluding rain water charged for) in total	million m^3	877.8	508.8	496.4	490.3	487.6	473.2	455.3	446.1
	% as of 1989	100	58	56.6	55.9	55.5	53.9	51.9	50.8
Treated waste waters including rain water [1)]	million m^3	897.4	807.5	842.9	957.9	871	836.7	912.3	812.2
Treated waste waters in total excluding rain water	million m^3	627.6	485	472.7	471.5	472.2	459.4	443.4	432.3
	% as of 1989	100	77.3	75.4	75.2	75.3	73.2	70.6	68.9
Percentage of treated waste waters excluding rain water [2)]	%	71.5	95.3	95.2	96.2	96.8	97.1	97.4	96.9

Source: Czech Statistical Office
Note: [1)] In the year 1989 the data relate 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 the years 1989 and 2004–2014



Source: Czech Statistical Office

Table 7.2.2
Number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated waste waters in the year 2014 in the individual regions

Region	Inhabitants living in buildings connected to public sewerage systems		Waste waters discharged to public sewerage systems (excluding rain water charged for)	Treated waste waters excluding rain water	
	Total	Percentage of the total number of inhabitants	Total	Total	Percentage
	(number)	(%)	(thousand m³)	(thousand m³)	(%)
City of Prague	1,237,653	98.9	76,103	76,103	100.0
Středočeský	920,218	70,3	48,218	48,142	99.8
Jihočeský	548,057	86.0	27,034	25,508	94.4
Plzeňský	472,934	82.4	28,446	26,698	93.9
Karlovarský	286,891	95.7	13,858	13,828	99.8
Ústecký	683,287	82.8	29,077	28,592	98.3
Liberecký	300,552	68.5	13,921	13,529	97.2
Královéhradecký	425,246	77.1	19,740	18,568	94.1
Pardubický	375,817	72.8	17,851	17,590	98.5
Vysočina	444,680	87.2	18,782	16,459	87.6
Jihomoravský	1,058,109	90.4	52,458	50,888	97.0
Olomoucký	512,112	80.5	26,289	24,781	94.3
Zlínský	548,107	93.6	26,992	25,373	94.0
Moravskoslezský	1,014,818	83.2	47,304	46,199	97.7
Czech Republic	**8,828,481**	**83.9**	**446,072**	**432,260**	**96.9**

Source: Czech Statistical Office

7.3 Development of water and sewerage charges

Based on the survey carried out by the Czech Statistical Office, the average price of water rate excluding VAT in the year 2014 amounted to 34.80 CZK/m³ and the average price of sewerage charge after refining the method of calculation amounted to 29.80 CZK/m³.

Prior to the Act No. 76/2006 Coll. coming into force, i.e. before 2006, the information on the average price of water rates and sewerage charges was based on the information sent upon request of the Ministry of Agriculture by selected operators of water supply and sewerage systems. Through the amendment to this act, the owners or, as the case may be, the operators if authorized by the owner, pursuant to the provision in Section 36, Subsection 5 of the Act on Public Water Supply and Sewerage Systems and on amendments to some laws, were imposed the obligation to send to the Ministry of Agriculture every year by 30 April at the latest complete information on the comparison of all items for calculating the price according to price regulations for water and sewerage charges and the real data achieved in the previous calendar year. The data on prices collected by the Ministry of Agriculture include VAT and are obtained through a weighted average. With regard to the deadline for submitting the comparison, these data cannot be evaluated and processed before the closing date of this publication. For this reason, this publication states only the data established by the Czech Statistical Office as the percentage of revenues from sales to the consumers and the quantity of the drinking water supplied and the waste water discharged (from 2013 newly including rain water charged for). Aggregate data of the Czech Statistical Office for the Czech Republic are not obtained through a weighted average and cannot therefore be compared with the data collected by the Ministry of Agriculture.

Table 7.3.1
Strike prices of water and sewerage charges (excl. VAT) in the years 2013 and 2014

Indicator	Unit	2013	2014	Index 2014/2013
Water rates in total	CZK million	15,894	16,298	1.03
Water invoiced in total	million m^3/year	472	468.7	0.99
Average price of water rate	CZK/m^3	33.7	34.8	1.03
Sewerage charges in total	CZK million	15,118	15,376	1.02
Waste waters discharged to sewerage systems*)	million m^3/year	517.0	515.2	1.00
Average price of sewerage charges	CZK/m^3	29.2	29.8	1.02

Source: Czech Statistical Office
*Note: *) from 2013 including rain water charged for*

Based on the survey carried out by the Czech Statistical Office, the highest average price of water rate was established, similarly to the previous year 2013, in the Ústecký region, where it reached the amount of CZK 40.90/m^3. Compared to the national average this price was thus higher by 17.5%. The highest average price of sewerage charges was established, similarly to the previous year 2013, in the Liberecký region and in the amount of CZK 39.00/m^3 exceeded the national average by 30.9%. On the contrary, the lowest average price of water rate (CZK 30.80/m^3) was established in the Jihomoravský and Pardubický regions. The lowest average price of sewerage charges (CZK 24.70/m^3) was established in the Vysočina region. Average prices in the respective regions are shown in table 7.3.2.

Revitalization on the Jelení stream in Čaková in Bruntál district

Koryčany hydraulic structure

Table 7.3.2
Water consumption, average prices of water and sewerage charges excluding VAT in the year 2014

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)	(l/person/day)	(CZK/m^3)	(CZK/m^3)
City of Prague	167.4	106.0	38.3	27.8
Středočeský	118.2	82.9	37.5	28.6
Jihočeský	120.3	84.7	35.3	27.6
Plzeňský	137.2	87.3	33.3	25.0
Karlovarský	128.8	83.0	36.4	31.7
Ústecký	124.6	90.3	40.9	38.4
Liberecký	128.4	86.9	38.5	39.0
Královéhradecký	119.8	77.6	31.9	31.7
Pardubický	120.0	75.7	30.8	33.5
Vysočina	116.4	77.7	33.8	24.7
Jihomoravský	131.1	91.5	30.8	31.4
Olomoucký	117.7	82.5	30.9	29.0
Zlínský	113.4	75.7	34.1	29.1
Moravskoslezský	130.5	88.9	31.5	29.1
Czech Republic	**129.5**	**87.3**	**34.8**	**29.8**

Source: Czech Statistical Office

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8. Fisheries and fishpond management

8.1 Fisheries and fishpond management

Fisheries constitute an important part of agriculture in the Czech Republic, in terms of fish production belonging to successful areas of agricultural production. Czech fisheries include fish farming in ponds and recreation fishing.

The most important area of fishery with the irreplaceable landscaping function is fish farming in ponds (aquaculture). In the Czech Republic, there are approximately 24 thousand fishponds and reservoirs covering the total area of about 52 thousand ha. Of this, more than 41 thousand ha are used for fish farming. Fishpond management is historically the most significant area of fishery in the Czech Republic. It is a traditional part of agriculture and in terms of fish production it belongs to successful areas of agricultural production. In addition, fishponds have many other important non-production functions, such as landscaping, retention, flood control, and they also contribute to the preservation of biodiversity, etc. Moreover, fishpond management is logically related to the service sector.

An important area of fisheries is management in running waters, support for the existence of fish species, maintaining the balance of fish communities in surface waters, namely in streams and other water bodies. Superstructure works as a consequence of the biological aspects of the function of fish management in the fishing grounds. Fishing and angling activities are carried out by approximately 370 thousand of recreational fishermen, who are largely organized in two major fishing associations (Czech Fishing Association, Moravian Fishing Association). There are about 2,000 fishing grounds, reaching an area of 42 thousand ha of water bodies in the Czech Republic.

Marketable fish production in 2014 reached a total of 20,135 tonnes, of which 19,453 tonnes come from fish farming in ponds. Special fish breeding facilities (mainly trout) yielded 645 tonnes and 37 tonnes of fish were fished out of storage reservoirs. Over the last decade, the production did not change significantly and fluctuated depending mainly on the climatic conditions, the pressure of piscivorous predators or restrictions relating to nature conservation requirements. Table 8.1.1 shows the production of marketable fish in the longer period of time.

Table 8.1.1
Market production of farmed fish in the Czech Republic (tonnes)

Species	2008	2009	2010	2011	2012	2013	2014
Carp	17,507	17,258	17,746	18,198	17,972	16,809	17,833
Total	**20,395**	**20,071**	**20,420**	**21,010**	**20,763**	**19,358**	**20,135**

Source: MoA and the Czech Fish Farmers Association

In total 8,472 tonnes of live fish were supplied to the domestic market in 2014, which means a decrease of 560 tonnes, compared to 2013. Exports of live fish reached 8,407 tonnes, representing an increase of 34 tonnes, compared to 2013. In 2014, a total of 2,138 tonnes of live-weight of fish were processed, i.e. 10.6% of the harvested quantity of marketable fish.

Horka hydraulic structure

Table 8.1.2
The use of marketable fish produced by fish farming in the Czech Republic (thousands of tonnes)

Year	Production in total	Of this *)		
		sales of live fish on domestic market	processed fish (live weight)	exports of live fish
2008	20.4	8.4	1.7	9.0
2009	20.1	9.1	1.6	8.9
2010	20.4	9.5	1.8	9.1
2011	21.0	9.7	2.1	8.8
2012	20.8	9.5	2.3	8.6
2013	19.4	9.0	2.4	8.4
2014	20.1	8.5	2.1	8.4

Source: MoA and the Czech Fish Farmers Association
*Note: *) Includes stocks at the beginning and end of the year, losses and imports of live freshwater fish*

The species composition of marketable fish is relatively stable and has not changed significantly, compared to the previous years. Of the total volume of harvested fish, carp accounted for 88.6%, salmonids 3.4%, herbivorous fish 3.9%, tench 0.8% and predatory fish accounted for 1.0% of the total harvested quantity. The domestic market continued to prefer supplies in the form of live fish, which in the past three years accounted for 42 – 47% of the production obtained by fish farming. Exports of live fish corresponded during the three previous years to 42 – 43% of the total catch and demonstrated stable interest in fish produced largely by member organizations of the professional association. Fish processing plants processed into products 11 – 12% of produced freshwater marketable fish.

The consumption of freshwater fish produced by fish farming in 2014 reached the value of 0.975 kg/person/year. To calculate the total consumption of freshwater fish per capita in 2014, population number of 10,538,275 as of 31 December 2014 was considered. The total consumption of fish obtained by fish farming including fish caught on hook reached 1.34 kg/person/year. Sports and recreational fishermen caught in 2014 a total of 3,812 tonnes of fish. Development of fish consumption is shown in table 8.1.3.

Table 8.1.3
Fish consumption in the Czech Republic (kg/person/year)

Species	2008	2009	2010	2011	2012	2013	2014
Fish in total	5.5	5.5	5.1	5.0	4.7	3.7	3.7
of this freshwater fish	1.3	1.4	1.4	1.5	1.5	1.4	1.3

Source: MoA and the Czech Fish Farmers Association
Note: Since 2003, fish obtained by fish farming and fish caught on hook are included.

The sector of fisheries is associated with a number of other industries, such as trade in fishing requisites or tourism. Recreational fishing is also associated with many other industries. Numerous manufacturing companies, shops and businesses in tourism depend on sales of their products to sports fishermen.

Under the Operational Programme Fisheries 2007–2013, fishermen can use funds under Priority Axis 2 – Aquaculture, fishery and aquaculture products processing and marketing and Priority Axis 3 – Measures of common interest. Priority Axis 2 is focused on investments in aquaculture production, compensation payments to improve the aquatic environment, measures in the area of fish health and investments in fish processing and marketing. Priority Axis 3 concerns the development of new markets, promotion campaigns, reintroduction of European eel (Anguilla anguilla) and pilot projects.

Ministry of Agriculture issued in 2014 a decision to grant subsidies within Call 16, Call 18, Call 19 and Call 20 of accepting applications for subsidies from the Operational Programme Fisheries 2007–2013 in the following numbers:

Under measure 2.1 Measures for Productive Investments in Aquaculture, in 2014 the decisions were issued to grant subsidies for 50 business plan projects a) with the aggregate subsidy amounting to approximately CZK 30.3 million, for 20 business plan projects b) with the aggregate subsidy amounting to approximately CZK 16.1 million and for 20 business plan projects c) with the aggregate subsidy amounting to approximately CZK 31.1 million. In 2014, under measure 2.1, the decisions were issued to grant subsidies in the total amount of approximately CZK 77.6 million for 90 projects.

Under measure 3.1 Common Activities, in 2014 the decisions were issued to grant subsidies for 18 business plan projects a) with the aggregate subsidy amounting to approximately CZK 4.6 million and for 3 business plan projects b) with the aggregate subsidy amounting to approximately CZK 2.9 million. In 2014, under measure 3.1, the decisions were issued to grant subsidies in the total amount of approximately CZK 7.5 million for 21 projects.

Under measure 3.2 Measures for the Protection and Development of Aquatic Animals and Plants, in 2014 the decisions were issued to grant subsidies for 5 business plan projects b) (reintroduction of European eel) with the aggregate subsidy amounting to approximately CZK 4.9 million.

Under measure 3.3 Support and Development of New Markets and Promotion Campaigns, in 2014 the decisions were issued to grant subsidies for 1 business plan project a) with the aggregate subsidy amounting to CZK 3.0 million and for 1 business plan project e) with the aggregate subsidy amounting to approximately CZK 1.5 million. In 2014, under measure 3.3, the decisions were issued to grant subsidies in the total amount of CZK 4.5 million for 2 projects.

Ministry of Agriculture in 2014 continued in the pre-financing of projects under the Operational Programme Fisheries 2007–2013. In 2014, under measure 2.1 Measures for Productive Investments in Aquaculture, subsidies in amount of CZK 47.2 million were disbursed for 89 projects. Under measure 2.4 Investments in Fish Processing and Marketing, subsidies in amount of CZK 2.6 million were disbursed for 6 projects. Under measure 3.1 Common Activities, subsidies in amount of CZK 5.9 million were disbursed for 13 projects. Under measure 3.2 Measures for the Protection and Development of Aquatic Animals and Plants, subsidies in amount of CZK 8.9 million were disbursed for 34 projects. Under measure 3.3 Support and Development of New Markets and Promotion Campaigns, subsidies in amount of CZK 5.1 million were disbursed for 4 projects. Under measure 3.4 Pilot Projects, subsidies in amount of CZK 5.0 million were disbursed for 5 projects. Under measure 5.1 Technical Assistance, subsidies in amount of CZK 3.3 million were disbursed for 4 projects.

Table 8.1.2
Operational Programme Fisheries 2007–2013

Priority Axis 2 – Aquaculture, fishery and aquaculture products processing and marketing	
Number of measure	**Name of measure**
Measure 2.1	Measures for productive investments in aquaculture
Measure 2.2	Measures for the protection of the aquatic environment
Measure 2.3	Measures in the area of fish health
Measure 2.4	Investments in fish processing and marketing
Priority Axis 3 – Measures of common interest	
Number of measure	**Name of measure**
Measure 3.1	Common activities
Measure 3.2	Measures for the protection and development of aquatic animals and plants
Measure 3.3	Support and development of new markets and promotion campaigns
Measure 3.4	Pilot projects

Source: MoA

8.2 Changes in the fishpond system

The programme 229 210 „Renewal, Dredging and Rehabilitation of Fishponds and Water Reservoirs" was followed by the programme of the Ministry of Agriculture 129 130 „Support for Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs".

The objective of the programme 129 130 is a renewal and rehabilitation of fishponds and water reservoirs, aimed at improving their water management and non-productive functions. Emphasis is placed on strengthening the retention of water in the landscape and improving operational safety of fishponds and reservoirs in connection with flood situations.

Under the programme 129 130, one project with the total expenditures amounting to CZK 3.024 million was completed in 2014. In more detail, the information on the funding of this programme is presented in chapter 9.

