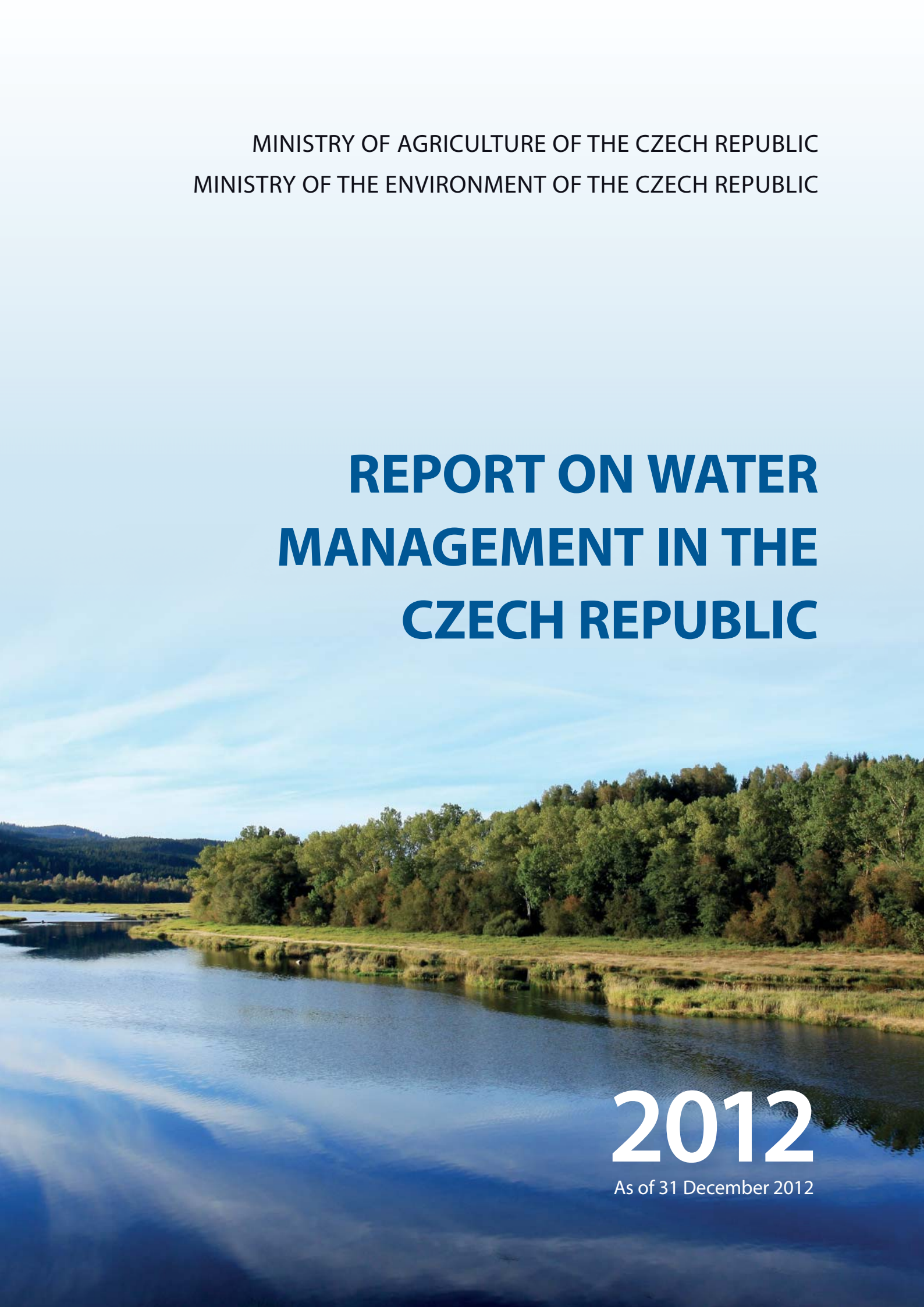
MINISTRY OF AGRICULTURE OF THE CZECH REPUBLIC

MINISTRY OF THE ENVIRONMENT OF THE CZECH REPUBLIC

REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC



2012

As of 31 December 2012

MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

Report on Water Management in the Czech Republic in 2012
As of 31 December 2012

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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Each chapter is introduced with a picture from the children´s competition for pupils at primary and lower secondary school level on the topic of „on the same wave“, organized as part of the World Water Day 2013 celebration.

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Report on Water Management in the Czech Republic

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

Contents

A lakelet – 1st class, Závodu míru primary school, Pardubice, Pardubický kraj region

1. Hydrological balance

1.1 Temperature and precipitation

In terms of temperature, the year 2012 with the mean air temperature of 8.3 °C showed the average. It was only by 0.3 °C colder than the previous year and the temperature variation of 0.9 °C from the average $N_{1961-90}$ represented only the next positive annual variaton in a row. In the last 25 years there have been only three years (2010, 1996 and 1991), which showed the mean temperature below the average.

Winter season 2011/2012 as a whole with the temperature of -1.2 °C was slightly above the average, mainly due to warm December (2.9 °C above the average) and January (2.6 °C above the average). These two months with above-average temperatures were followed, on the contrary, by very cold February with the mean temperature of -5.2 °C (4.1 °C below the average), which was also the coldest month of the year and over the last 39 years in the Czech Republic it was the third coldest February after February 1985 (-5.6 °C) and February 1986 (-7.4 °C). Spring season, similarly to the last year, showed above-average temperatures with the mean temperature of 9.3 °C (i.e. 2 °C above the average). Besides the average April, this was influenced by warm March (2.7 °C above the average) and also May (2.1 °C above the average). During the summer months, the temperature again mostly showed values above the average. The mean summer temperature of 17.8 °C was, mainly due to warmer July, even slightly higher than in 2011 (17.1 °C). The highest values of the mean daily air temperature were reached at the turn of June and July and then again at the beginning of the second half of August. The highest mean monthly temperature of 18.2 °C in 2012 was recorded both in July and August, having exceeded the average by 1.3 and by 1.8 °C, respectively. Growing season months, similarly to the year 2011, mostly showed above-average temperatures and so the mean temperature of 14.9 °C of the growing season again reached the value of 1.4 °C above the long-term average. During autumn, months with temperatures ranging around the average with small variations prevailed. A more significant temperature variation (2.2 °C above the average) was showed only by warm November with the mean temperature of 4.9 °C and the year was closed by December with temperatures ranging again around the average, with the mean temperature of -1.4 °C.

In terms of the total precipitation amount which corresponded to 103% of the average ($N_{1961-90}$), the year 2012 in the Czech Republic showed the average. The total amount of 695 mm was only 20 mm above the average and by 60 mm greater than the total precipitation amount in 2011. The average precipitation amount on the territory of Bohemia, which roughly corresponded to the long-term average, was again by approx. 10% of the average greater than in Moravia and Silesia, where except for three months there was always less rain than in Bohemia.