Fishing vats

Jirkov hydraulic structure

Žaneta Sontágová – Water for the Future - People Extract Water from Glaciers - 4th class, Generála Janouška primary school, Praha 9, The City of Prague

9. State financial support for water management

9.1 Financial support provided by the Ministry of Agriculture

In 2014, the Ministry of Agriculture provided support amounting to the total of approximately CZK 1.0 billion under its programmes 129 180 „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II" and 129 250 „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 programme 129 180, based on the approved documentation, was scheduled for the years 2009–2013 and subsequently extended until mid 2015. This programme in 2014 aimed to complete co-financing of multi-year projects. The follow-up subsidy programme 129 250, originally scheduled for the years 2013–2015, has been extended until 2017. The above support was granted to the investors both in the form of subsidies and in the form of „subsidised loans".

In 2014, in the form of subsidies, a total of 34 projects received from the state budget support amounting to approximately CZK 178 million under the sub-programmes 129 182 and 129 252 (measures aimed at water supply systems) and a total of 55 projects were granted support amounting to approximately CZK 771 million under the sub-programmes 129 183 and 129 253 (measures aimed at sewerage systems).

„Subsidised loans" were provided for the projects under programmes 129 180 „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II" and 229 310 „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure". They were granted in the form of compensation of payments for a part of interest rates for commercial loans in case of projects requiring larger investments in the years 2008–2013. In 2014, investors of 102 projects with loan contracts amounting to a total of approximately CZK 1,578 million were reimbursed a part of interest on these loans in the total amount of CZK 29.8 million. Of this sum, capital investment funds amounted to CZK 0.3 million. Non-capital investment funds that are not included in programme funding amounted to CZK 29.5 million (in table 9.1.1, the line „Subsidies for part of interest on commercial loans" includes both capital investment and non-capital investment funds).

Under the programme 129 140 „Support for Remedying Flood Damage to Infrastructure of Water Supply and Sewerage Systems" there started in 2013 the implementation of sub-programme 129 144 in response to floods from the year 2013. Under the sub-programme 129 144 „Support for Remedying Damage Caused by Floods in 2013", a total of 24 projects were granted support in the total amount of CZK 469.3 million in 2014.

Table 9.1.1
State budget funds provided in the year 2014 under the programmes 129 140, 129 180 and 129 250 of the Ministry of Agriculture, including subsidy for a part of interest on commercial loans in millions of CZK

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 the floods	Ministry of Agriculture in total
Subsidies under MoA programmes	177.900	771.301	469.281	**1,418.482**
Subsidies for a part of interest on commercial loans	9.365	20.441	0.000	**29.806**
Subsidies in total	**187.265**	**791.742**	**469.281**	**1,448.288**
Refundable financial assistance	0	0	0	0
Total	**187.265**	**791.742**	**469.281**	**1,448.288**

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 the years 2010–2014, provided by the Ministry of Agriculture in millions of CZK

Financial resource	2010	2011	2012	2013	2014
Refundable financial assistance	0	0	0	0	0
State budget subsidies	2,092	2,194	1,631	1,151	1,448
Support from the state budget	**2,092**	**2,194**	**1,631**	**1,151**	**1,448**
Subsidised loan (EIB and CEB)	0	0	0	0	0
Support in total	**2,092**	**2,194**	**1,631**	**1,151**	**1,448**

Source: MoA

In 2014, the Ministry of Agriculture implemented programmes aimed at rehabilitation of water management property owned by watercourse administrators, within the process of remedying damage caused by floods in the previous years, as well as at the implementation of flood control measures, the renewal, dredging and rehabilitation of fishponds and water reservoirs, increasing the functionality and utility of hydraulic structures, the renewal and construction of irrigation detail and optimization of irrigation systems, and the management of state-owned property on minor watercourses.

The use of state funds for capital and current expenditures is shown in tables 9.1.3 and 9.1.4.

Table 9.1.3
State funds provided by the Ministry of Agriculture in the year 2014 for capital and current expenditures under programme financing (programme 129 270) in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
129 270	Remedying the impacts of floods on state-owned water management property II	278.540

Source: MoA

Table 9.1.4
State funds provided by the Ministry of Agriculture in the year 2014 for capital and current expenditures under programme financing (programmes 129 120, 129 260, 129 130, 129 160) in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
129 120	Flood prevention II	161.481
129 260	Flood prevention III	0.290
129 130	Renewal, dredging and rehabilitation of fishponds and water reservoirs	3.024
129 160	Support for the renewal and construction of irrigation detail and optimization of irrigation systems	0

Source: MoA

In 2014, the Ministry of Agriculture terminated the administration of the programme 129 120 „Support for Flood Prevention II", which from the year 2010 included five sub-programmes thematically focusing on support for flood control measures with retention, support for flood control measures along watercourses, support for increasing the safety of hydraulic structures, support for delimitation of flood areas and studies of runoff conditions and support for water retention in dry polders on minor watercourses. Subject-oriented nature of these sub-programmes allowed their mutual cohesion, augmenting thus the effects of flood prevention on the watercourse.

The subject matter of sub-programme 129 122 „Support for Flood Control Measures with Retention" was the construction and the renewal of polders, the construction and rehabilitation of water reservoirs, the restoration of the existing reservoirs and polders and also the construction and restoration of structures in areas designated for overflowing.

Sub-programme 129 123 „Support for Flood Control Measures along Watercourses" was aimed at increasing channel capacity of watercourses, flood banks, flood ways and diversion tunnels, increasing the flow capacity of weirs, rehabilitation of dams and stabilization of watercourse channels.

The objective of sub-programme 129 124„Support for Increasing the Safety of Hydraulic Structures" was the rehabilitation of the existing hydraulic structures to improve their safety during floods and to increase the operating potential of hydraulic structures in operational flood management. Priority measures were those that may increase the effect of other flood control measures downstream of the respective hydraulic structure.

Sub-programme 129 125 „Support for Definition of Flood Areas and Studies of Runoff Conditions" was in particular aimed at identification of the extent of floods and plotting this extent to maps. The defined flood areas, approved by the water authority, are one of the land use limits and are used by the public administration bodies particularly in issuing building permits. The studies of runoff conditions are sources of information on flood areas prior to and after the implementation of the proposed flood control measures, on the quantification of the extent of flood damage and evaluation of the effectiveness of the proposed technical and non-technical measures.

Sub-programme 129 126 „Support for Water Retention in Dry Polders on Minor Watercourses" responded to the repeating occurrences of „flash floods" and focused on reducing risks of floods from torrential rains on minor watercourses through

Miřejovice hydraulic structure, reconstruction of the lock bottom

a construction (reconstruction) of dry polders in combination with the possible regulation of watercourse channels.

The measures under the programme 129 120 were implemented by watercourse administrators (the River Boards, s. e., the Forests of the Czech Republic, s. e., and the minor watercourse administrators appointed by the Ministry of Agriculture pursuant to Section 48, Subsection 2 of the Act No. 254/2001 Coll., on Water and on the amendment to certain laws (the Water Act) as amended). The implementation of flood control measures under the sub-programme 129 126 was ensured by municipalities only.

Through the institution of the so-called promoter, the programme allowed the involvement of municipalities, association of municipalities, towns and regions in the process of proposing flood control measures which were then implemented by the watercourse administrators.

Under the programme 129 120 „Flood Prevention II", a total of 16 projects of flood control measures along watercourses were completed in 2014. To finance these projects, investment funds in the amount of CZK 26 million from the state budget and investment funds in the amount of CZK 135.5 million from EIB loan were used. The following table 9.1.5 shows some of the major projects under the programme 129 120.

Flood control measures on the Litavka River

Table 9.1.5
Use of funds for selected major projects under the programme 129 120 „Flood Prevention II" in millions of CZK

Watercourse administrators	Name of project	Implementation period	Total costs	Subsidies in 2014
Elbe River Board, s. e.	The Elbe in Ústí nad Labem, left bank – flood protection Q_{100} on the Elbe	09/12–09/14	338.231	5.348
Morava River Board, s. e.	Flood control measures in Velké Meziříčí	08/12–12/14	191.669	34.938
Vltava River Board, s. e.	Flood control measures on the Litavka River – Stage I, section Králův Dvůr	09/12–09/14	148.237	17.686

Source: MoA

Table 9.1.6
Use of state budget funds in the year 2014 under the programme 129 120 by the individual watercourse administrators in millions of CZK

Owners and administrators	Use of funds in 2014	
	Investments	Non-investments
Elbe River Board, s. e.	5.375	0
Vltava River Board, s. e.	58.898	0
Ohře River Board, s. e.	0.118	0
Oder River Board, s. e.	0	0
Morava River Board, s. e.	76.431	0
Forests of the Czech Republic, s. e.	0	0
Minor watercourse administrators – municipalities	20.659	0
Total	**161.481**	**0**

Source: MoA

In mid-2014, the Ministry of Finance approved the documentation for the programme 129 260 Support for Flood Prevention III, and so the Ministry of Agriculture could launch the administration of this programme. The programme builds on the previous stage, with a greater emphasis on the implementation of measures with retention effect.

The programme is divided into four sub-programmes thematically focusing on support for the preparatory project work for major construction, support for flood control measures with retention, support for flood control measures along watercourses.

Sub-programme 129 262 „Support for Project Documentation for Land Proceeding" and sub-programme 129 263 „Support for Project Documentation for Building Proceeding" are designed to support the preparation of project documentation for major flood control measures that will be implemented under other sub-programmes.

The subject matter of sub-programme 129 264 „Support for Flood Control Measures with Retention" are the establishment of new retention areas, modifications to existing water reservoirs with retention effect to improve the level of flood protection, measures for flooding and support for water retention in dry polders on minor watercourses.

Sub-programme 129 265 „Support for Flood Control Measures along Watercourses" is aimed at the construction of protective dikes, the increase in the capacity and the stabilization of watercourse channels (especially in urban areas).

The implementation of measures under the programme 129 260 will be ensured, as in previous years, by watercourse administrators (the River Boards, s. e., the Forests of the Czech Republic, s. e., and the minor watercourse administrators appointed by the Ministry of Agriculture pursuant to Section 48, Subsection 2 of the Water Act). 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 process of proposing flood control measures which will then be implemented by the watercourse administrators.

Under the programme 129 260 „Support for Flood Prevention III" only two projects under the sub-programme 129 263 were funded with the use of investment funds from the state budget in the amount of CZK 0.290 million.

In 2014, under the programme 129 270 „Remedying the Impacts of Floods on State-owned Water Management Property II" the Ministry of Agriculture continued to implement the sub-programme 129 272 „Remedying the Impacts of Floods from 2013".

In 2014, under the sub-programme 129 272, financial support was granted to a total of 220 projects. Most of them, 114 projects, were implemented by the watercourse administrator Vltava River Board, s. e. The following table 9.1.7 shows some of the major projects under this sub-programme.

Table 9.1.7
Summary of costs of selected major projects under the sub-programme 129 272 in millions of CZK

EDS/ SMVS 129 272	Name of project	Implementation period	Total costs of the project	Investor
4015	The Vltava River, right bank, river km 44.300–44.600 – repair of bank reinforcement	2014	4.938	Vltava River Board, s. e.
4045	The Dobrovodský stream, river km 6.500–9.500 – repair of reinforcement – flood damage	2014	1.468	Vltava River Board, s. e.
1025	Remedying flood damage 06/2013 – the Mandava River in Varnsdorf (km 5.400–5.900)	2014	13.451	Ohře River Board, s. e.
6011	The Lower Elbe – Restoring the flow profile – canalized section	2014	22.733	Elbe River Board,s. e.

Source: MoA

Table 9.1.8
Use of state budget funds in the year 2014 under the sub-programme 129 272 in millions of CZK

Owners and administrators	Use of funds in 2014	
	Investments	Non-investments
Elbe River Board, s. e.	8.242	101.702
Vltava River Board, s. e.	0	91.642
Ohře River Board, s. e.	40.215	36.239
Forests of the Czech Republic, s. e.	0	0.500
Total	**48.457**	**230.083**

Source: MoA

In 2014, the Ministry of Agriculture continued to implement the programme 129 130 – „Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs".

The administration of the programme 129 130 was in the beginning postponed due to certain changes in the notification deadline and the consequent delays in the process of approving the programme documentation. For this reason, the funding of this programme effectively began as late as in the year 2008.

Programme 129 130 includes three sub-programmes, namely sub-programme 129 132 „Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs", which ended on 31 December 2013 and in 2014 was subjected to the final evaluation; furthermore, sub-programme 129 133 „Remedying Flood Damage to Dams and Structures of Fishponds and Water Reservoirs" and sub-programme 129 134 „Remedying Emergency Situations in Fishponds and Water Reservoirs". These sub-programmes will be terminated in 2015.

The objective of this programme is to improve the technical status of fishpond system in the Czech Republic and to renew the water management functions of fishponds and water reservoirs with focus on increasing their safety during floods, including the prevention of the threat of special floods, as well as to dredge fishponds and water reservoirs in order to restore their storage capacity and thus fully renew their function. Another objective of this programme is to support construction of new water reservoirs that will be included in flood control system, in dry periods used for controlled increase of discharge and, at the same time, they will also be used for extensive fish farming. Both objectives of the programme are aimed at reducing the impacts of extreme hydrological situations, i.e. the floods and drought.

In 2014, one project was financed under the following breakdown: non-capital investment funds of the state budget in the amount of CZK 1.824 million and capital investment funds in the amount of CZK 1.200 million were expended. No funds from the EIB loan were used.

The rules governing the submission of project applications for inclusion in the programme 129 130 lay down the detailed terms. The most important rules include:

- The applicant may only be an entity carrying out business in primary agricultural production, carrying out subsidized fish farming and fishing operations in a fishpond or water reservoir, which proves farming on more than 20 hectares of water bodies in the course of the last year and submits documents certifying the ownership, lease or other legal relationship in respect of at least 20 hectares of water bodies.

- For the prepared project, the applicant shall submit the documents of ownership (lease or other legal relationship) of the land affected by the construction, the affirmative standpoints of the river basin administrator (River Board, state enterprise), of the administrator of the watercourse downstream of the respective hydraulic structure, and of the competent water authority having subject-matter and local jurisdiction.

- In case of construction of a new water reservoir or a system of water reservoirs, which must be larger than 2 hectares, the main purpose of such hydraulic structure will be the protection against floods and drought, i.e. only extensive fish farming will be permitted.

Table 9.1.11 shows a major project included in the programme 129 130.

Table 9.1.9
Use of state budget funds for selected major projects under the programme 129 130 in millions of CZK

Applicant	Name of project	Implementation period	Total costs	Subsidies in 2014
BioFish s.r.o.	Reconstruction of fishpond dam and structures at the Dolní Kladiny pond after damage	06/13–06/14	12.209	3.024

Source: MoA

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

The aim of the sub-programme is to reduce the need for water for irrigation, reduce energy intensity of irrigation and make use of positive environmental and non-economic effects of irrigation as one of the adaptation measures to mitigate the impacts of climate change, and thereby improve the competitiveness of agricultural enterprises and stabilize agricultural production.

Revitalization of the Stropnice River

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, the programme 129 160 including its sub-programme 129 162 were reopened and new applications for support accepted. In 2014, no subsidy was paid.

Programme 129 170 „Support for Improving the Functionality of Hydraulic Structures"

The primary objective of the programme is to ensure, in particular, the following: to prevent major failures of the hydraulic structures, in respect of their technical condition and improvements in the quality of water in reservoirs. The main aspects include the reliability and safety of hydraulic structures and the quality of water in reservoirs, the deterioration of which might have significant impacts.

The programme ended on 31 December 2013 and in 2014 was subjected to the final evaluation.

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

The Operational Programme Environment is a sectoral 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). The applications for support are received by regional offices of the State Environmental Fund of the Czech Republic, those submitted under the priority axis 6 and under the intervention area 1.3.2 are also received by the Agency for Nature Conservation and Landscape Protection of the Czech Republic. Dates for submitting the applications are published in the form of Calls on the portal www.opzp.cz. For the year 2014, the receipt of applications for the granting of support under the Operational Programme Environment was opened within three Calls. Under the priority axis 1, there were Calls aimed at reducing flood risks (Call 58 with the allocation of CZK 0.5 billion), reducing water pollution and improving drinking water quality (Call 61 with the allocation of CZK 4 billion and Call 63 for large projects to reduce pollution from municipal sources with the allocation of CZK 2 billion). Under the priority axis 6, Call 58 was announced, through which it was possible to apply for support to optimize landscape water regime.