In terms of the total precipitation amount distribution in the main river basins, slightly above-average values were recorded in the Elbe River Basin and slightly below-average values in the Oder and the Morava River Basins.

As regards the individual seasons, above-average precipitation values were shown in winter and summer, below-average values in spring (only 63% of the average) and average values were shown in autumn.

In the course of the year 2012, months with precipitation amounts ranging around the average prevailed, more significant variations occurred only in the period from January to May. Above-average precipitation amount (84 mm) already at the beginning of the year was shown by very wet January, which was also relatively the wettest (199% of the average) month of the year. More precipitation in average fell only in July and then the same amount in June. The smallest precipitation amounts were recorded in the period from February to May. In February, it was 35 mm (91% of the average), in March 15 mm (38% of the average), in April 39 mm (82% of the average) and in May 48 mm (65% of the average). Very dry March and dry May were relatively the driest months of the year. The smallest precipitation amounts, approx. 5 mm (20% of the average), were recorded in March mainly in southern Moravia, but also in central and southwest Bohemia (approx. 13 mm), which represented only a third of the usual amount. March was the driest spring month in the Czech Republic over the last 50 years, similarly to March 2003 with the same precipitation deficit. Also in May there was least rain in southern Moravia (approx. 50% of the average) and a similar deficit was recorded in this month also in the Liberec and Moravia-Silesia regions.

The turn of May and June due to precipitation deficit in most of the river basins was also the poorest in terms of flow, or as the second least watery period of the year (after the turn of August and September in the basins of Moravian watercourses), with the main river flows having decreased to 30% Q_m (long-term average monthly flows). During the warm summer months, rainfall amounts were again mostly near the average. In June, average precipitation amount reached 84 mm (100% of the average), with rainfall by approx. 20% of the average richer in Moravia than in Bohemia, and in overall wet July with 114 mm (144% of the average), on the contrary, significantly more rainfall (by approx. 60% of the average) was recorded in Bohemia, compared to Moravia. Similarly, this was also in August (76 mm, 97% of the average), with Bohemia having rainfall greater by approx. 30% of the average, compared to Moravia. After average September (49 mm, 94% of the average), slight precipitation deficit in the east of the country failed to be compensated even by more abundant rainfall in the second half of October. Wet October with 64 mm (134% of the average) showed average precipitation in Bohemia, but above-average precipitation (more by 70% of the average) in Moravia. In the last months of the year, November (39 mm, 80% of the average) and December (56 mm, 116% of the average), there was again more precipitation in Bohemia, compared to Moravia (by approx. 50, and 40% of the average, respectively). Overall, the precipitation trend showing slightly above-average values in the Elbe River Basin and, on the contrary, slightly deficit values in the Oder and Morava River Basins, was observed until the end of the year. This also corresponds to annual runoff from the main river basins, i. e. reaching only slightly below-average runoff values from the Elbe River Basin, more significantly below-average runoff values from the Oder and Morava River Basins as far as the confluence with the Dyje River, and relatively the lowest runoff values from the Dyje River Basin.

Such a situation is also confirmed by the map of the relative amounts of annual precipitation, with clearly evident area predominance of above-average precipitation in the western part of the country. This above-average precipitation occupies approximately half of the area of this territory, while areas with below-average precipitation occur rather rarely, mainly in the west in the area of the Bohemian Forest and the Slavkovský les Mountains, in the east of central Bohemia and also in the areas of the Krkonoše Mountains and the Broumov region. The eastern part of the country, on the contrary, is clearly dominated by areas with below-average to average precipitation, where the driest belt with precipitation of 95 to 75% of the average forms an area approximately with the axis of Znojmo, Brno, Olomouc, Opava. Relatively most precipitation in 2012 fell in the south and the southwest of Bohemia and also in the northwest in the basins of the Kamenice River, the Lužická Nisa River and the Smědá River, with precipitation amounts having locally reached 125 to 150% of the average.

More intense precipitation events causing local flooding of watercourses or greater or smaller floods in 2012 were not too common. During the year there were only two major flood situations, in February and July, minor flood situations occurred also in January, March and December. In some regions, significant flooding events were locally experienced also in April and May.

Water supplies accumulated in the snow cover in 2012 in the majority of the monitored river basins ranged around the average, in the southwest of the country they were slightly above the average. Water supplies reached the maximum level approximately in mid-February and in comparison with other years in this period they were 2 to 3 times greater. At the beginning of the last decade in February, however, snow supplies were reduced by significant snow thawing with rainfall. During March and April, the remaining snow supplies gradually diminished. The fastest snow thawing was observed in the Oder River Basin and especially in the Morava River Basin, where in early April there were almost no traces of snow cover. Snow supplies of winter 2012/2013 began to form in early December and until the middle of the month they steadily increased in all river basins. In most of the Bohemian river basins, the maximum of water in the snow was recorded in mid-December, in the Moravian river basins then about a week later. As in previous winter seasons, however, by the end of the year much of snow supplies melted away due to the Christmas thaw.

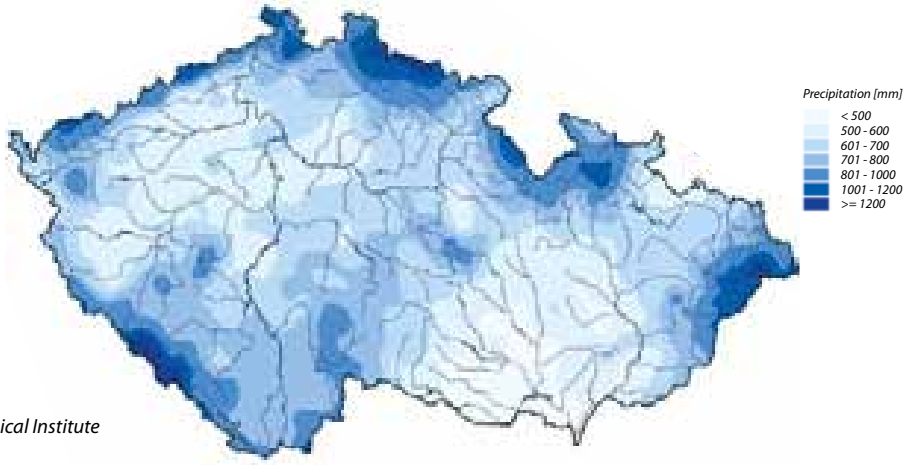
Table 1.1.1
Renewable water sources in the years 2003–2012 in millions of m³