Under the Operational Programme Environment, the priority axis 1 – Improving Water Management Infrastructure and Reducing Flood Risks, funds from the ERDF/Cohesion Fund in the total amount of CZK 9,921.5 million were used in 2014. Under the priority axis 1 – Improving Water Management Infrastructure and Reducing Flood Risks, the Ministry of the Enviroment in 2014 approved (registration sheet issued + positive status of the project) a total of 201 projects with the total eligible costs in the amount of CZK 3.5 billion. Of that, 49 projects fell under the area of intervention 1.1 Reducing Water Pollution (the total support from the EU funds amounted to CZK 2.9 billion) and 152 projects fell under the area of intervention 1.3 Reducing Flood Risks (the total support from the EU funds amounted to CZK 593.0 million). Under the priority axis 6 – Improving the State of Nature and Landscape, the Ministry of the Environment in 2014 approved (registration sheet issued + positive status of the project) a total of 300 projects with the total eligible costs in the amount of CZK 1.1 billion falling under the area of intervention 6.4 – Optimization of the Landscape Water Regime.

Table 9.2.1.1
Grant funds from the Operational Programme Environment for the financing of measures in the area of water management in 2014

Priority axis	Area of support	Number	Total eligible costs (CZK)	ERDF/CF (CZK)	SEF grant (CZK)	SEF loan (CZK)
1	1,1	49	2,883,390,371	2,450,881,816	144,169,518	84,222,413
	1,2	-	-	-	-	-
	1,3	152	593,050,940	504,093,297	29,652,547	-
Priority Axis 1 in total		**201**	**3,476,441,311**	**2,954,975,113**	**173,822,065**	**84,222,413**
6	6,4	300	1,127,687,322	879,783,638	55,633,378	4,796,982
Priority Axis 6 in total		**300**	**1,127,687,322**	**879,783,638**	**55,633,378**	**4,796,982**
Total		**501**	**4,604,128,633**	**3,834,758,751**	**229,455,443**	**89,019,395**

Source: IS Central

Table 9.2.1.2
Use of funds from the Operational Programme Environment in 2014 in CZK

Priority Axis	EU grant (CZK)	SEF co-financing (CZK)	SEF loan (CZK)	State budget co-financing (CZK)
1.1 – Reducing Water Pollution	7,059,605,174	649,225,702	233,954,828	0
1.2 – Improving Drinking Water Quality	2,039,584,212	177,826,731	57,851,191	0
1.3 – Reducing Flood Risks	822,336,214	47,978,024	0	1,845,841*)
Priority Axis 1 in total	**9,921,525,600**	**875,030,457**	**291,806,019**	**1,845,841**
6.4 – Optimization of the Landscape Water Regime	1,248,318,878	83,430,075	1,304,863	1,759,207
Total	**11,169,844,479**	**958,460,532**	**293,110,882**	**2,943,285**

Source: IS Central
*Note: *) Funds used by the Fire Rescue Department of the Moravskoslezský region, beyond the MoE chapter.*

Support under ISPA and Cohesion Fund

Based on the Government Resolution No. 149 of 14 February 2001, the Ministry of the Environment of the Czech Republic was established the Intermediate Body and the State Environmental Fund of the Czech Republic the implementing agency for the implementation of ISPA projects. The pre-accession instrument ISPA was designed for sectors of transport and environment in EU candidate countries. Projects were submitted by applicants from the public sector and total costs of the implementation of the project could not be lower than € 5 million, with the exception of technical assistance projects.

In total 106 projects applying for support under ISPA programme or the Cohesion Fund were registered by the State Environmental Fund of the Czech Republic. As of 31 December 2006, of the total number of 106 projects, the European Commission approved 40 projects, of which 1 was the project of Technical Assistance and 1 was the project of remedying flood damage, approved by the European Commission in the non-standard procedure. In December 2006, the European Commission approved the last four applications for the granting of support from the Cohesion Fund. These four approved projects are in the amount of € 89.9 million, i.e. CZK 2,518.1 million (using the exchange rate of 28 CZK/1 €) of the total costs, or € 80.0 million (CZK 2,241.2 million) of the eligible costs with the promised support in the amount of € 55.0 million (CZK 1,539.2 million). One of these 4 projects was the project „Reconstruction of existing and construction of new sewers and the provision of the quantity and quality of drinking water in the Jihlava region" (the eligible costs in the amount of € 15.0 million, promised support in the amount of € 10.0 million). Due to the failure to start the implementation of the project by the extended deadline for the eligibility of costs (31 December 2011), the project was formally terminated.

The total costs of 39 projects approved in the standard procedure amount to € 959.7 million (CZK 26,871 million, of which the eligible costs amount to € 867.4 million (CZK 24,287 million). CF/ISPA support allocated to these projects amounts to € 598.2 million (CZK 16,750 million). As of 31 December 2014, support in the amount of € 583 million (CZK 16,324 million) was received from the European Commission.

In addition to the above, there was also implemented the project to remedy flood damage, comprising 13 sub-projects that were supported from ISPA fund. The total costs of this project amounted to € 17.7 million (CZK 495.6 million), of which support granted by the European Commission amounted to € 14.6 million (CZK 408.8 million). The remaining part was covered by the final beneficiaries. The final report was approved by the European Commission at the end of 2004.

The use of ISPA/CF funds in 2014

In the sector of environment, the payments for the Cohesion Fund projects are effected through the chapter 315/MoE of the state budget. No funds from the state budget were transferred to the final beneficiarie in 2014. European Commission approved in 2014 the final report for the last CF project and based on this the final payment in the total amount of € 1.9 million was released to the account of the National Fund of the Ministry of Finance.

Table 9.2.1.3
The allocation of funds for types of measures (approved ISPA and CF projects)

Type of measure	Number of projects	Eligible costs (millions of €)	Podpora z FS/ISPA (millions of €)
Water	35	748.2	526.6
Monitoring of hydrosphere	1	16.9	12.7
Technical Assistance	1	2.3	1.7
Floods ISPA 2002	1 (13 sub-projects)	17.7	14.6
Total	**38**	**785.1**	**555.6**

Source: The State Environmental Fund of the Czech Republic

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 € 50 million (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 the priority axis 3, six projects belong to the priority axis 4 and the remaining projects belong to the priority axis 1.

Flood control measures in Planá nad Lužnicí

Priority Axis 1 – Improving Water Management Infrastructure and Reducing Flood Risks

Table 9.2.2.1
Large projects approved by the European Commission – a decision to grant support was issued

Project ID	Name of project	Area of support
541408	Improving water quality in the Jihlava River and the Svratka River upstream of the water reservoir Nové Mlýny*)	1.1 and 1.2
255577	Project of water protection in the Dyje River Basin – Stage II	1.1 and 1.2
222184	Cheb area – environmental measures*)	1.1
959882	Clean Bečva River II	1.1
569740	Reconstruction and extension of sewerage system in Brno	1.1
253217	Improving water quality in the Upper Morava River basin – Stage II	1.1

Source: The State Environmental Fund of the Czech Republic
*Note: *) After approval of projects by the European Commission, financial ceiling for the category of large projects was raised from € 25 million to € 50 million, which is not reached by these projects.*

Table 9.2.2.2
Large projects submitted/accepted

Project ID	Name of project	Area of support
31001615	Total reconstruction and extension of Central Waste Water Treatment Plant in Prague at Císařský ostrov*)	1.1

Source: The State Environmental Fund of the Czech Republic
*Note: *) The project was submitted in 2014 under Call 63, but the application for support was rejected in 2015.*

Table 9.2.2.3
Large projects reclassified from the category of large projects to the category of individual projects

Project ID	Name of project	Area of support
248481	Modernization of biological waste water treatment plant Pardubice	1.1
1288601	Ústí nad Orlicí – sewerage system and waste water treatment plant	1.1
1612488	Sewerage system and water in the Křivoklát area (the project was abandoned)	1.1 and 1.2

Source: The State Environmental Fund of the Czech Republic

Table 9.2.2.4
Large projects – cancelled by the applicant/not accepted/not approved for funding

Project ID	Name of project	Area of support
576008	Completion of sewerage system Ostrava	1.1
374628	Ensuring the quality of drinking water in the water supply system in southwest Moravia, Žďár region	1.2
464737	Total reconstruction and extension of Central Waste Water Treatment Plant in Prague at Císařský ostrov, construction 1 – New water line including connection	1.1

Source: The State Environmental Fund of the Czech Republic

9.3 The State Environmental Fund of the Czech Republic

The State Environmental Fund 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 2014, the revenues of the SEF reached 115.9% of the budgeted revenues. Of the total revenues of the SEF as of 31 December 2014, the revenues from charges for environmental pollution reached the amount of CZK 1,388 million.

Revenues from fines and financial penalties in 2014 reached the amount of CZK 88.3 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.

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

Revenues from charges and penalties broken down to environmental compartments (water only)	Budget 2014 (millions of CZK)	Revenues as of 31 December 2014 (millions of CZK)	Reality in %	Difference (millions of CZK)
Waste water	170.0	209.8	123.4	39.8
Groundwater	290.0	359.4	123.9	69.4

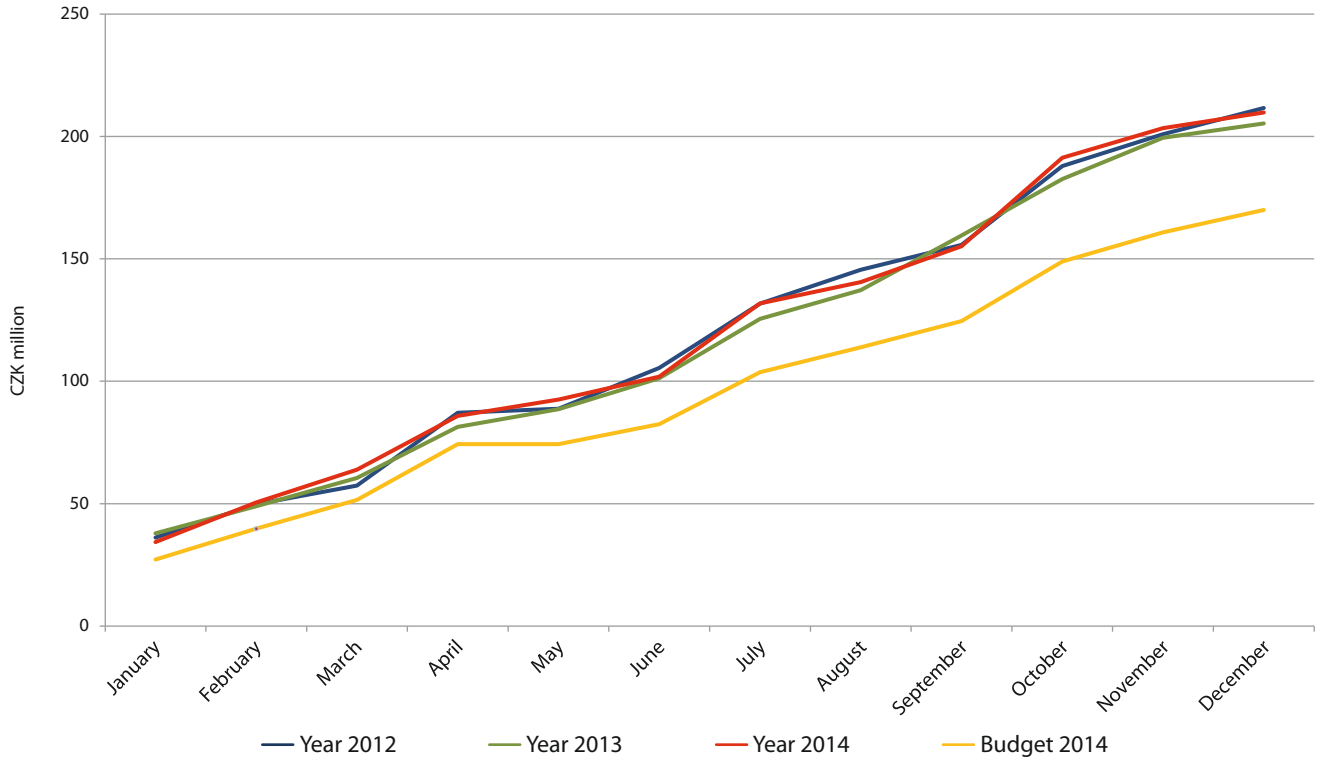
Source: The State Environmental Fund of the Czech Republic

Skalník water reservoir

The collection of charges for waste water discharges into surface waters in the year 2014 reached 123.4% of the budgeted revenues. For the year 2014, the planned budget revenues in the amount of CZK 170 million for this item were exceeded by CZK 39.8 million. The amount of charges collected for waste water discharges has recently been more or less constant. This is due to the fact that in the last 20 years considerable support was granted for the construction and intensification of waste water treatment plants and construction of sewerage systems. Therefore, at present virtually no municipal waste water treatment plants do not pay charges for pollution discharged, because the quality of waste water discharged is good enough (COD_{Cr} below 40 mg/l) that polluters do not pay this charge. They pay only for waste water discharged, in the amount of CZK 0.10/m^3. Smaller waste water treatment plants of up to approx. 2,000 PE do not pay even these charges as they are paid from 100,000 m^3/year of waste water discharged.

Revitalization of the Blanice River in Vlašim

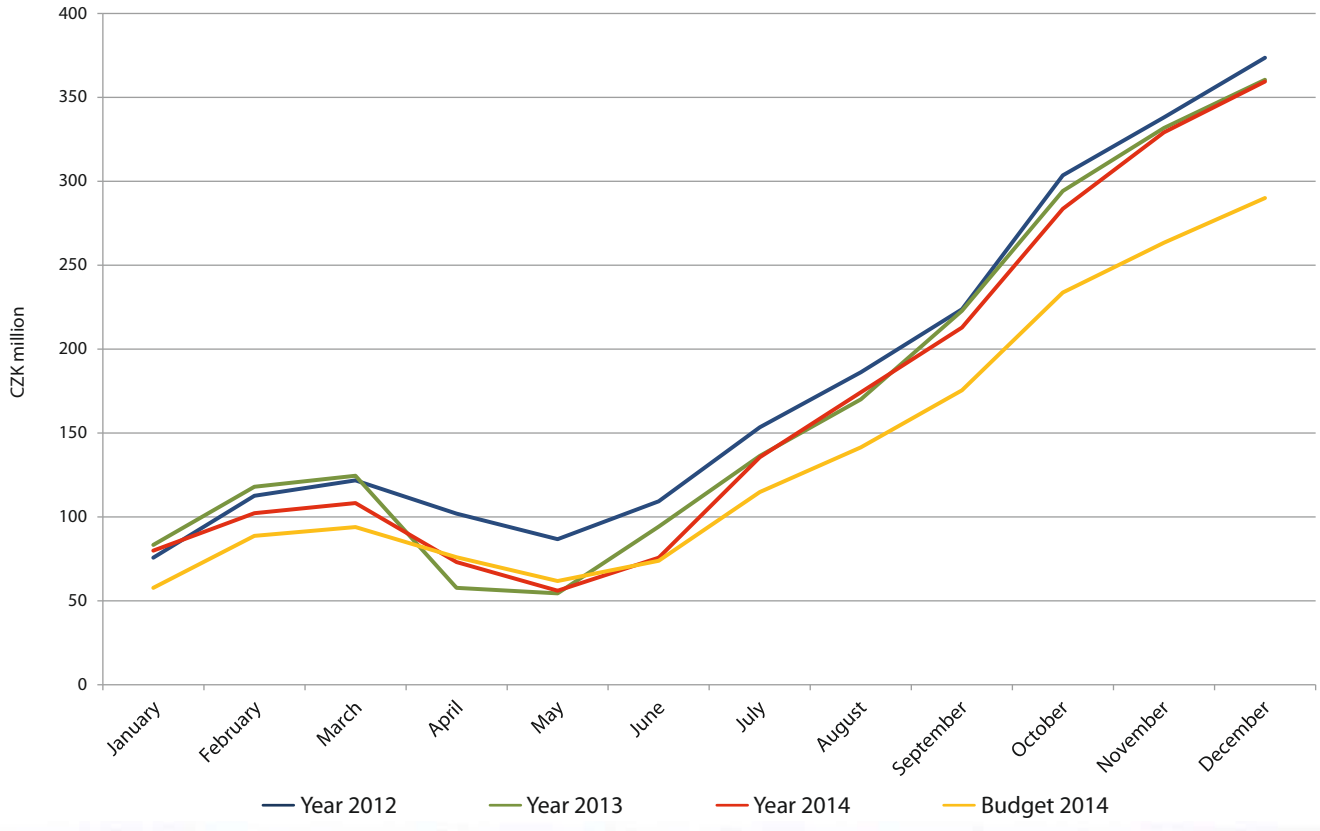
Chart 9.3.1
Development of revenues from charges for waste water in the years 2012–2014 in millions of CZK



Source: The State Environmental Fund of the Czech Republic

The collection of charges for groundwater abstractions in the year 2014 reached 123.9% of the budgeted revenues. For the year 2014, the planned budget revenues in the amount of CZK 290 million for this item were exceeded by CZK 69.3 million.

Chart 9.3.2
Development of revenues of from charges for groundwater in the years 2012–2014 in millions of CZK



Source: The State Environmental Fund of the Czech Republic

National programmes

The State Environmental Fund of the Czech Republic administered in 2014 the following three 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)

The aim of the programme is to compensate for losses of economic development of municipalities located in the regions of national parks. Support under the programme is provided for the implementation of measures in four sub-programmes. One of them is the sub-programme IV.2 C Waste Water Treatment, under which the project „Intensification of Waste Water Treatment Plant in Dolní Dvůr" is currently before the final evaluation. The approved subsidy for the project amounts to CZK 507 thousand. Under the sub-programme IV.4 „The Increase in Support from the SEF in Co-financing OPE Projects", 15 projects in the total amount of support of CZK 13.4 million are administered. In 2014, the final evaluation of 1 project in the total amount of support of CZK 0.5 million was carried out. The amount of CZK 2.1 milion of support is to be used for the remaining 14 projects.

Programme of Support for Water Management Activities (Annex V of the MoE Directive No. 6/2010)

In accordance with the requirements of Directive No. 2000/60/EC to carry out monitoring of waters and establish a comprehensive system for the assessment of status or potential of waters and water bodies, including the implementation into a single assessment information system, 6 projects with a support amounting to a total of CZK 11.0 million were administered in 8 sub-programmes V.1.A and V.1.B. Final evaluation was carried out for 5 projects with a support in the total amount of CZK 9.6 million, the remaining 1 project with a support in the total amount of CZK 1.1 million will be completed in 2015. Under the sub-measure V.3 Programme of Support for Water Management Projects, in total 3 projects were administered. In 2014, final evaluation was carried out for the project „Waste Water Treatment Plant Třeboň" with a support in the total amount of CZK 29.9 million and a loan in the amount of CZK 54.7 million, with the first installment of the loan having been due as of March 2015. Furthermore, a subsidy in the total amount of CZK 55 million was definitively granted in 2014 for the projects „Sewerage System and Waste Water Treatment Plant Hlubočky" and „Waste Water Treatment Plant and Sewerage System Tlučná".

MoE Programme 115 270 „MoE Remedying Damage Caused by Natural Disasters"

Currently, the State Environmental Fund of the Czech Republic administers under the MoE programme „MoE Remedying Damage Caused by Natural Disasters", MoE sub-programme 115272 „MoE Floods 2013" four categories of measures that concern water management activities. The first category refers to the group „Reconstructions and Repairs of Waste Water Treatment Plants", which includes 16 applications for support amounting to a total of approximately CZK 4.33 million. Furthermore, 18 measures related to the category „Restoring the Natural Function of Watercourses" amounting to a total of approximately CZK 41.01 million are administered under the

Cascade at the outlet from the reservoir Jezeří

programme. This category includes, for example, measures related to the recovery of watercourse channels or floodplains. Another group is „Decontamination of Surface Water and Groundwater Resources", which includes four applications for support amounting to a total of approximately CZK 80 thousand (this mostly applies to the decontamination of wells). The last group is „Restoring Migration Passability and Ecological Stability of the Landscape". In this group 39 measures in the total amount of CZK 138.2 million are administered. This category includes not only actions related to water management activities (for example, renewed technical structures on a pond/polder, excavation of sediments from ponds or restoration of fish passes), but also other actions that do not relate to this area (for example, remediation of landslides, rock mass, restoration of meadows).

The SEF CR also provided from national funds the amount of CZK 1,570 million for co-financing OPE projects in the sector of water management. The structure of funding is shown in table 9.3.2.

Table 9.3.2
The structure of co-financing OPE projects in the sector of water management

Item	CZK
Approved subsidy	229,455,443
Approved loan	89,019,395
Subsidy paid	958,460,532
Loan paid	293,110,882

Source: The State Environmental Fund of the Czech Republic

9.4 Financial support from international cooperation and the EU

Projects focusing on the area of water management are also implemented under the Objective 3 programmes. The implementation of water management projects continued also in 2014. Control of these projects was entrusted to the Centre for Regional Development of the Czech Republic, which performs it through a network of offices in NUTS II regions. The offices store the project documentation, including documents on the provided and used support from the foreign resources.

Under the Objective 3 programmes that are represented by Operational Programmes of Cross-border Cooperation Czech Republic – Polish Republic, Czech Republic – Slovak Republic, Czech Republic – Austria, Czech Republic – Free State of Saxony and Czech Republic – Free State of Bavaria, support continued to be granted for the projects focusing on environmental protection, contributing to environmental status improvements and aiming to prevent risks (natural and technological risks including climate change, water management, etc.). Transnational Cooperation Operational Programme for Central Europe focused, in addition to the other thematic objectives, in the 2007–2013 programming period also on transfer and exchange of experience in the field of environmental protection. The given topics were also addressed under the Operational Programme for Inter-regional Cooperation (programme INTERREG IVC). Given the advanced stage of the programming period, the implementation of most projects meeting the above mentioned criterion of focus was completed during 2014. All remaining projects listed below are expected to be completed in 2015.

During 2014, the implementation of projects from previous years as well as projects launched or newly approved in 2014 continued.

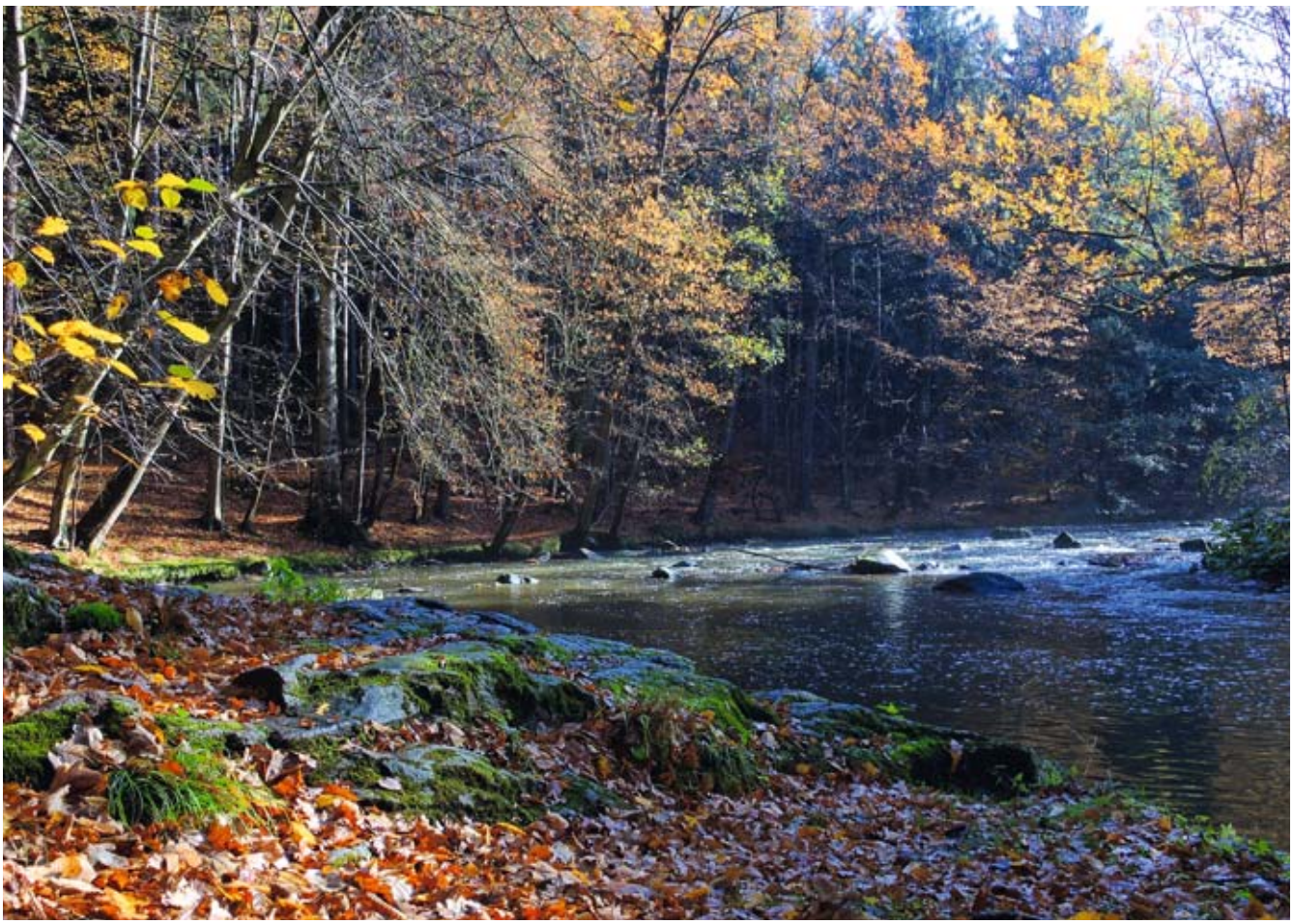
1. The following projects under the Operational Programme of Cross-border Cooperation between the Czech Republic and Austria in the field of environmental protection were implemented and completed:
- „Schwarzenberg navigation canal – cultural heritage revives" (with ERDF grant in the amount of 856,272 € for the Czech partners) was approved in November 2011 and its execution is currently under way,
- „Flood control measures on the Malše River in Leopoldschlag, planning" (with no financial participation of the Czech partner) was approved in November 2012 and its execution is currently under way,

Two projects continue to be implemented, namely:
- „Flood control measures on the Malše River in Leopoldschlag, extension" (with no financial participation of the Czech partner) was approved in June 2013,
- „Joint measures in the area of water protection on the border formed by the Dyje River" (with ERDF grant in the amount of 1,447,507 € for the Czech partner) was approved in May 2012.

2. Operational Programme of Cross-border Cooperation between the Czech Republic and the Free State of Bavaria supported the implementation of the following projects:
- „Integrated soil and water protection in the Drachensee Basin" with a grant in the amount of 229,500 € (the implementation of the project continued and was also terminated in 2014),
- „Contaminants in the environment of the Eger – the Ohře River" with a grant in the amount of 162,000 € (the implementation of the project continued and was also terminated in 2014).

3. Under the Operational Programme of Cross-border Cooperation between the Czech Republic and the Free State of Saxony, the following projects continued to be executed:
- „Jointly used groundwaters on the Czech-Saxonian border" – GRACE, with a grant in the amount of 991,701 €,
- „AQUAMUNDI" focusing on education, with water as the key element, with a grant in the amount of 1,408,858 €.

In the period under review, there was completed the implementation of a number of projects that were thematically related to the sector of water management. They included:
- „The research of possibilities how to minimize the contents of organic harmful substances in drinking water resources in the Krušné hory Mountains" with a grant in the amount of 1,224,850 €,
- „VODAMIN" focusing on the quality of groundwater and surface water and water supply, with a grant in the amount of 3,435,975 €,
- „The Elbe River – our shared heritage", focusing on education, with a grant in the amount of 467,118 €,
- „Flood protection and remediation of flood damage Hrádek nad Nisou – Zittau focusing on the rehabilitation of damaged meadows along the Nisa River in the area of Trojmezí and acquisition of water level monitoring system on the Nisa River and tributaries", with a total grant in the amount of 1,219,179 €,
- „Reconstruction of border communications and bridges after the floods in 2010" with a grant in the amount of 2,992,816 €,
- „Clean waters in the Upper Krušné hory Mountains area, German-Czech project of waste water discharge with a grant in the amount of 6,630,789 €,
- „The revitalization of peat-bogs between Hora Sv. Šebestiána and Satzung – implementation stage" with a grant in the amount of 1,194,346 €,



The Doubrava River in Třemošnice

- „The proposed uses of the landscape leading to sustainable improvements of water quality and erosion control measures in the transboundary Nisa River basin, with a grant in the amount of 538,595 €,
- „Flood control measures at Opárenský mlýn", with a grant in the amount of 249,315 €,
- „Clean waters in the Upper Krušné hory Mountains area – implementation of joint measures for waste water disposal in the border region" with a grant in the amount of 352,767 €.

Beyond the above-mentioned projects, a project of „Joint solutions for original landscape management" with a total grant of 199,724.75 € from the ERDF was approved. This project was also completed during 2014.

4. Under the Operational Programme of Cross-border Cooperation between the Czech Republic and the Polish Republic, the implementation of the following projects was under way in 2014:
- „Protection of waters in the territory of the Sudetenland" with a grant in the amount of 2,188,066 €,
- „Via the clean river from the Orlické hory Mountains to the Elbe" with a grant in the amount of 719,313 €.

The implementation of the projects „Protection of waters in the Metuje River basin in Kudowa Zdrój and Náchod" with a grant in the amount of 883,566 € and „Improvement of water supply and sewerage infrastructure in the Czech-Polish borderland" with a grant in the amount of 728,673 € was completed.
5. Under the Operational Programme of Cross-border Cooperation between the Czech Republic and the Slovak Republic, the following projects continued to be executed in 2014:
- „Automatization of exchange of crisis data in the hydrological district of the Morava River and the Dyje River basins" with a grant in the amount of 1,288,213 €,
- „The confluence of the Morava River and the Myjava River – joint flood control measures on both banks of the Morava River", with the ERDF grant in the amount of 819,934 €,
- „Kopčany – Hodonín – joint flood control measures on both banks of the Morava River", with the ERDF grant in the amount of 814,606 €,
- „The renaturalization of the Morava River from the Radějovka River to the Myjava River", with the ERDF grant in the amount of 825,523 €,
- „We want clean water in both Slovakia and Czechia" with the ERDF grant in the amount of 214,644 €.

In 2014, the project „Flood control measures and early warning system Říka-Vlára-Váh Rivers, Stage II", with the ERDF support in the total amount of 338,494 € was completed.
The following two projects were newly approved in 2014:
- „Following water to a wealth of habitats in cross-border area" with the ERDF support in the total amount of 27,702.18 €,
- „Caring for springs" (project No. 642) – a way to preserve natural wealth with the ERDF grant in the amount of 40,144.43 €.

6. Under the The Operational Programme for Inter-regional Cooperation (INTERREG IVC), support was granted for the project Lake-Admin (Regional administration of lake restoration initiatives), where the Czech partner is the University of South Bohemia in České Budějovice, Faculty of Fisheries and Water Protection. The ERDF support for this project amounted to 157,250 €. The project implementation started on 1 January 2012 and was completed as of 31 December 2014.

The Rural Development Programme of the Czech Republic for the period 2007–2013 is based on the National Strategic Plan for Rural Development and was prepared in accordance with the Council Regulation (EC) No. 1698/2005. The provision of grants was aimed at developing rural areas, improving the environment, supporting the expansion and diversification of economic activities, creating new jobs and strengthening solidarity of the rural population.

The subsidies from the Rural Development Programme for the period 2007–2013 are co-financed from the EAFRD and from the state budget of the Czech Republic. The EAFRD support for the period 2007–2013 amounted to 2.8 billion € and the total support including the funds from the state budget of the Czech Republic amounts to 3.7 billion €. The funding for the Rural Development Programme for the period 2007–2013 proceeds in the form of pre-financing from the state budget, i.e. all payments to beneficiaries are first covered from national resources.

Under the Rural Development Programme for the period 2007–2013, support was also granted for investments into basic water management infrastructure in municipalities with the population of less than 2,000 PE, namely through the sub-measure III.2.1.1 Village Renewal and Development, project scheme b).