Item	Annual values									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Precipitation	40,695	53,629	57,730	55,837	59,544	48,818	58,676	68,692	49,449	54,812
Evapotranspiration	29,319	41,473	42,872	37,617	46,194	37,394	44,090	46,824	35,511	42,239
Annual inflow [1)]	0,524	0,640	0,781	1,070	0,637	0,462	0,714	0,781	0,482	0,492
Annual runoff [2)]	11,900	12,796	15,639	19,290	13,987	11,886	15,300	22,649	14,420	13,065
Surface water sources [3)]	3,758	4,270	5,489	5,317	4,673	4,503	5,112	8,788	5,770	5,195
Usable groundwater sources [4)]	1,195	1,224	1,305	1,345	1,244	1,209	1,266	1,594	1,340	1,311

Source: Czech Hydrometeorological Institute

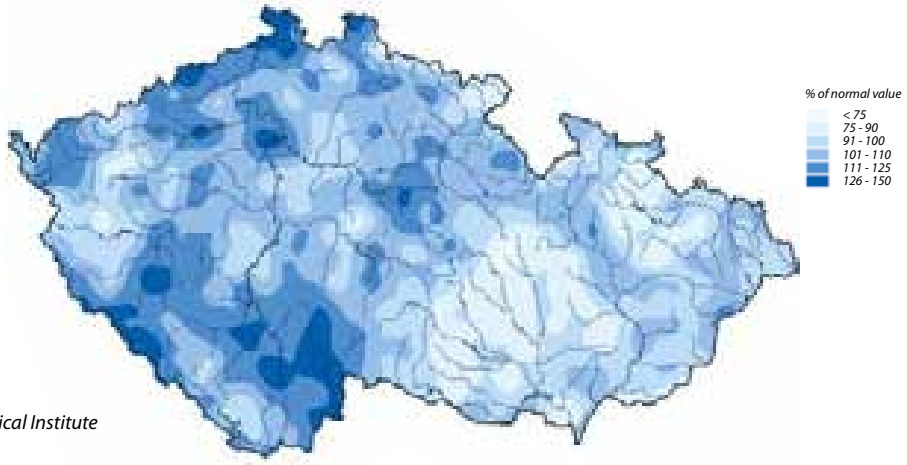
Note: [1)] *Annual inflow to the territory of the Czech Republic from neighbouring states.*
[2)] *Annual runoff from the territory of the Czech Republic.*
[3)] *Determined as the flow in the main catchment areas with 95% probability.*
[4)] *A qualified estimate, specification in more detail is published by the Czech Hydrometeorological Institute not sooner than the second half of 2013.*

Figure 1.1.1
Total precipitation amount in the Czech Republic in 2012 in mm



Source: Czech Hydrometeorological Institute

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



Source: Czech Hydrometeorological Institute

1.2 Runoff

In terms of runoff, the year 2012 in most of the territory of the Czech Republic reached values between the average and slightly below the average. Mean annual flows in catchment areas of the Elbe, the Oder River, the Olše River and the Morava River ranged mostly between 55 and 95% of long-term annual averages (Q_a). The highest annual averages were reached in the Vltava River Basin by the Otava River (90%), the Lužnice River (97%), the upper Vltava River (94%) and the Berounka River (91%), in the Elbe River Basin by the Jizera River (94%) and the upper Elbe (92%). On the contrary, of major watercourses, the lowest annual averages were reached by the Morava River (68%), the Jihlava River (55%) and the Dyje River (54%).

The most water-abundant months were in the winter and spring seasons, the remaining months of the year showed rather below-average levels of runoff, especially in the eastern part of the country. Due to the unusually warm weather in precipitation-rich January with snow supplies repeatedly melting away, this month in terms of flow showed relatively significantly above-average values (76 to 220% Q_I). Peak flows in three major waves usually reached as much as Q_1, Q_2 occurred rarely and in the third event the water levels in a number of profiles reached flood activity degree I (FAD I) and sporadically even FAD II. In the following much colder period between 25 January and 15 February, the flows everywhere were falling below long-term average values (35 to 80% Q_{II}) and a more significant rise in water levels occurred after next thaw and precipitation events at the turn of February and March, when runoff waves were among the greatest in the whole year. Flooding concerned almost all of the watercourses. FAD I and FAD II were very frequently reached and in less than ten hydrometric profiles even FAD III was shortly reached. In the first wave of peak flows (around 25 February) there often appeared local runoff problems caused by the accumulation of ice in river channels, mainly during deep frosts in the first half of February. Above-average flow rates, however, did not last too long, and in some places already in March they reached again values below the monthly averages.

In April, there continued the trend of slight decline with fluctuations or temporary rise in water levels at the end of the month following the significant warming and melting away remnants of snow. During warm and dry May water levels everywhere again declined and in the last decade in a number of watercourses they dropped to reach the level of annual minimums with flow rates at places corresponding to less than 25% Q_V. A slight increase in water levels occurred not sooner than in June, but with insignificant fluctuations flow rates continued to maintain a fairly steady trend and were mostly, with few exceptions, slightly below the monthly averages until the end of the year.

This trend was more significantly disrupted only after heavy rainfall in early July. Runoff response was most pronounced in the upper Otava River basin (with peak flows on 3 and 4 July at a level of Q_1 to Q_5 in FAD I to FAD III), the upper Úhlava River and the Úslava River basins (with peak flows on 4 July at a level of Q_1 to Q_{10} in FAD I to FAD III) and in the north of Bohemia in the Smědá River, the Kamenice River and the Mandava River basins (with peak flows on 6 and 7 July at a level of $Q_{½}$ to Q_5 in FAD I to FAD III). Warm end of July and almost all of August with an average rainfall led to a return to water level declines. Annual runoff minimum levels were reached by watercourses for the second time this year approx. at the beginning of the third decade of August, somewhere also in the first decade of September. In the following period, water levels significantly fluctuated only at the beginning of November in the Oder River, the Bečva River and the Olše River basins and greater runoff waves were then recorded in the last decade of December due to more frequent precipitation and snow thaw, mainly on watercourses in the Elbe River basin. More significant flooding occurred only in the upper Vltava River, the Otava River, the Lužnice River, the Skalice River, the upper Berounka River, the Litavka River and the upper Ohře River basins, where peak flows reached $Q_{½-5}$ and water levels frequently reached FAD I, and sporadically even FAD II to FAD III.

Water levels in most of the monitored reservoirs during the year showed a generally sustained trend. More significant fluctuations in terms of filling the storage space were evident mainly in water reservoirs in the Oder River and the Dyje River basins. On the contrary, relatively sustained filling was shown by water reservoirs in the Vltava River basin. The largest accumulated volumes were shown by most of water reservoirs at the beginning of the year as a result of the thaw in December 2011 and then especially at the turn of March and April, again as a result of snow cover melting. This was followed by a period characterized by slight fluctuations with an overall slightly downward trend or a sustained state. In the second half of the year, most of water reservoirs clearly showed a decline or fluctuations of storage levels, and generally the lowest water levels were recorded in November and especially in December. The very end of the year was characterized by filling most of the reservoirs due to increased inflows during the Christmas thaw.

1.3 Groundwater regime

From the long-term viewpoint, the year 2012 showed average values in shallow aquifers and below-average values in deeper aquifers. It was characterized by significant differences between regions.

In the western part of Bohemia, water levels in shallow wells and spring yields were ranging around the average or even higher throughout the year. Eastwards, on the contrary, the measured values decreased well below the average level. At the beginning of the year, the highest water levels and yields were recorded in central and northern Bohemia (17 and 29% of the long-term monthly cumulative frequency curve). The lowest shallow water levels were in southern regions (the upper Vltava River, the Dyje River – 57% of the long-term monthly cumulative frequency curve), the lowest yields were in the northeast of the country (the Oder River – 66% of the long-term monthly cumulative frequency curve). The annual maximums of shallow levels were recorded from January (the Berounka River – 17% of the long-term monthly cumulative frequency curve) to March (30–70% of the long-term monthly cumulative frequency curve), the yields from February (the Berounka River – 29% of the long-term monthly cumulative frequency curve) to April (36–60% of the long-term monthly cumulative frequency curve). In a year-to-year comparison, shallow levels were slightly above, and yields slightly below the maximums of the year 2011. In the summer months, downward trend was temporarily slowed down by rainfall-rich July especially in the western part of Bohemia, where a short-term increase was recorded for 90% of water levels and 70% of yields. Also the distribution of annual minimums in regions and horizons was different. For shallow water levels in central Bohemia and northern Moravia, the period showing the minimum values was August (50–60% of the long-term monthly cumulative frequency curve, the Oder River 77% of the long-term monthly cumulative frequency curve), in eastern Moravia it was September (the Morava River 63%, the Dyje River 72% of the long-term monthly cumulative frequency curve), the whole of the Elbe showed annual minimums in October (52–56% of the long-term monthly cumulative frequency curve). The yields were the lowest for the northern and eastern regions in September (the lower Elbe 66%, the Oder River 83%, the Morava River 81% of the long-term monthly cumulative frequency curve). The upper Elbe and the Berounka River showed their annual minimums in October (54 and 71% of the long-term monthly cumulative frequency curve) and in the southern regions the yields were decreasing until the end of the year (the upper Vltava River 69%, the Dyje River 78% of the long-term monthly cumulative frequency curve). In December, most of shallow groundwater aquifers were recharged to average and even higher levels, while the deeper groundwater horizons remained slightly below the average.

At the beginning of the year, deep wells in most of the monitored areas showed a varying-intensity increase of water levels, which lasted until their maximums at the turn of March and April. This was followed by a period of water level declines until September and October, when the minimum values were reached. The end of the year was dominated by steady state or a slight increase of groundwater levels.

A brook – photo group, Pěnčín primary school, Liberecký kraj region

2. Flood situations

2.1 Flood courses

In terms of floods, the year 2012 was the calmest period since 2008. Winter flood events dominated, significant were complications associated with ice phenomena. Exceptionally, Q_2 levels were exceeded, reaching levels of between Q_5 and Q_{10} occurred in February, May, July and sporadically also in December in profiles representing runoff from catchment areas of the order of only hundreds of km². The highest recorded extremity of Q_{10-20} was reached by the upper stretch of the Skalice River during December flood event.

The warm weather led to two runoff episodes after 6 January and after 19 January caused only by rainfall (up to 50 mm/24 hours). Both of them afflicted the Berounka River catchment area, the latter also the Elbe catchment area, with max. FAD II and flows at a level of $Q_{½}$ to Q_1, sporadically also Q_{2-5} (the Mrlina River the Cidlina River). Flood ended due to attenuation of rainfall, cooling, followed by water level freezing. sometimes even at higher water levels, fixation of the state of saturation before cooling and during two weeks formation of a strong ice cover. There were icy backwater events and sporadically also the formation of ice-jam at max. FAD I, rarely also FAD II (the Vydra River, the Otava River and the Berounka River in Zbečno).

The rapid warming after 14 February and rainfall (mostly up to 20 mm/24 h) and snow thaw at lower and medium altitudes caused three flood episodes (after 19 February, after 23 February and after 29 February), which were associated at places with complicated ice leaving. All of the three flood episodes afflicted mainly the lower and medium altitudes in Bohemia and only partially in Moravia. The most significant was the third episode with a major factor of stormy wind also contributing to the thaw. Peak flows rarely exceeded a level of Q_2 (sporadically in the Jizera River, the Ploučnice River, the Svratka River, the Kladská Nisa River and the upper Morava River catchment areas). The exception was reaching a level of Q_5 or Q_{5-10} (in the Loučná River and the Cidlina River catchment areas). A significant number of peak water levels affected complicated ice leaving and the formation of ice barriers in a number of watercourses (the upper Elbe, the Úpa River, the Metuje River, the Jizera River, the upper Morava River, the Moravská Sázava River, the Bečva River and the Svratka River), with water levels having often exceeded FAD II and FAD III.

Warm weather at the turn of April and May (temperatures in maximums of up to 30 °C) led to a rapid melting of snow in higher altitudes in the Krkonoše Mountains and the Šumava Mountains and two-week oscillations of water levels by daily temperatures with a peak on 28 April (the Jizera River reached even FAD I). Almost simultaneously, there occurred very early (on 3 May) a torrential flood on the Sázavka River, reaching flow at a level of Q_{5-10}. Frequent storms in the second and the third decades of June and July led mostly only to local damage and only insignificant water level increases at the monitored profiles. The only significant situation occurred on 3 to 4 July after storm rainfall (up to 80 mm) in the southwest, in the north and in the northeast of the country. Responses were represented by frequent reaching flows at a level of Q_1 to Q_2. In the Otava River, the Berounka River and the Orlice River catchment areas the Křemelná River, the upper Otava River and the Ostružná River reached Q_{2-5}. After the following rainfall on 5 and 6 July in the north of the country (up to approx. 80 mm), the Mandava River reached Q_{2-5}, and the Chřibská Kamenice River reached Q_{5-10}.

The cause of the last „Christmas" flood were strong warming (on 25 December, daily maximum temperatures reached in the south of the country up to 16 °C), snow thaw and rainfall in the south and west of the country (15 to 35 mm/24 h). The hydrological response corresponded to the levels of Q_1, but in the area of the Brdy Mountains locally Q_{2-5}, on the upper stretch of the Skalice River even Q_{10-20}. A minor wave of precipitation and less significant water level rises was recorded on 28 December, again in the south of the country.

The Jizera River – remnants of the ice barrier, Rakousy

2.2 Remedying flood damages

Ministry of Agriculture

The programme 229 110 „Remedying flood damage to state-owned water management property" included in 2012 the following sub-programmes:

- 229 116 „Remedying of the impacts of floods in the year 2009" – the sub-programme implementation was completed as of 31 December 2012.
- 229 117 „Remedying of the impacts of floods in the year 2010" – the sub-programme implementation is under way. The expected date of completing this sub-programme is 30 June 2013.