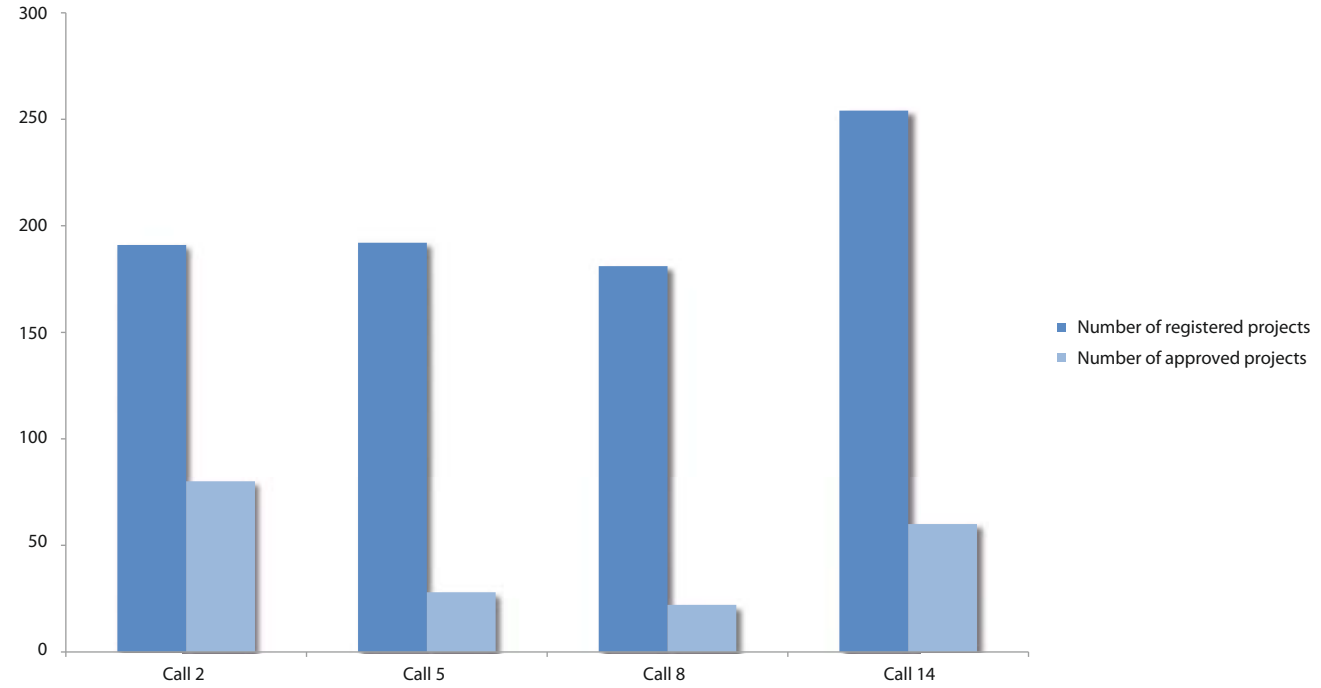
Under the project scheme b) public water supply systems, sewerage systems and waste water treatment plants, the applicants for subsidy could be municipalities and associations of municipalities. The association of municipalities could also include municipalities with the population of more than 2,000 PE, but the project had to be implemented in municipalities with the population of less than 2,000 PE.

Under this project scheme, support was not provided for projects aimed at construction of water supply systems, sewerage systems and waste water treatment plants in the territories requiring special protection – national parks and protected landscape areas including their protection zones, Natura 2000 sites, protected areas of natural accumulation of waters, water resource protection areas and the basin district of the Nové Mlýny hydraulic structure. The listed territories fall into the area of subsidies provided from the Operational Programme Environment.

For the sub-measure III.2.1.1 Village Renewal and Development, four Calls to submit the applications for the granting of support took place. The last 14th Call took place in 2011, when there were allocated all remaining funds intended for this measure in the programming period 2007–2013.

Revitalization of the Ohře River in Sokolov

Chart 9.4.1
Registered/approved projects in Call 2, Call 5, Call 8 and Call 14 to submit the applications for support – the state of approved applications/project execution under sub-measure III.2.1.1 Village Renewal and Development, project scheme b) public water supply systems, sewerage systems and waste water treatment plants as of 31 December 2014



Source: MoA

The above chart illustrates the high interest of municipalities to get support. The chart also demonstrates that funding designed for this sub-measure under the Rural Development Programme 2007–2013 failed to adequately meet the needs of municipalities. In the period between 2007 and 31 December 2014, in total 190 applications for support in the amount of approximately CZK 3 billion were approved. Of this, 179 projects in the amount of approximately CZK 2.7 billion were reimbursed, i.e. put into operation, before 31 December 2014.

Table 9.4.1
Status of implementation of sub-measure III.2.1.1 Village Renewal and Development, project scheme b) public water supply systems, sewerage systems and waste water treatment plants as of 31 December 2014

	III.2.1.1, project scheme b)
Number of registered projects (pcs)	818
Amount claimed by registered projects (CZK)	12,011,284,778
Number of approved applications (pcs)	190
Amount covering approved projects (CZK)	3,016,478,223
Number of reimbursed projects (pcs)	**179**
Reimbursed amount (CZK)	**2,671,135,416**

Source: MoA

Due to the reduced budget, support for water management infrastructure in the programming period 2014–2020 is not included in the Rural Development Programme. Projects previously suppported through the Rural Development Programme 2007–2013 will be funded from the Operational Programme Environment 2014–2020.

Metuje River in Běloves

Leontýna Machová – The Heat of Africa - 4th class, 26th Skupova primary school, Plzeň, Plzeňský Region

10. Legislative measures

10.1 Water Act and implementing regulations

Three Acts that have affected the wording of the Water Act were published in the Collection of Laws of the Czech Republic 2013 and became effective in 2014.

Act No. 61/2014 Coll., of 19 March 2014, amending Act No. 350/2011 Coll., on chemical substances and chemical mixtures and on amendments to some acts (the Chemical Act), as amended by Act No. 279/2013 Coll., and some other acts – became effective on 7 April 2014; Art. V, implementing an amendment to the Water Act, became effective on 1 July 2014

The purpose of the legislation was an adaptation to the Regulation of the European Parliament and of the Council (EC) No. 259/2012, which was published in the Official Journal of the European Union on 14 March 2012, amending Regulation of the European Parliament and of the Council (EC) No. 648/2004, as regards the use of phosphates and other phosphorous compounds in detergents for consumers and detergents for automatic dishwashers for consumers.

A related amendment to the Water Act contained in Part 3 eliminates duplication of the provision of Section 39, Subsection 10 of the Water Act with the aforementioned Regulation of the European Parliament and of the Council (EC) No. 259/2012. This is also corresponded to by the repeal of the provisions of Section 122, Subsection 5 and Section 125g, Subsection 5 governing administrative offences for the breach of the defined obligation.

An amendment implemented by the transitional provision ensures the continuity for proceedings brought under the Water Act and initiated before the effective date of this amendment.

Act No. 64/2014 Coll., of 7 April 2014, amending certain acts in connection with the adoption of Audit Rules – it became effective on 1 May 2014

The Act immediately follows the already adopted Act No. 255/2012 Coll., on control (Control Rules), in order to complete the implementation of the process of unifying and simplifying the regulatory environment in the area of control.

Part 49 contains the amendment to the Water Act. Modification affected the provision of Section 92, to which there has been added a new Subsection 5, which establishes an exception to the right to compensation for the collected samples that would otherwise result from Section 11 of Control Rules, in respect of samples for the purposes of analyses and control of waste water pollution.

Provisions relating to water management supervision have been adapted to Audit Rules terminology, namely the replacement of the term „to control" by the term „to supervise" (Sections 110 – 112 of the Water Act).

Newly formulated provision of Section 114 – Exercise of the water management supervision – removes procedural and legal variations of exercising control from the general provisions in Control Rules. The authorization of persons performing water management supervision and supreme water management supervision is repealed, including the provision governing a derogating scheme of liability for damage caused by control.

The merits of an administrative offence contained in the provision of Section 114a have been repealed.

Act No. 187/2014 Coll., of 31 July 2014, amending Act No. 114/1995 Coll., on inland navigation, as amended, Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), as amended, and Act No. 634/2004 Coll., on administrative fees, as amended – it became effective on 1 January 2015

The amendment to the Act on inland navigation represents a comprehensive revision of the current wording of the Act on inland navigation; in Part 2 it contains an amendment to two provisions of the Water Act. The provision of Section 117 newly reflects, in addition to the terminology of the Act on inland navigation, the fact that certain acts meeting the merits of offence mentioned in that provision can be commited by the operator of the vessel, some can be commited by the leader of the vessel and in some cases by the operator and the leader of the vessel.

Common provisions on administrative offences governed in Section 125l were revised in Subsection 7 to enable the Police of the Czech Republic to discuss on the spot some offences found.

Three implementing legal regulations to the Water Act were published in the Collection of Laws of the Czech Republic in 2014:

Decree No. 49/2014 Coll. of 24 March 2014, amending Decree No. 24/2011 Coll., on river basin management plans and flood risk management plans – it became effective on 1 April 2014

The amendment was prepared by the Ministry of Agriculture in cooperation with the Ministry of the Environment in response to the censure letter from the European Commission, which notified in the letter of incorrect implementation of Directive of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration.

The amendment concerned the provisions of Section 4 and Section 17. The basic and supplementary measures proposed in the river basin management plans, as defined in Section 4, Subsection 1, letter j), expressly require taking into account of best practice, including the Best Environmental Practice and Best Available Techniques specified in other legislation.

The granting of exemptions pursuant to Section 17, Subsection 4 is limited to cases which do not affect the achievement of the objectives of water protection for the relevant body of groundwater in the river basin management plan; the granting of exemption consisting of the injection into the geological structures of natural gas or liquefied petroleum gas for storage purposes is subject to the public interest.

In Section 17, Subsection 5, administrative error consisting in reference to other provision was removed.

Decree No. 66/2014 Coll. of 27 March 2014, amending Decree No. 450/2005 Coll., on the particulars of handling of harmful substances and particulars of the emergency plan, the method and scope of reporting accidents and eliminating accidents and their harmful effects, as amended by Decree No. 175/2011 Coll. – it became effective on 1 September 2014

Morava River, National Nature Reserve Vrapač (upstream of Litovel)

The Decree was prepared by the Ministry of the Environment on the basis of the authorization in Section 39, Subsection 8 and Section 41, Subsection 7 of the Water Act. Amendment resulted from the need to take into account the „Proposed measures to strengthen the competitiveness and development of business in the Czech Republic in view of legislation for environmental protection" (the so-called ecoaudit) resulting from the Government Resolution No. 72 of 30 January 2013. The new legislation mainly regulates the method of carrying out leak testing and formally specifies the requirements for education of persons professionally qualified to perform leak tests. Furthermore, it deletes the requirement for automatic sending safety data sheets and identification sheets of harmful substances along with a draft emergency plan to the water authority; in the future, they will be available on request for the water authority and the Czech Environmental Inspection. Consent to the processing of the data on the form was added to Annex 3.

Government Order No. 117/2014 Coll. of 16 June 2014, amending Government Order No. 262/2012 Coll., on specification of vulnerable zones and action programme, as amended, and Government Order No. 479/2009 Coll., defining the consequences of the breach of conditions for the granting of some types of support, as amended – it became effective on 1 July 2014

Government Order lays down in accordance with the legal authorization specified in Section 33, Subsection 2 of the Water Act a revision of the action programme for vulnerable zones from the year 2014–2015. It responds to a request from the European Commission from January 2013 relating to incorrect implementation of the requirements of the Nitrates Directive. Changes were also made to Annexes 2 and 3 of the Government Order.

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

In 2014, there was no direct amendment to Act No. 274/2001 Coll., on public water supply and sewerage systems.

On 1 April 2014 there became effective Decree No. 48/2014, amending Decree No. 428/2001 Coll., implementing the Act on public water supply and sewerage systems and on amendments to some acts (Act on water supply and sewerage systems), as amended by Decree No. 146/2004 Coll., Decree No. 515/2006 Coll., and Decree No. 120/2011 Coll.

The need for amendment to the Decree of the Ministry of Agriculture resulted from the following reasons:

The Decree was prepared in accordance with the authorization in the provision of Section 40 of Act No. 275/2013 Coll., amending Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to some acts (Act on water supply and sewerage systems), as amended, and Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), as amended. Its draft responded to changes in the amendment to the Act on water supply and sewerage systems and was based on practical experience.

Mainly the following facts were incorporated in the Decree, including its Annexes:

- the clarification and supplementation of some basic terms and the incorporation of changes resulting from the Act No. 275/2013 Coll., amending Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to some acts (Act on water supply and sewerage systems), as amended; repealing the provisions of the Decree, whose content was directly incorporated into the Act,
- modification of the parts connected with the change of system of development planning of public water supply and sewerage systems, instead of preparing new plans, for the reason of economy, the plans are to be updated on ongoing basis; in this area the Decree clarifies the steps to be taken by the regional authorities in updating development plans for water supply and sewerage systems,
- specification of selected data from the assets and operating records; changes are included in Annex 22,
- deletion of some of the particulars of agreements (for example, agreement on authorization to operate water supply and sewerage systems) that are newly incorporated in the Act,
- specification of requirements of operating rules for the sewerage system,
- modifications associated with the establishment of a unified system of electronic communication in order to reduce the administrative burden,
- establishment of rules for specification of cost items when calculating the price in Annexes 19 and 19a of this Decree,
- implementation of minor legislative and technical modifications arising from the practical application of this legal regulation.

Department of Water Management of the Ministry of Agriculture issued no guideline in 2014.

Interpretation Committee for the Act on public water supply and sewerage systems approved in 2014 three interpretations. Interpretations are published regularly on the website of the Ministry of Agriculture.

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.

New Act No. 255/2012 Coll., on auditing (Audit Rules) became effective on 1 January 2014. This Act uniformly regulates the general institutes of auditing.

In connection with the adoption of the new Audit Rules the Government of the Czech Republic approved a Resolution No. 689 of 11 September 2013, 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 City of Prague and municipal authorities of territorially divided statutory cities.

Plan of audits of regions and the City of Prague with the set three-year auditing period, i.e. for the years 2014–2016 (framework monthly schedule) was prepared by the Ministry of the Interior of the Czech Republic.

In 2014, in accordance with the plan, audits of the execution of the delegated powers were carried out at five Regional Authorities performing the function of the water authority (see table 10.3.1).

Table 10.3.1
Audits of the execution of state administration, carried out by the Ministry of Agriculture at Regional Authorities in 2014

Region	Audit date
Středočeský	25 February 2014
Ústecký	10 April 2014
Olomoucký	25 June 2014
Jihomoravský	30 September 2014
Královéhradecký	11 November 2014

Source: MoA

Beyond the scheduled audits of regional water authorities, in the period from July to September there were also carried out audits of the execution of the agenda of the water authorities of municipalities with extended powers.

These audits examined the activities of 12 offices of municipalities with extended powers performing the function of the water authority (see table 10.3.2).

Table 10.3.2
Audits of the execution of state administration, carried out by the Ministry of Agriculture at water authorities of municipalities with extended powers in 2014

Municipality	Audit date
Municipal Office Benešov	23 July 2014
Municipal Office Votice	23 July 2014
Municipal Office Mnichovo Hradiště	6 August 2014
Municipal Council Mladá Boleslav	6 August 2014
Municipal Council Liberec	11 August 2014
Municipal Office Frýdlant	11 August 2014
Municipal Office Nový Bor	13 August 2014
Municipal Office Varnsdorf	13 August 2014
Municipal Office Kadaň	19 August 2014
Municipal Council Chomutov	19 August 2014
Municipal Office Praha 14	26 August 2014
Municipal Office Praha 5	18 September 2014

Source: MoA

The Ministry of Agriculture in carrying out audits focused mainly on implementation of Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), as amended, in cases in which the powers of central water authority are exercised by the Ministry of Agriculture, and regulations issued pursuant to this Act; Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to some acts (Public Water Supply and Sewerage Act), as amended, and regulations issued pursuant to this Act; Act No. 500/2004 Coll., Code of the Administrative Procedure, as amended; and Act No. 183/2006 Coll., on Land-Use Planning and Building Code (the Building Act), as amended, and its implementing legal regulations, and last but not least, the application of individual provisions of Act No. 500/2004 Coll., Code of the Administrative Procedure, as amended.