The applicants for support aimed at the remediation of flood damage to state.owned water management property are the River Boards, s. e. and the Forests of the Czech Republic, s. e.

The objective of the programme 229 110 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 programme 129 140 „Support for remedying food damage to infrastructure of water supply systems and sewerage systems" included in 2012 only one sub-programme:

- 129 143 „Support for remedying flood damage caused by floods in 2010" – this sub-programme was established in response to flood situations in the given year and was completed as of 31 December 2012. The applicants for support for remedying flood damage to infrastructure of water supply systems and sewerage systems were municipalities, associations of municipalities and water management joint-stock companies with the majority equity participation of towns and municipalities.

The financial performance of the above-mentioned sub-programmes under the programmes 229 110 and 129 140 is included in chapter 9.1 of this report.

Ministry of the Environment

Ministry of the Environment launched a programme 115270 „Remediation of Damage Caused by Natural Disasters". Under this programme, a sub-programme 115271 Floods 2010 was established by the Ministry of the Environment. Through this sub-programme, the Strategy of Recovery of Land and Property adopted by the Resolution of the Government of the Czech Republic No. 556/2010 of 4 August 2010 and No. 692 of 29 September 2010 is implemented.

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

1. Reconstructions, repairs of waste water treatment plants and sewerage systems,
2. Decontamination of land,
3. Decontamination or remediation of other damage to surface waters and groundwaters, including wells,
4. Rehabilitation of damage to migration passability and recovery of ecological stability of landscape,
5. Recovery of natural function of watercourses.

2.3 Remembrance of the 10th anniversary of the extraordinary flood

On 15 August 2012, an international conference attended by 200 experts from the Czech Republic and Germany was organized to evoke a memory of the flood in August 2002, which after the flood in July 1997 was another extreme flood event that afflicted this time much of the Elbe River basin, both in the Czech Republic and Germany.

The flood in both countries caused enormous material damage and loss of human lives. Although already in the period 1997–2002 substantial progress in the preparation of society for flood situations was achieved, this flood showed the weaknesses in the system of flood prevention and protection as well as the problems in addressing flood situations. Over the past 10 years since the disastrous flood in 2002 a lot was done in the field of flood prevention. Czech Republic managed to complete the first phase

The Bečva River

The Kopřivný stream, Stará Červená Voda

of the implementation of the EC Directive on the assessment and management of flood risks. Flood forecasting and warning service is continuously developing and improving. Programmes of support for construction of flood control measures were implemented. From the presented papers and discussions there have resulted the following recommendations:

- envisage the occurrence of extreme floods and preventively prepare for them, assess flood risk for all types of floods including flash floods,
- strengthen the capabilities and effectiveness of flood prevention in urban planning with the use of maps of flood hazards and maps for flood risk management, prepared and published in accordance with the Floods Directive of the EC,
- legislate the method of defining flood areas and their active zones. Restrict development and activities in flood areas, protect and, where appropriate, restore areas suitable for natural spilling,
- increase the application of economic tools in flood prevention including insurance policies,
- combine standard hydrotechnical solutions and nature-friendly measures for protection against floods, examine options and support measures for the accumulation of water in catchment areas,
- promote good agricultural practices and observance of erosion control principles,
- thoroughly perform flood inspections on watercourses, hydraulic structures and in flood areas,
- prepare and on an ongoing basis update flood management plans and ensure their links to contingency plans,
- assess possibilities of the use of hydraulic structures (water reservoirs) to improve protection of the area, check and optimize operating regulations,
- improve the level of care for category III and category IV hydraulic structures, provide technical and safety supervision, operating staff and other necessary activities of owners of these hydraulic structures during floods,
- provide the necessary amenities for flood management authorities, fire fighters and other components of the Rescue Information System for managing and carrying out the operational measures,
- improve the technical, organizational and methodological support for flood forecasting service,
- provide timely information of flood occurrence to flood authorities and improve flood warning service at the municipal level,
- promote the development of local alert systems, deploy and modernize information systems used by municipalities to warn the population,
- further expand cooperation and sharing of information internationally, especially in international committees,
- constantly provide training for staff of flood and emergency authorities and raise public awareness.

Water cycle in nature – 4th class, Třinec – Nebory primary school, Moravskoslezský kraj region

3. Quality of surface waters and groundwaters

3.1 Surface water quality

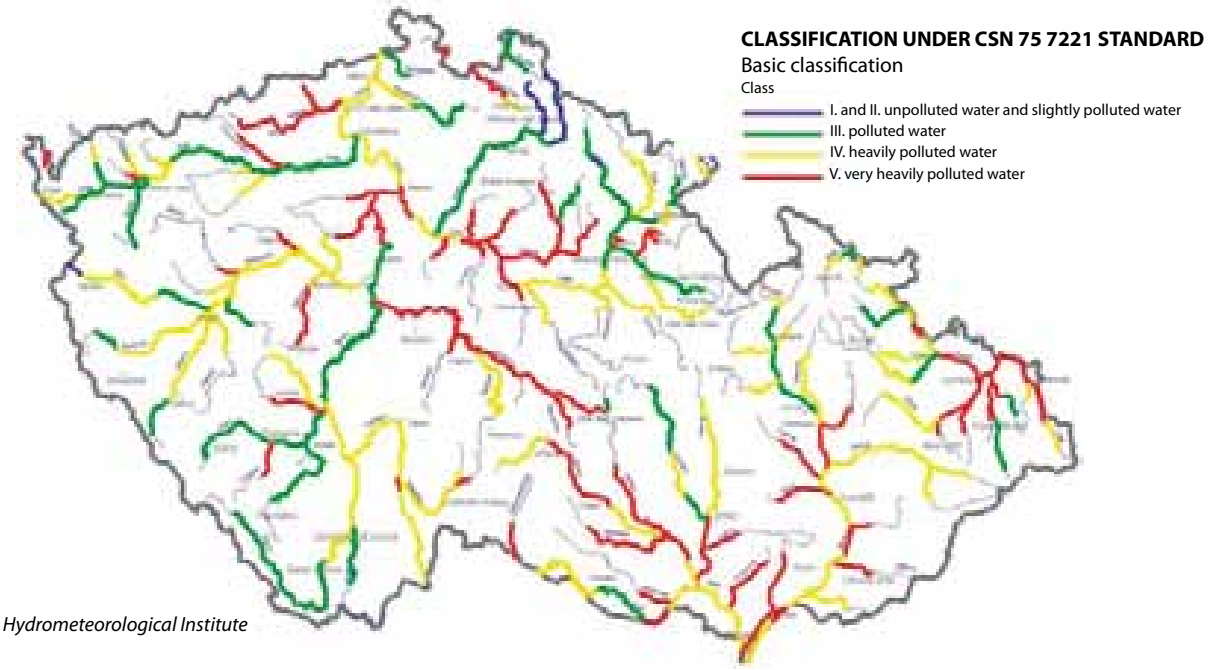
Current surface water quality in comparison with the 1991–1992 two-year period

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 2011–2012 period, under CSN 75 7221 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.

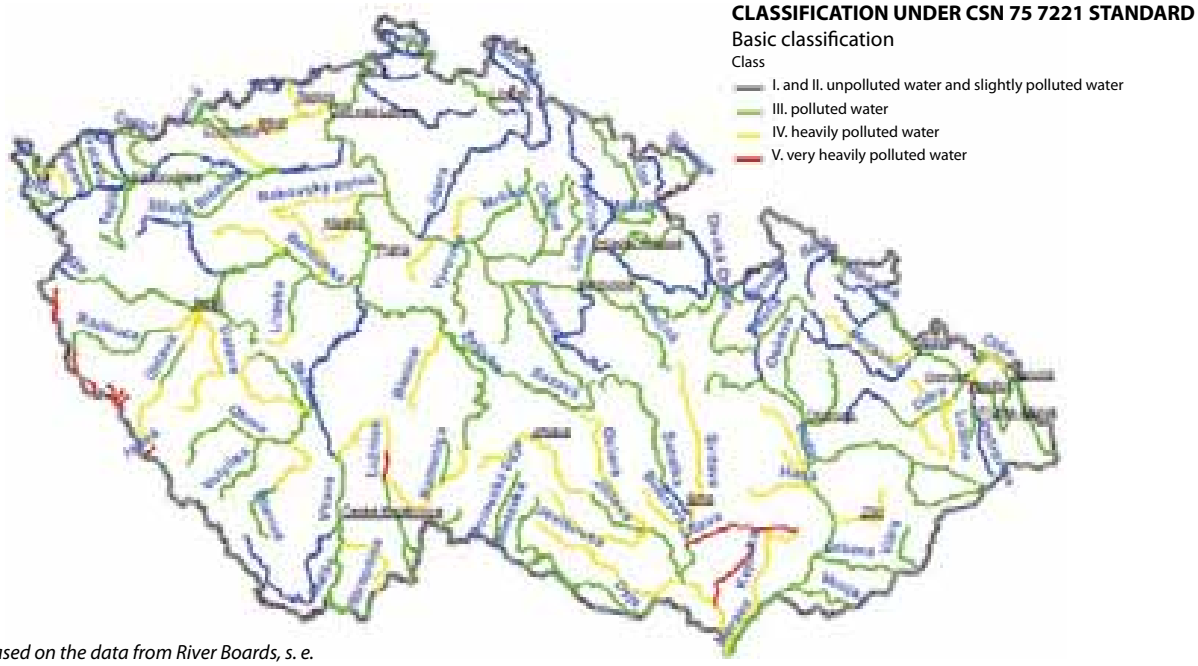
To produce the above presented map of quality of water in watercourses of the Czech Republic for the period 2011–2012, river basin administrators provided the data from 290 profiles of the water quality monitoring network. The respective monitored hydrometric profiles are classified in the following water contamination classes under the CSN 75 7221 standard:

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



Source: Czech Hydrometeorological Institute

Figure 3.1.2
Quality of water in watercourses in the Czech Republic in 2011–2012



Source: MoE, based on the data from River Boards, s. e.

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.

The map of water quality was prepared on the basis of the assessment of physico-chemical parameters listed in Table 1 of Annex 11 to the Decree No. 98/2011 Coll. Of the basic chemical parameters, most frequent exceedances of ground-level concentration defined by the government resolution were recorded for total phosphorus, especially on smaller watercourses. This status combines two effects. First, low water levels of these watercourses and, second, problems with waste water treatment in small agglomerations and intensive agricultural activities. Suspended solids wee measured in increased concentrations in smaller watercourses in the south of Moravia – in the Trkmanka River, the Litavka River, the Kyjovka River and in the Elbe River Basin – the Javorka River and the Vlkava River. Of major watercourses, the Morava River in Lanžhot, the Oder River in Bohumín, the Jihlava River and the Cidlina River can be named. High levels of COD_{Cr} and BOD_5 were measured in the Trkmanka River, the Litava River, the Vlkava River, the Lomnice River, the Lužnice River in Veselí nad Lužnicí and in the Cidlina River in Sány. Increased concentrations of BOD_5 were also detected in the Zákolanský stream and the Teplický stream, in the Výmola stream and the Mže River in Stříbro. Total nitrogen and nitrate nitrogen in most profiles met or only slightly exceeded ground-level concentration standards, more significant exceedances were detected in the Zákolanský stream, the Vlkava River, the Želetavka River and the Rokytná River. The classification of watercourses in class V is due to the indicators total phosphorus and suspended solids.

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 2012, 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 28.4 Bq/l, in the hydrometric profile Vltava Praha the value of 17.7 Bq/l and in the hydrometric profile Elbe Hřensko the value of 6.3 Bq/l.

The annual average volume activity of tritium downstream of the outlet of waste waters from the Dukovany nuclear power plant in the hydrometric profile Jihlava downstream of the Mohelno reservoir reached the value of 101.8 Bq/l and in the hydrometric profile Jihlava Ivančice the value of 50.5 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 area of the Stráž pod Ralskem deposit, in terms of total volume activity alpha, can be stated to have met the environmental quality standard values in all hydrometric profiles (also in the traditionally most critical Ploučnice – Noviny profile, where the total average volume activity alpha reaching the value of 0.20 Bq/l was very close to the environmental quality standards set by the Government Decree No. 61/2003 Coll., as amended). Total activity beta in all of the monitored hydrometric profiles was not exceeded.

Water quality in water reservoirs and other reservoirs

On the territory of the Czech Republic, the year 2012 with the mean annual air temperature of 8.3 °C ranged around the average. The average precipitation amount on the entire territory of the Czech Republic reached 695 mm, which represents 103% of the long-term precipitation average. A number of water reservoirs, nevertheless, 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).

Within the framework of water quality monitoring conducted by the Elbe River Board, s. e. through its divisions, in total sixteen water reservoirs are continuously monitored. Detailed water quality monitoring including regular evaluation was performed for five water supply reservoirs and for five reservoirs with waters used for bathing. These locations are regularly subjected to a regular limnological examination in vertical lines defined in a longitudinal profile of the water reservoir. Physico-chemical, chemical and biological parameters are measured within this examination (discrete sampling from water level, bottom, plankton sampling).

For another six water reservoirs, a limited monitoring is performed by the Elbe River Board, state enterprise. Only the following parameters are measured: water level temperature (daily measurement throughout the year), transparency in the area of the dam of the reservoir and concentration of chlorophyll_*a* at the water level close to the dam. Beyond this scheme is only the Mlýnice water reservoir with no permanent staff, where only the measurement of water level temperature is performed.