In the case of Regional Authorities, audits also focused on compliance with the provisions of Section 67, Subsection 1, letters a), b), c) and e) of the Act No. 129/2000 Coll., on regions, as amended; in the case of offices of municipalities with extended powers, audits also focused on compliance with the provisions of Section 61 of Act No. 128/2000 Coll., on municipalities, as amended.

Audits also focused on the way the water authorities operate, involving their personnel, material and organizational support, especially the achieved qualifications and experience of staff.

During each audit, randomly selected documents were examined. Minutes of each audit were prepared, containing a description of any shortcomings found.

Based on audits carried out it can be stated that the exercise of the delegated powers of regional authorities in the field of water management is consistently at a high level. Positive as well are continuing efforts of regional water authorities to provide detailed methodological guidance for offices within their jurisdiction.

The quality of the exercise of this agenda at the level of municipal offices with extended powers often depends on the size of a particular office, where it is significantly influenced by the personnel and material support. However, also here an improving level of activity of the water authorities can be pointed out.

This finding is also confirmed by the fact that for 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 Agriculture uses findings from audits towards water authorities as feedback that not only helps to deepen mutual communication at all levels of administrative hierarchy, but for the Ministry of Agriculture it is very useful to become acquainted with the regional and local water management issues.

The audit findings are then also applied in the methodological guidance for water authorities. Knowledge of the application of regulations within the competence of the Ministry of Agriculture is annually presented at a work meeting of the MoE Department of Water Management with water authorities.

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. 1181 of 18 October 2006 and in accordance with the „Audit Plan for the Regions and the City of Prague for the Years 2014 and 2015" of the Ministry of the Interior and the plan of supervisory activities of the departments for execution of state administration I-IX for the year 2014. 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 for the year 2014.

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, as amended, and Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), as amended.

Supervisory activities form an essential element of controlling the level of execution of state administration, the purpose of which is to supervise how the administration authorities at the lower level (regional authorities, water authorities and the Czech Environmental Inspection) execute state administration in the assigned area of water management. Of particular concern is the correct application of legal regulations, compliance with the relevant competence legal provisions and compliance with the provisions of the Act No. 500/2004 Coll., the Code of the Administrative Procedure, as amended. Audits also focus on the way the water authorities operate, qualifications and experience

Liběšice hydraulic structure

of staff members, organization of work and material background of departments.

The purpose of the exercise of the supreme state supervision is primarily to eliminate defects of systemic nature. In individual cases, the wrong decision may be changed by means of an extraordinary legal remedy (review of the decision in review proceedings, revision).

Table 10.3.3
Audit of the execution of state administration, carried out by the Ministry of Environment at the Regional Authorities in 2014

Region	Audit date
Jihomoravský	10 – 19 November 2014
Olomoucký	3 – 24 June 2014
Karlovarský	24 – 30 June 2014

Source: MoE

In carrying out audits of the exercise of the delegated powers of regional authorities in the area of water management in 2014, all scheduled dates established by the Ministry of the Interior were met. No major systemic shortcomings were identified in the audited period. For that reason, it was not necessary to take measures of the fundamental (systemic) nature. Tasks resulting from special legal regulations are fulfilled and achieved. Opposition proceedings were not conducted and process penalties did not need to be imposed. Recommendations for administrative authorities were formulated in relevant protocols, other minor irregularities or administrative shortcomings were addressed and remedied during the audit, in the form of the recommendations and proposals for action.

Audits carried out at water authorities constitute a smaller part of supervisory activities of the Ministry of the Environment. More frequent and more extensive in their scope are audits carried out at the regional authorities and other bodies.

Table 10.3.4
Audit of the execution of state administration, carried out by the Ministry of the Environment at water authorities of municipalities with extended powers in 2014

Municipality	Audit date
Municipal Council Karlovy Vary	14 October 2014
Municipal Council Chomutov	9 December 2014
Municipal Office Přeštice	18 November – 15 December 2014
Municipal Office Horažďovice	18 June – 29 July 2014
Municipal Office Kyjov	27 November 2014
Municipal Office Svitavy	30 January 2014
Municipal Office Trutnov	29 September 2014

Source: MoE

Audits of the execution of the delegated powers of water authorities did not identify shortcomings with the need to impose remedial measures. Minor errors or administrative shortcomings that did not affect the effectiveness, validity or legality of the administrative acts issued, were corrected during the audit or discussed with the staff members in the course of the supreme water management supervision within the methodological assistance.

Table 10.3.5
Audit of the execution of state administration, carried out by the Ministry of the Environment at the Czech Environmental Inspection in 2014

Regional Inspectorate of the Czech Environmental Inspection	Audit date
Ostrava	8 – 28 April 2014

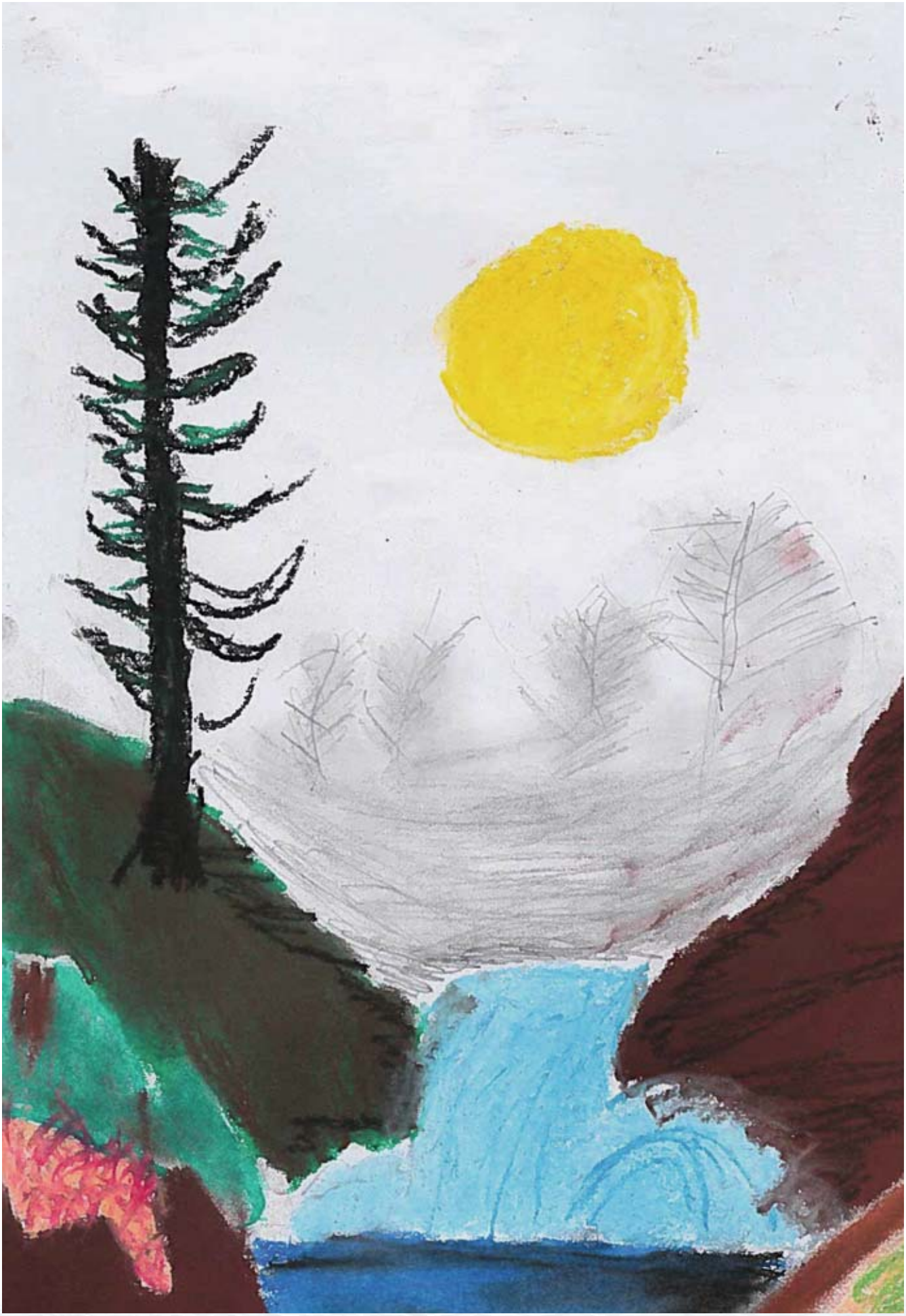
Source: MoE

Beyond the audits carried out at the Regional Authorities, Municipal Offices and the Czech Environmental Inspection, supreme water management supervision was carried out at the reed bed Dražovice on 10 July 2014 and the waste water treatment plant Havlíčkův Brod on 25 September 2014. Water supervision was also carried out at North Bohemian Water Supply and Sewerage Company, based in Teplice, on 20 October 2014.

Audit of the execution of state administration under the Water Act, carried out by the Ministry of the Environment at the Czech Environmental Inspection was paid due attention. The supreme water supervision found no significant shortcomings. Despite the considerable complexity and difficulty of the agenda, the execution of state administration at the department of water protection is at an adequate level, both in terms of organization and in terms of expertise.

Based on the conclusions of the audits carried out within the supreme water supervision by the departments for the execution of state administration 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 2014 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 correct 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 2013 were imposed remedial measures.

Revitalization of the Blanice River in Vlašim



Adam Hojdar – Waterfall - 3rd class, Litvínov primary school with extended language teaching and nursery school, Ústecký Region

11. Priority tasks, programmes and key documents in water management

11.1 Planning in the field of waters

In 2014 there continued the process of preparation of the second river basin management planning cycle for the period 2015–2021, consisting in reviews and updates of the current River Basin Management Plans, leading to the completion of the draft River Basin Management Plans. Within the framework of preparing flood risk management plans, maps of flood hazards and maps of flood risks were reported to the EU.

In preparation for the second river basin management planning cycle, in accordance with legislative requirements, a preliminary overview of the significant water management issues identified in part of the international Elbe/Oder/Danube River Basin District in the Czech Republic was completed. An important step was the completion of draft national river basin management plans (Elbe, Oder, Danube) along with the drafts of relevant river sub-basin management plans (the Upper and Middle Elbe; the Upper Vltava River; the Berounka River; the Lower Vltava River; the Ohře River, the Lower Elbe and other tributaries of the Elbe; the Upper Oder; the Lužická Nisa River and other tributaries of the Oder; the Morava River and tributaries of the Váh River; the Dyje River; other tributaries of the Danube River), which were subsequently from 22 December 2014 made available for the period of six months (till 22 June 2015) to the public and water users for written comments.

Within the methodological management and coordination of the process there were prepared and updated a number of methodologies, on the basis of which, for example, the status of water bodies is monitored and assessed. And just these methodologies represented one of the major uncertainties from the first river basin management planning cycle.

The significant part of the second water management planning cycle is also the implementation of the Directive 2007/60/EC of the European Parliament and of the Council, on the assessment and management of flood risks. In accordance with the requirements of the Directive, the requested data on the mapping of flood hazards and flood risks as of 22 March 2014 were reported to the European Commission. Flood mapping results are made available to the public through the Central Data Store and can be found on the website of the Czech Hydrometeorological Institute (http://cds.chmi.cz). Drafts of flood risk management plans were from 22 December 2014 made available for the period of six months (till 22 June 2015) to the public and water users for written comments in accordance with the provision of Section 19 of Decree No. 24/2011 Coll., on river basin management plans and flood risk management plans, as amended. Notifications of draft plans prepared in the scope of Annex 7 of the Act No. 100/2001 Coll., on environmental impact assessment, as amended, were submitted at the end of the year for screening procedure pursuant to Act No. 100/2001 Coll., on environmental impact assessment, as amended. Information on the process of environmental impact assessment of draft plans can be obtained from the SEA information system on the website http://portal.cenia.cz/eiasea/view/sea100_koncepce. All current and general information on the water management planning process, including the working papers and records of the meetings of the Commission for Water Management Planning are available to the public on the website of the Ministry of Agriculture (www.eagri.cz) with links to the websites of the Ministry of the Environment and individual river basin administrators. More information relating to water management planning is provided on the website of Public Administration Information System WATER (www.voda.gov.cz). For the purposes of implementation of the Flood Directive, Flood Information System (www.povis.cz) is used as a communication platform).

11.2 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 1, Letter c) of the 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.

Development plans for water supply and sewerage systems in the Czech Republic (the National Development Plan for Water Supply and Sewerage Systems, the Regional Development Plans for Water Supply and Sewerage Systems) including their updates represent a medium-term constantly updated concept in the sector of water supply and sewerage systems.

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.

Pursuant to Section 29, Subsection 1, Letter c) of the aforementioned Act, the Ministry of Agriculture continued to issue statements for the approved and effective Development Plans for Water Supply and Sewerage Systems in the Regions of the Czech Republic, relating to the proposed updates of the technical solutions for drinking water supply and waste water sewerage and treatment.

135 statements were issued in 2014. In total for the period 2006–2014, the Ministry of Agriculture issued 3,994 statements.

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, that 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 Regional Development Plans for Water Supply and Sewerage Systems are used by the Ministry of Agriculture, the Ministry of the Environment, the regional authorities, municipalities with extended powers (water authorities), municipalities, owners and operators of water supply and sewerage systems as well as by both specialists community and the general public.

11.3 Programmes and measures to reduce surface water pollution

Construction projects for water quality protection completed in 2014

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 2014 (N = nitrification, DN = denitrification, BP = biological removal of phosphorus, CHP = chemical removal of phosphorus):

New municipal waste water treatment plants (10,915 PE in total): Horní Jiřetín (2,805 PE, N, DN, CHP), Přemyslovice (2,100 PE, N, DN, CHP), Březí (2,010 PE, N, DN, CHP), Starý Kolín (2,000 PE, N, DN, CHP), České Meziříčí (2,000 PE, N, DN, CHP).

Furthermore, the following waste water treatment plants were reconstructed or extended in 2014:

The existing municipal waste water treatment plants: Tábor (territory waste water treatment plant) (95,000 PE, N, DN, CHP), Kolín (44,293 PE, N, DN, CHP), Litomyšl (28,000 PE, N, DN, CHP), Ústí nad Orlicí (22,000 PE, N, DN, CHP), Svitavy (17,000 PE, N, DN, CHP), Letohrad (15,450 PE, N, DN, CHP), Čáslav (15,000 PE, N, DN, CHP), Starý Plzenec (8,000 PE, N, DN, CHP), Mnichovo Hradiště (7,040 PE, N, DN, CHP), Pec pod Sněžkou (4,888 PE, N, DN, CHP), Vilémov (4,800 PE, N, DN, CHP).

The existing industrial waste water treatment plants: TOMA Otrokovice (168,300 PE, N, DN, CHP).

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. The transfer of the Nitrates Directive was implemented into the provisions of Section 33 of the Act No. 254/2001 Coll., on waters, as amended (the Water Act), where it is imposed on the government to specify by order vulnerable zones and in these zones to regulate the use and storage of fertilizers and livestock manure, crop rotation and implementation of erosion control measures (the so-called Action Programme).

Vulnerable zones represent the areas, where the contamination of groundwaters and surface waters by nitrates has already exceeded or might exceed the set limit of nitrate concentration in amount of 50 mg/l. The list of vulnerable zones was announced by the 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 erosion control measures in these zones. Vulnerable zones are subject to review, according to the requirements of the Nitrates Directive, at least every four years from their publication. The first review of vulnerable zones was carried out in 2007 and announced through the amendment to the Government Order No. 219/2007 Coll.,

Confluence of the Morava River and the Dřevnice River

with effect from 1 September 2007. The second review of the specification of vulnerable zones was carried out in March 2011 and announced through the Government Order No. 262/2012 Coll., on specification of vulnerable zones and action programme, with effect from 1 August 2012.