In terms of water quality development, traditionally trouble-free was the Souš water reservoir in the Jizerské hory Mountains. Potential impairment in the snow thawing period was eliminated by aerial application of very fine-ground limestone between 23 and 24 April.

Although during most of the year the quality of water in the Vrchlice water supply reservoir was very good, at the end of the growing season there was massive development of cyanobacterial water bloom, mainly composed of genera Microcystis, Aphanocapsa and Woronichinia. The unfavourable situation persisted until the end of October. The maxima were found to show about 400 thousand cells

per millilitre and the concentration of chlorophyll-*a* at a level of as much as 100 µg/l was also measured. This resulted, among other things, in deterioration of the oxygen regime in the water reservoir. In late summer, at the end of impoundment, concentrations of organic compounds expressed by COD_{Mn} at a level of as much as 13 mg/l were detected. Retention in the canyon-shaped reservoir, however, towards the dam leads to a significant improvement in water quality, and thus at the sampling point the level of COD_{Mn} did not exceed 6 mg/l and the amount of chlorophyll-*a* did not exceed the level of 17 µg/l.

Higher rainfall activity at the beginning of summer, favourable temperatures and supply of nutrients (phosphorus) from the settlements in the catchment area created appropriate conditions for an increased occurrence of cyanobacteria and green algae at Hamry water reservoir (max. 30 µg/l chlorophyll-*a*). To increase the quality of raw water, regulatory catching of accompanying fish species associated with the long-term ichtyological survey was performed there.

At the Křižanovice water supply reservoir, water quality was also impaired (over 45 µg/l chlorophyll-*a*, transparency for most of the growing season 100–200 cm).

The extraordinary activity with continuous monthly monitoring was required by the development of picocyanobacteria of the family Merismopedia at the Josefův Důl water supply reservoir in the Jizerské hory Mountains. Compared to previous years, there was a significant decrease in transparency (previously 4 – 5 m, now a long-term drop below two metres). Obviously long-term change in water quality may require costly investments in water treatment technology.

Although in autumn the development of water quality at the Vrchlice water supply reservoir was not optimal, in the area of abstraction for water supply purposes there was no deterioration requiring to take emergency measures.

Excellent water quality persisted throughout the growing season at the Labská water reservoir. This reservoir influences by its water quality the abstraction for water supply purposes situated downstream in Herlíkovice (drinking water for the town of Vrchlabí). Transparency ranged between 200 and 500 cm (excellent quality), chlorophyll-*a* concentration reached a maximum of around 21 µg/l.

At the Seč water reservoir which serves as the local water supply source and also has a great potential for recreation, summer season was surprisingly free of continual cyanobacterial bloom, i.e. the unfavourable situation of the previous two years did not occur. Yet the bathing season was terminated by the environmental health officer well before the end of the season, because in August the reservoir was found to show unacceptably high microbial load.

Water quality in reservoirs monitored by the Vltava River Board, state enterprise can be generally stated to have ranged within a usual year-to-year variability of water quality. Since the year 2012 was characterized by low water levels, showings of eutrophication including the presence of cyanobacteria in long, canyon-shaped reservoirs were mainly observed in the upper and middle parts of the reservoirs (Hracholusky, Orlík, Římov, Švihov). In the area of the dam, basically all reservoirs showed water quality rather better than in previous years.

Římov water supply reservoir is worth mentioning in assessing eutrophication. Similarly to the year 2011, the Římov reservoir was affected by quite a strong development of phytoplankton in the middle part of the reservoir. The cause was the same in both years – input of nutrients through increased Malše River flows in mid-summer and their partial mixing into the water production layer. Increased phytoplankton biomass, however, did not reach the dam and quality of raw water so was not directly affected.

In terms of threats to water quality by pesticidal substances, permanently unfavourable situation is in the catchment area of the Švihov water supply reservoir. As a result of intensive growing of mainly corn and rape in systematically drained areas, triazine herbicides are found in the tributaries of the reservoir.

The quality of water in reservoirs was continuously monitored also by the Ohře River Board, state enterprise, and generally for all of the reservoirs it can be stated that according to the results of zonal measurement it was not necessary to carry out desludging. There were no threats to drinking water supplies because of quantity or quality.

The summer of 2012 was hot and very dry, therefore, an increase of intense cyanobacterial water blooms in most reservoirs administered by the Morava River Board, state enterprise could have been expected. This adverse effect, however, generally did not occur. Planktonic cyanobacteria strongly colonized only shallow hypertrophic reservoirs in the south of Moravia – Jevišovice hydraulic structure and reservoirs of the Nové Mlýny hydraulic structure. Really mas, s development of cyanobacteria was observed there, also with a significant presence of problematic and toxic species Microcystis aeruginosa. Other reservoirs, mainly water supply reservoirs, showed in the warmest period of the year the development of various communities of algae (especially diatoms and desmidiales), which competed with cyanobacteria and they did not form mass water bloom.

The quality of raw water monitored by the Oder River Board, state enterprise, at the Šance, Kružberk and Morávka water supply reservoirs in 2012 was very good and did not require more complex treatment to achieve drinking water. At the Kružberk water reservoir, during the summer months, the occurrence of cyanobacterial genus Anabaena was observed, however, the total numbers of the organisms found did not reach high levels. It can be said that in 2012 the situation at the Kružberk water reservoir was in this respect more favourable, compared to the year 2011. Last year, at this reservoir, there was also slightly exceeded the limit value of A1 category for indicators COD_{Mn}, total organic carbon (TOC) and total nitrogen.

As regards reservoirs for purposes other than water supply administered by the Oder River Board, s. e., the season 2012 can be considered trouble-free. Except for the reservoir of the Olešná hydraulic structure, the development of water bloom was not observed in any of the monitored reservoirs. A minor problem arose in July at the Slezská Harta water reservoir in the bay of Nová Pláň, where due to intense rainfall and subsequent runoff excessive occurrence of enterococci was identified. This situation, however, over the next few days rapidly faded away.

Quality of water used for bathing during the bathing season 2012

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, 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. 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.

The most frequent problems with water quality are connected with a huge presence of cyanobacteria, which resulted in imposing a ban on bathing in certain localities. In the bathing season 2012 this was the reason for imposing in total 9 bans on bathing. Due to exceeding the limits of microbiological indicators, 6 bathing sites were classified in the category of poor quality and at one location a ban on bathing was imposed because of the risk of cerkaria dermatitis.

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 the indigenous fish species 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).