The Action Programme which is also updated every period of four years, represents mandatory methods of management in the defined vulnerable zones which are aimed at reducing the risk of nitrogen leaching into surface waters and groundwaters. Through the Government Order No. 262/2012 Coll., the so-called Action Programme 3 was promulgated. User relation-based Land Use Register brings information for farmers on measures which the farmer should comply with within the specific soil block. The Action Programme is the most effective system of measures in the implementation of the Nitrates Directive.

The basic measures of the Action Programme in the Czech Republic which is produced in compliance with Annex III to the Nitrates Directive, include:

1. Period, when the use of certain types of fertilizers and farmyard manure is prohibited.

2. The establishment of maximum nitrogen fertilization limits for the individual crops.

3. Specification of the minimum capacity of farmyard manure storage facilities allowing to store farmyard manure during the period when manuring is prohibited (in the Czech Republic, this is based on general legal regulations; from the year 2014 on, the required capacity of farmyard manure storage facilities will have to be large enough for six-month production).

4. Ban on wide-row crop growing on land threatened by erosion.

5. Restrictions on the use of fertilizers on sloping land.

6. Maintaining a protection zone near surface water bodies.

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.

Government Order No. 262/2012 Coll. slightly extended vulnerable zones and, mainly 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) and the increase in the capacity of farmyard manure storage facilities for six-month production.

In 2014, Government Order No. 117/2014 Coll. in connection with the comments of the European Commission on the implementation of the Nitrates Directive amended the Government Order No. 262/2012 Coll. The amendment extended the period of the ban on fertilizing in the spring, modifed the capacity of farmyard manure storage facilities to 5-month production, expanded the list of crops in the table of fertilization limits, imposed restrictions of fertilization on sloping grassland and modified fertilizer application under adverse soil conditions.

11.4 Public administration information system WATER

Records pursuant to Section 22 of the Water Act

After the release of the new Decree No. 252/2013 Coll., on the extent of the data in records of surface waters and groundwaters and on the method of processing, storage and transmission of such data to public administration information systems, modifications of water records in the public administration information system – WATER were prepared in 2014.

A new tab was established for the registration of structures on watercourses. The tab is further divided to records of transverse barriers of over 1 m, structures to monitor surface water status (used by the Czech Hydrometeorological Institute) and structures to monitor surface water status (used by river basin administrators).

Records of water reservoirs were expanded to include all reservoirs to which the river basin administrators have the right of management and all reservoirs which fall within categories I – III of technical and safety supervision. During 2015, these records will be further expanded to include water reservoirs to which the Forests of the Czech Republic have the right of management. Under preparation for these records is also a new type of displaying, which will be in the form of polygons created according to the level of the manageable volume of the reservoir. These records were attached via web services to databases of river basin administrators, thus always current data are made available for viewing.

Records of river basin districts were renamed to records of international river basins and river sub-basins. Definition of river basin districts was replaced by definition of river sub-basins on the basis of Decree No. 393/2010 Coll., on river basin districts. This change was reflected in the above mentioned records of international river basins and river sub-basins and the overview map was changed accordingly.

For 2015, English version of the system is under preparation along with a new module for inclusion of national river basin management plans and river sub-basin management plans, which will be approved by the end of 2015 and will be valid for the period 2016–2021.

Preparation of stage II of the project

In 2015, a preparation of project documentation for the modernization and expansion of the Water Management Information Portal WATER is under way. The primary purpose of modernization will be to develop a new, more user-friendly map browser, which allows to integrate all records regardless of department they come from and image them on the same map background. For this part of the project, a tender for processor is expected to be launched in 2015.

Another part of the project will involve a preparation for the development of editorial module that enables to start the process of harmonizing the data in the central register of watercourses in cooperation with the Czech Hydrometeorological Institute and the Czech Office for Surveying, which administers the Basic Geographic Database of the Czech Republic (ZABAGED). This part of the project, including harmonization, will be implemented in the years 2016–2019.

11.5 Czech Republic´s reporting to the EU

Reporting pursuant to Directive of the European Parliament and of the Council 2007/60/EC, on the assessment and management of flood risks

As of 22 March 2014 there were forwarded to the European Commission, to comply with reporting under Art. 15 of Directive No. 2007/60/EC on the assessment and management of flood risks, complete data sets (source databases Access, xml versions, spatial data) of maps of flood hazards and flood risks for the relevant administrative units (Units of Management) representing three international river basins on the territory of the Czech Republic (Elbe, Oder and Danube). Complete data sets were recorded via Eionet (http://cdr.eionet.europa.eu/cz/eu/fhrm/) in a data repository of the European Commission.

In accordance with the requirements of the follow-up documents (Guidance Documents) there were reported results of mapping of flood hazards and flood risks from river flooding for the scenario with a medium probability of return (Q_{100}) including the additional information required for this scenario (the indicative number of inhabitants potentially affected; information on economic activities affected – housing, infrastructure, industry, agriculture, others; on the number of IPPC installations affected and on the number of protected areas affected, in accordance with Annex IV, paragraph 1, points I, III and V of Directive 2000/60/EC).

The basis for reporting was the data stored in the Central Data Store, which provides access to maps of flood hazards and flood risks for the specialists community and the general public through a map portal. This data was complemented with additional data, for example, from the Ministry of the Environment (protected areas) and Register of Census Districts (administered by the Czech Statistical Office). The final form of reporting is the result of subsequent spatial analyses.

Horka hydraulic structure

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12. International relations

International cooperation of the Czech Republic in the field of water protection is based on the principles arising from the UNECE 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 Commission was established between the former Czechoslovak Republic 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.

Today, 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 UNECE;

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.

As mentioned above, activities of the Czech Republic in the field of water protection at international level build on the long-time basis, which cannot be compared to any similar cooperation in the world. Based on this fact, cooperation of the Czech Republic with other states in the field of water management is considered higher than standard.

12.1 Cooperation within UNECE

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

The basic principle is bilateral cooperation of neighbouring states in the field of water management, based on concluded international agreements, treaties and conventions. Emphasis is laid on mutual exchange of information, joint research and development (for example, through bilateral and multilateral projects, international commissions, etc.), improving warning and alarm systems, as well as access to information by the public, etc.

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (The Convention) entered into force on 6 October 1996. Czech Republic is a party to the Convention from 10 September 2000. Representatives of the Czech Republic participate in activities relating to the fields of integrated management of water resources and water ecosystems, protection of waters against accidental pollution from industrial sources, support for international cooperation on transboundary watercourses and in commissions for international river basins. Cooperation under the Convention also focuses on the relation between water quality and human health. The supreme body of the Convention is the Meeting of the Parties, held once every three years. The next, 7th Meeting of the Parties will take place on 17 – 20 November 2015 in Budapest, Hungary.

The current theme is the so-called Global Opening of the Convention. The basic condition for enabling non-member countries of the UNECE to accede to the Convention is a modification of Articles 25 and 26 of the Convention. Given that these modifications were ratified by a sufficient number of Parties to the Convention, amendments to Articles 25 and 26 entered into force on 6 February 2013. However, before non-member countries of the UNECE can accede to the Convention, it is needed that the amendments to Articles are ratified by all countries that were parties to the Convention before 28 November 2003. In 2014, amendments to Articles were not ratified by 3 countries. Czech Republic adopted the update of the above-mentioned Articles of the Convention on 29 January 2008.

The Convention also discusses the possibility of establishing regular reporting on the progress of implementation of the Convention in the Member States. The Czech Republic participated in the meetings discussing the draft of the questionnaire, which will be presented at the 7th meeting of the Parties to the Convention in 2015, where it will be decided whether the reporting obligation, its form and frequency will be established for the Parties to the Convention.

Protocol on Water and Health

Within the UNECE Convention, in cooperation with the World Health Organization (WHO) a convention document was produced with focus on the connection between water and human health – the Protocol on Water and Health. Although the Protocol entered into force in 2005, the Czech Republic has been a party to the Protocol since 2001. Czech Republic set national targets to the Protocol already in 2008. Update of these targets was approved on 1 June 2013. The reason for this update was that some targets have already been met or their achieving in the future is ensured by legislation.

The forthcoming meeting of the Parties to the Convention will be held in 2016 in Switzerland.

In more detail, the information on the UNECE Convention and the Protocol is available on the website www.unece.org/env/water.

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.

International cooperation in protection of the main river basins in the Czech Republic primarily focuses, through international commissions for protection of the Elbe, the Danube River and the Oder River, on:

- reducing the pollutant load on the Elbe, the Danube River and the Oder River,

- striving to achieve an ecosystem that is as close as possible to natural condition with a healthy diversity of species,

- allowing the use of water, especially the provision of drinking water from bank infiltration and the agricultural use of water and sediments,

- reducing pollution in the North Sea from the Elbe River Basin, in the Black Sea from the Danube River Basin and in the Baltic Sea from the Oder River Basin,

- flood control,

- coordinated implementation of the Water Framework Directive (2000/60/EC) of the European Parliament and of the Council, establishing a framework for Community action in the field of water policy in integrated river basins.

Agreement on the International Commission for Protection of the Elbe

The Elbe River Basin is shared by four states: the predominant part is situated in Germany (65.5%) and the Czech Republic (33.7%), very small part in Austria (0.6%) and Poland (0.2%). In order to improve the status of surface waters, the Agreement on the International Commission for Protection of the Elbe was signed on 8 October 1990. This Agreement entered into force on 14 September 1992. The Protocol to the Agreement on the International Commission for Protection of the Elbe, through which the Commission acquired legal subjectivity, came into effect on 13 August 1993. International cooperation at the level of the International Commission for Protection of the Elbe (ICPE) can be considered the most important board of the Czech-German cooperation in the field of water protection in the Elbe River Basin. The cooperation focuses on reducing the pollution of the Elbe and its tributaries, improving the status of water-related ecosystems, the programmes of water quality measuring and monitoring, the prevention of accidental pollution and especially on the coordinated approach to meeting the requirements of the Water Framework Directive (2000/60/EC) and improving flood control measures through the coordinated approach to meeting the requirements of the EC Directive on the assessment and management of flood risks (2007/60/EC).

The International Commission for Protection of the Elbe discussed at its 27th session (between 14 and 15 October 2014, Berlin), inter alia, the completion of the draft of the International Elbe River Basin District Management Plan (part A) for the second planning cycle and the draft of the International Flood Risk Management Plan in the Elbe River Basin District (level A). In December 2014, these drafts were made available to the public on the ICPE website for comments.

ICPE completed the final report „ICPE concept for management of sediments. Proposals of good practice for management of sediments in the Elbe River Basin to achieve supra-regional operational objectives". ICPE discussed its making available to the public in the form of printed publication and on the website of the ICPE.

The establishment of an ad hoc group of experts „Nutrients" and the text of „Hydrological Assessment of the Flood in the Elbe River Basin in June 2013" were approved. The publication „Hydrological Assessment of the Flood in the Elbe River Basin in June 2013" will be released in the form of bilingual Czech-German publication and will be placed on the website of the ICPE.

ICPE also took note of information on the status of realization of a stable emergency profile in the transboundary section of the Elbe. Elbe River Board, state enterprise, promised to carry out construction work and purchase of necessary equipment using its own funds. Realization of a stable profile should be carried out in a more economical option. This should include landscaping and fencing of the access area, modifications of the descent to the Elbe and bank parts and installation of mooring elements on the Czech side. The project realization is expected to be completed in 2015. ICPE in this context thanked the Water and Navigation Office in Dresden for the installation of the necessary mooring elements on the German bank.

Discussed as well was the optimization of activities of the working committees of the ICPE and preparation of festive events on the 25th anniversary of the ICPE, which will be held on 8 October 2015 in Dresden.

The International Commission for Protection of the Elbe is also significantly involved in organizing the Magdeburg Workshop on protection of waters, which is held every two years, alternately in the Czech Republic and Germany, and is the most important international expert and scientific event in the field of water protection in the Elbe River Basin. The 16th meeting of the Magdeburg Workshop took place between 18 and 19 September 2014 in Špindlerův Mlýn, Czech Republic. The main topics of the workshop included hydromorphology (passability for sediments and biota, diversity of the environment, maintenance, regulations, revitalizations and flood plains), communities and their habitats (the biological quality elements according to the Water Framewok Directive) and water quality (nutrients, pollutants, remobilization, dynamics of transport and new water pollution).

In more detail, the information on the activities of the International Commission for Protection of the Elbe is available on the website www.ikse-mkol.org.

Convention on Cooperation for Protection and Sustainable Use of the Danube River

In terms of the area covered, the Danube River Basin belongs to the most significant river basins in Europe and is shared by 19 European states. The Danube River Basin takes an area of 801,463 km^2, the Danube River itself reaches a length of 2,857 km and after the Volga River it is the second longest river in Europe. In order to reach coordinated approach to the protection of

watercourses in the Danube River Basin, the Convention on Cooperation for Protection and Sustainable Use of the Danube River was signed on 29 June 1994. This Convention entered into force on 22 October 1998. The Convention currently has 15 Parties, ranking it on the position of the most significant structure built to protect the particular river basin. The body to coordinate the implementation of this Convention is the International Commission for Protection of the Danube River (ICPDR).

Members of the ICPDR expert groups, in which the Czech Republic has representatives from the Ministry of the Environment, the Ministry of Agriculture, the Czech Hydrometeorological Institute, the Czech Environmental Inspection, Morava River Board, s. e., and T. G. Masaryk Water Management Research Institute, public research institution, were involved mainly in drafting an update of the International Danube River Basin Management Plan. Update of the analysis of the Danube River Basin 2013 was completed in 2014.

Two meetings at the level of heads of delegations of the Parties were held in 2014. The first of them, the 12th meeting of the Steering Group took place on 19 – 20 June 2014 in Sofia. The second meeting was the 17th plenary session of the International Commission for Protection of the Danube River, which took place on 9 – 10 December 2014 in Vienna.

In June, the heads of delegations of the Parties adopted, inter alia, a Report on the Floods in 2013 and a Report on Update of the Analysis of the Danube River Basin 2013.

At the December meeting there were mainly adopted a draft of the Flood Risk Management Plan in the Danube River Basin and draft of update of the International Danube River Basin Management Plan. Both plans were from 22 December 2014 made available to the public for comments. Furthermore, a technical report on the third joint survey of the Danube River was adopted.

In more detail, the information on the activities of the International Commission for Protection of the Danube River is available on the website www.icpdr.org.

Agreement on the International Commission for Protection of the Oder River against Pollution

International Commission for Protection of the Oder River against Pollution is another important commission established to protect waters in the basin, whose area is shared by more than one country.

International Commission for Protection of the Oder River against Pollution was established by the international Agreement on the International Commission for Protection of the Oder River against Pollution, which was concluded by the Government of the Czech Republic, the Government of the Republic of Poland, the Government of the Federal Republic of Germany and the European Community on 11 April 1996. The Agreement entered into force after ratification on 26 April 1999.

The activity of the Commission is focused especially on international coordination of meeting the requirements of the Water Framework Directive (2000/60/EC), flood protection and prevention of water pollution. The work of the Commission is carried out in working groups focused mainly on flood protection, accidental pollution, legal issues, monitoring and data management.

The work performed in 2014 was evaluated at the 17th plenary session of the International Commission for Protection of the Oder River against Pollution (ICPO), which took place from 2 to 3 December 2014 in Wroclaw. This meeting approved work plans of the Steering Working Group and its subgroups for 2015 and updated draft of the International Oder River Basin District Management Plan, which was on 22 December 2014 made available on the website of ICPO to the public for consultation (note: Flood Risk Management Plan in the International Oder River Basin District Management Plan was on agreement of heads of delegations made available to the public for consultation as late as 31 March 2015). The Working Group for the area of Water Planning focused on the harmonization of the definition of heavily modified water bodies in the case of border and cross-border water bodies. The process of the above mentioned harmonization and its results are included in the updated draft of the International Oder River Basin District Management Plan. The core issue of the work of the Working Group for Data Management was Geoportal. Eight possible solutions were compared to each other. The comparison resulted in a conclusion that the needs of ICPO are best suited by the GDA Wasser system. The Working Group for Monitoring continued to assess the ecological status of running waters on the basis of the biological quality elements macrophytes/phytobenthos. Harmonization of water status assessment was also performed within this Working Group and results of this work are included in the updated draft of the International Oder River Basin District Management Plan.

Detailed information on the activities of the International Commission for Protection of the Oder River against Pollution is available on the website www.mkoo.pl.

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 740 km are known as the „wet line", which means that more than 30% 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 has with all neighhbouring states international agreements concluded. 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 transbounary 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.

Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Transboundary Waters in the Field of Water Management

The total length of the state border between the Czech Republic and the Federal Republic of Germany is 811 km. Of this length, 290 km are constituted by watercourses or water bodies. Cooperation in the field of water management is regulated by the „Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Transboundary Waters in the Field of Water Management", which was signed on 12 December 1995 and became effective on 25 October 1997. The fulfilment of the Agreement with the Federal Republic of Germany takes places through the Czech-German Commission for Transboundary Waters.

With regard to the territorial division of the Federal Republic of Germany, the cooperation takes place at the first level through the Standing Committee Bavaria and the Standing Committee Saxony. Collectively, the cooperation is roofed by the Czech-German Commission for Transboundary Waters.

In 2014, the following meetings took place:

- 16th session of the Standing Committee Bavaria (7 – 9 April 2014, Coburg, Federal Republic of Germany),
- 16th session of the Standing Committee Saxony (30 September – 2 October 2014, Prague, Czech Republic),
- 17th session of the Czech-German Commission for Transboundary Waters (29 – 30 October 2014, Prague, Czech Republic).

The key points that were discussed during the above mentioned meetings include, for example, the implementation of the Water Framework Directive (2000/60/EC) and Directive on Flood Risk Assessment and Management (2007/60/EC), change of the „Agreement between the Government of the Czechoslovak Socialist Republic and the Government of the German Democratic Republic on the adjustment of some of the common issues associated with the construction and operation of the water reservoir in the Flöha stream valley near Rauschenbach" (concerning the new calculation of the elevation of upper level of the retention area of the Rauschenbach water reservoir), joint cross-border projects aimed at improving the quality and quantity of surface waters and protection of freshwater pearl mussel and blunt mussel (*Unio crassus*) in transboundary waters and their catchment areas. Furthermore, warning systems for notification in the events of pollution of transboundary watercourses between the Czech Republic and the Federal Republic of Germany were discussed, and discussions on charging groundwater abstractions from the Czech Republic for the needs of the town of Waldmünchen were finished.

Regarding the realization of the emergency profile on the Elbe in Hřensko it was stated that its completion is expected in 2015.

The results of these meeting are included in the „Protocol on the 17th meeting of the Czech-German Commission for Transboundary Waters", which was submitted to heads of the departments concerned for their standpoint and subsequently approved by the Minister of the Environment.

The next 18th session of the Commission will take place on 20 – 21 October 2015 in the Federal Republic of Germany.

Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters

The total length of the state border between the Czech Republic and the Republic of Austria is 466 km, of which 173 km (approx. 37%) of the state border are constituted by watercourses and water bodies. The cooperation on transboundary waters with Austria is governed by the Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters of 7 December 1967 and effective from 18 March 1970. This agreement is implemented through the Czech-Austrian Commission for Transboundary Waters, which involves the Sub-commission I and Sub-commission II.

The 22nd session of the Czech-Austrian Commission for Transboundary Waters took place on 27 – 28 May 2014 in Prague and a regular meeting of the representatives of the Governments for the purpose of mutual informing about current issues in the field of water management was held on 11 – 12 November 2014. In addition to issues of maintenance of transboundary watercourses, their quality monitoring and joint monitoring, the main issues included the impacts on the Dyje River caused by the Austrian chemical plant in Pernhofen and the project of drainage of rainwater from the planned A5 motorway on Austrian territory.

Regarding the impacts on the Dyje River caused by the Austrian chemical plant in Pernhofen, the Czech party cannot agree with the issuance of permit for the discharges of waste water from this plant since 2016 in the proposed extent. Consent would be contrary to the requirements of the Water Framework Directive, which does not allow to take measures that could lead to failure to achieve good water status, possibly even to deterioration of the current status on the Czech part. Czech and Austrian parties have agreed that Jungbunzlauer company will continue to maintain a regular communication process with the mayors of neighbouring municipalities.

Regarding the project of Austrian draining rainwater from the planned A5 motorway, a meeting of Czech experts with Austrian experts from ASFINAG company took place in November 2014. A5 motorway project envisages the drainage of rainwater from the motorway on Austrian territory into catchment areas of the Zaya stream, the Rybniční stream and the Včelínek stream. The first part of the project should be launched in spring 2015. The realization of the final stage will follow depending on the construction of highway R52 in the Czech Republic. Czech and Austrian parties have agreed to carry out joint water abstractions from the Včelínek stream in order to monitor the selected parameters during 2015.

The result of the meeting of the Commission is included in the mutually agreed and signed Protocol on the 22nd Meeting of the Czech-Austrian Commission for Transboundary Waters, which was subjected to interdepartmental discussion and approved by the Minister of the Environment.

The next 23rd session of the Commission will take place on 26 – 27 May 2015 in Austria.

Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters

The total length of the state border between the Czech Republic and the Slovak Republic is 252 km. Of that, watercourses and water areas constitute 71 km. Cooperation of both states in the field of water management is governed by the Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters, which was signed and became effective on 16 December 1999. This agreement is implemented through the Czech-Slovak Commission for Transboundary Waters, which for its activities established four working groups focusing on technical issues, hydrology, water protection and the Water Framework Directive (2000/60/EC).

The 14th session of the Commission took place on 24 – 25 May 2014 in Prague, Czech Republic.

Within the framework of the Czech-Slovak cooperation on transboundary waters, mainly discussed are joint cross-border projects aimed at improving flood protection, in terms of construction (project „Joint Flood Control Measures on Both Banks of the Morava River"), and in terms of technical support for improving the exchange of current data (project „Automation of the Exchange of Crisis Data in the Hydrological Catchment Area of the Morava River and the Dyje River").

The project „Joint Flood Control Measures on Both Banks of the Morava River" is divided into three project parts, funded under the programme of the European Territorial Cooperation between the Slovak Republic and the Czech Republic 2007–2013. The project comprises a study part and a realization part. In particular, it includes the study of revitalization measures, the levelling of left-bank dike of the Morava River between border km 48.20 and 49.00 and levelling of the vertical alignment of the dike between the road bridge and weir in Hodonín. All the three projects are expected to be completed in 2015. Both parties inform each other about the state of progress of the work and potential cross-border impacts.

The aim of the project „Automation of the Exchange of Crisis Data in the Hydrological Catchment Area of the Morava River and the Dyje River" is to streamline, expand and link existing systems of hydrological data transmission in cross-border catchment areas of the Morava River and the Dyje River, using the web portal for transmission of current important data for the relevant institutions.

Other discussed topics of the Czech-Slovak cooperation are included in the Protocol on the 14th session of the Czech-Slovak Commission for Transboundary Waters, which was subjected to interdepartmental discussion and subsequently approved by the Minister of the Environment.

The next 15th session of the Commission will take place on 7 – 9 June 2015 in Bratislava, Slovak Republic.

Convention between the Government of the Czechoslovak Republic and the Government of the People´s Republic of Poland on Water Management on Transboundary Waters

The length of the state border between the Czech Republic and Poland is 762 km, of that approximately 220 km are constituted by watercourses and water areas. Cooperation between both countries is regulated by the Convention between the Government of the Czechoslovak Republic and the Government of the People´s Republic of Poland on Water Management on Transboundary Waters, which was signed on 21 March 1958 and became effective on 7 August 1958. The Convention is implemented through meetings of the representatives of the governments of the Czech Republic and the Republic of Poland for cooperation in the field of water management on transboundary waters. Within the framework of the Czech-Polish cooperation there are established five standing working groups focused on investment plans, hydrology, hydrogeology, flood protection, regulation of watercourses, the protection of waters against pollution and the Water Framework Directive (2000/60/EC).

The 16th meeting of the representatives of the governments took place on 19 – 21 November 2014 in Lipowa, Republic of Poland.

In terms of cooperation on transboundary waters with Poland, special attention is paid to the negotiation of a New Agreement between the Government of the Czech Republic and the Government of the Republic of Poland on Cooperation in Water Management on Transboundary Waters. Negotiation on the Agreement was initiated in 2002, the procedure was revived in 2009, when at the 11th meeting of representatives of the governments for transboundary waters it was stated that both parties would take national action in accordance with relevant national legislation, to be followed by international negotiations. In February 2013, the Polish party informed the Czech party of having accepted the Czech comments. In addition to the acceptance of these comments, the Polish party in April 2014 sent to the Czech party the comments of the Legislative Council of the Republic of Poland and the legal department of the Ministry of the Environment of the Republic of Poland. These comments were settled in the presence of Czech and Polish representatives at the beginning of June in Prague. On the Czech part, the text of the Agreement was submitted to the Ministry of the Environment in October 2014 and then to the Government of the Czech Republic for final approval, which was signed on 12 November 2014. The Polish part also continued to carry out work leading to the acceptance of the text of the Agreement by the Government of the Republic of Poland and its subsequent signature.

Other discussed topics of the Czech-Polish cooperation on transboundary waters are included in the Protocol on the 16th meeting of representatives of the Government of the Czech Republic and the Government of the Republic of Poland for cooperation in the field of water management on transboundary waters, which was subjected to interdepartmental discussion and subsequently approved by the Minister of the Environment.

The next 17th meeting of representatives of the Governments will take place on 23 – 25 September 2015 in the Czech Republic.

The spring of the Elbe

Tamara Musilová – Rice Field - 4th class, Velký Beranov 331 primary school and nursery school, Vysočina Region

13. Research and development in the competence of the Ministry of Agriculture

In 2014, the Ministry of Agriculture provided special-purpose and institutional funding to address research and development projects and long-term conceptual development in the field of water management in the amount of CZK 43 million.

In 2014, the funds to support water management R&D projects amounted in total to CZK 34,363 thousand. The R&D projects launched in 2011 were funded by the amount of CZK 12,743 thousand, the R&D projects launched in 2012 were granted support amounting to CZK 18,564 thousand and the R&D projects launched in 2013 were granted support amounting to CZK 3,056 thousand. R&D projects are primarily aimed at soil and water protection in sustainable development of the agricultural sector, landscaping, revitalization and protection of cultural landscape, forests and water bodies, rationalization of water management and addressing the impacts of climate change.

An overview of the addressed R&D projects is shown in a summarized form in table 13.1.

Water management R&D projects resulted from public tenders called under the research programmes of the Ministry of Agriculture, namely the Research in Agricultural Complex 2009–2014 and Complex Sustainable Systems in Agriculture 2012–2018. These sectoral programmes also include sub-programmes, research trends or objectives relating to water management issues.

The programme of Research in Agricultural Complex 2009–2014 includes the sub-programme Rural Development through Sustainable Management of Natural Resources, where one of the objectives of this sub-programme is to develop water management practices with regard to assumed climate change risks and to innovate waste water treatment techniques.

Sub-programme II of the programme Complex Sustainable Systems in Agriculture 2012–2018 is called Sustainable Development of Forestry and Water Management and Other Areas of Agriculture. One of the objectives of this sub-programme is to create tools to support systems of water protection against pollution caused by agricultural production.

In 2014, the Research Institute for Soil and Water Reclamation, public research institution was granted institutional financial support in the amount of CZK 8,961 thousand for long-term conceptual development called Integrated Protection of Soil, Water and Landscape.

Publicly accessible data on R&D projects and granted institutional support for long-term conceptual development are available on the website of the Council for Research, Development and Innovation (www.vyzkum.cz) in the section Information System R&D&I (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.

The Čeladenka stream in Čeladná

Table 13.1
Research and development projects in the field of water management financed from the budget chapter of the Ministry of Agriculture in 2014

Project No.	Name of project	Date from – to	Coordinator	Funds (thousands of CZK)
QI111C034	Influence of livestock grazing on soil properties, water quality and quantity and species biodiversity in the landscape	1 January 2011 31 December 2014	Research Institute for Soil and Water Reclamation, public research institution	6,038
QI112A132	Research of measures to ensure drinking water supply in the period of climate change	1 January 2011 31 December 2014	Mining University - Technical University of Ostrava	2,225
QI112A174	Forestry and agricultural aspects of management of water component in the landscape	1 January 2011 31 December 2014	Research Institute for Forestry and Game Management, public research institution	4,480
QJ1220007	Possibilities of the capture of reactive nitrogen from agriculture in the most vulnerable zone in terms of water management	1 April 2012 31 December 2016	Mendel University in Brno	1,660
QJ1220029	The planting and maintenance of pond dam vegetation with regard to their use	1 April 2012 31 December 2016	Mendel University in Brno	1,624
QJ1220033	Optimization of water regime on the Morava River floodplain model	1 April 2012 31 December 2015	Mendel University in Brno	1,926
QJ1220050	Strengthening the infiltration processes through regulating water runoff from small river basins	1 April 2012 31 December 2015	Research Institute for Soil and Water Reclamation, public research institution	3,228
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 Soil and Water Reclamation, public research institution	1,892
QJ1220218	The development of effective measures to eliminate the impact of invasion of Chalara fraxinea 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	1,940
QJ1220233	The assessment of the area in the former fishpond systems (water bodies) in order to strengthen sustainable management of water and land resources in the Czech Republic	1 April 2012 31 December 2015	Palacký University in Olomouc	1,735
QJ1220346	Emissions and their impact on the aquatic environment	1 April 2012 31 December 2014	T. G. Masaryk Water Management Research Institute, public research institution	2,009
QJ1230319	Water regime of soils on sloping agricultural land	1 April 2012 31 December 2015	Czech Agricultural University in Prague	2,550
QJ1320122	Optimization of management of afforestation 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	1,632
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	Research Institute for Crop Production, public research institution	1,424
Total				**34,363**

Source: MoA

Acronyms in text

BOD_5	biochemical five-day oxygen demand
CEB	Council of Europe Development Bank
CHMI	Czech Hydrometeorological Institute
CEI	Czech Environmental Inspection
WWTP	waste water treatment plant
CSO	Czech Statistical Office
EAFRD	European Agricultural Fund for Rural Development
UNECE	United Nations Economic Commission for Europe
EIB	European Investment Bank
EC	European Commission
PE	population equivalent
ERDF	European Regional Development Fund
EU	European Union
CF	Cohesion Fund
GAEC	Good Agricultural and Environmental Condition
PLA	Protected Landscape Area
COD_{Cr}	chemical oxygen demand by dichromate
ISPA	Instrument for Structural Policies for Pre-Accession
ICPDR	International Commission for Protection of the Danube River
ICPE	International Commission for Protection of the Elbe
ICPO	International Commission for Protection of the Oder against Pollution
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
N_{inorg}	inorganic nitrogen
EQS	Environmental Quality Standards
SS	suspended solids
OPE	Operational Programme Environment
P_{total}	total phosphorus
PAH	polyaromatic hydrocarbons
RDP	Rural Development Programme
Q_m	monthly average flow
$Q_I – Q_{XI}$	long-term monthly average flow
Q_{Md}	M-day flow
Q_N	N-year flow
DIS	dissolved inorganic salts
SEF	State Environmental Fund of the Czech Republic
s. e.	state enterprise
FAD	flood activity degree
R&D	Research and Development

Karolinka hydraulic structure

Important contacts in water management

Ministry of Agriculture
Těšnov 65/17, Praha 1, 110 00, www.eagri.cz
Ministry of the Environment
Vršovická 1442/65, Praha 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 106/8, Praha 5, 150 24, www.pvl.cz
Ohře River Board, state enterprise
Bezručova 4219, Chomutov, 430 03, www.poh.cz
Oder River Board, state enterprise
Varenská 3101/49, Ostrava, Moravská Ostrava, 701 26, www.pod.cz
Morava River Board, state enterprise
Dřevařská 932/11, Brno, 601 75, www.pmo.cz
Forests of the Czech Republic, state enterprise
Přemyslova 1106/19, Hradec Králové, 500 08, www.lesycr.cz
Czech Hydrometeorological Institute
Na Šabatce 2050/17, Praha 412 – Komořany, 143 06, www.chmu.cz
T. G. Masaryk Water Management Research Institute, public research institution
Podbabská 2582/30, Praha 6, 160 00, www.vuv.cz
State Land Office
Husinecká 1042/11a, Praha 3 – Žižkov, 130 00, www.spucr.cz

MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

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