For the purposes of this report, in accordance with the procedures set by the applicable legislation, the assessment of the period 2011–2012 was performed only for the data available from less than half of reaches (48% of hydrometric profiles demarcating the delimited waters) and only for profiles in the lower reaches of watercourses in the Czech Republic. They provide, similarly to the previous year, only a framework information on meeting pollution limits for salmon waters and carp waters in the Czech Republic. Government Order No. 71/2003 Coll. (similarly to the Directive 2006/44/EU) allows in the event that no sufficient number of data or data structure are available, to assess whether pollution limits are met according to the maximum value measured for the given period.

Based on the assessment of the available data collected in hydrometric profiles demarcating the delimited waters it was established that in the period 2011–2012 pollution limits under the order were met for 65% of the assessed hydrometric profiles (69% of salmon waters and 62% of carp waters), i.e. impairment by approx. 10%, compared to the previous year.

For most of the assessed hydrometric profiles failing to meet pollution limits for fish waters this is caused by excessive values of ammonia ions. The target limits for ammonia ions are met only by two of all assessed hydrometric profiles. With regard to lack of data it was not possible to assess whether the limits for free ammonia, which is toxic to fish, were met. For the assessment, therefore, only the value of concentration of ammonia ions (without softening) was used, which is allowed by the Government Order No. 71/2003 Coll. (similarly to the Directive 2006/44/EU). A low concentration of dissolved oxygen in the hydrometric profiles was detected for five assessed waters.

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.

In the year 2012, the monitoring of the chemical status of suspended matter and stream sediments was carried out at 47 hydrometric profiles on main watercourses and their significant tributaries under the programme of the complex monitoring, which followed up with the surveillance monitoring programme conducted in the years 2007–2010 and with the monitoring of constant matrix in 2011, which, however, for financial reasons did not encompass the entire original scope of monitoring. Following up with the above mentioned programmes, the monitored indicators in constant matrix included contents of heavy metals, metalloids and specific organic substances, including the majority of priority pollutants with relevance to constant matrix (Annex II of the Directive 2008/105/EC). Monitored as well were other potentially hazardous substances with possible endocrine and toxic effects, whose presence in the aquatic environment was already previously demonstrated in research projects: bisphenol A, musk compounds, triclosan and a number of pesticides currently in use. At the selected 18 profiles, monitoring also included new priority hazardous substances – hexabromocyclododecane, dioxins and compounds with dioxin effect – identified in the review of Annex X of the Water Framework Directive (2000/60/EC) that are listed in the draft Directive of the European Parliament and of the Council, amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy. A selected set of ten sediment samples was subjected to the gamma-spectrometric analysis of radionuclides.

The sediments in a set of 94 samples were analyzed for a total of 125 substances (the sampling frequency of twice a year), suspended matter in a set of 192 samples were analyzed for a total of 94 substances (the sampling frequency of four times a year).

The assessment of the monitoring results of the quality of constant matrix and their chemical status in 2012 was carried out in accordance wih the valid normative (Government Order No. 23/2011 Coll. It establishes, in accordance with the Directives 2000/60/EC and 2008/105/EC, for the monitoring purposes, the qualitative limits for the selected substances in sediments and suspended matter, the so-called environmental quality standards. They mean concentrations of a pollutant or a group of pollutants in water, sediments or biota that must not be exceeded in order to protect human health and the environment. According to this regulation, the assessment is carried out for occurrences of the selected priority substances and priority hazardous substances listed in Annex X of Directive 2000/60/EC – anthracene, PBDE, cadmium, chloroalkanes C10-13, DEHP, fluoranthene, HCB, HCBD, HCH, lead, mercury, nickel, 4-nonylphenol, 4-terc octylphenol, pentachlorobenzene, pentachlorophenol, the sum of five PAHs and tributyltin. The assessment was carried out according to exceedances or non-exceedances of the EQS values by the profile annual average concentrations of these substances.

EQS values were taken over to the Czech normative from the European draft of the qualitative standards prepared in 2005. Currently, their credibility is being reviewed and probably some of the limits will be changed according to new scientific knowledge (in a number of cases, the values concerned are originally tentative values).

Given the relatively small number of quality limits for constant matrix set by the Government Order No. 23/2011 Coll. while also taking into account the continuity of assessment in the past years, there has also been mentioned 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. This method of assessment is compatible with the assessment performed in the past years, allows the assessment of trends and is also applicable to most of the measured chemical substances, for which it has the limit values set.

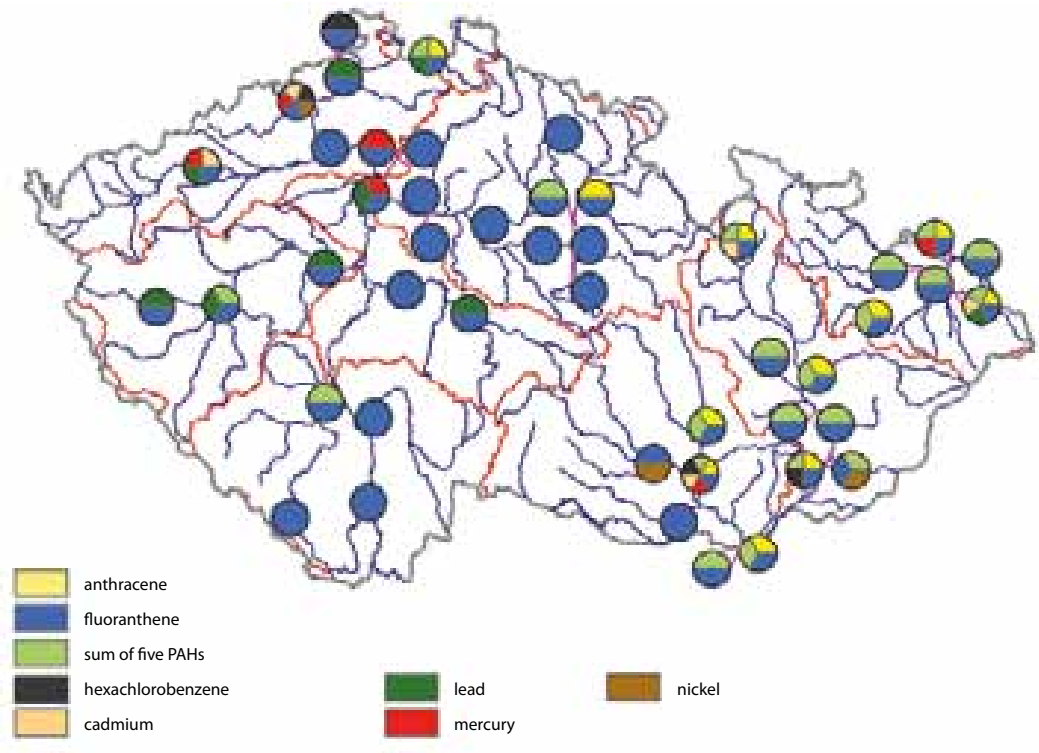
The text is further complemented with the characteristics of the occurrence of substances that did not exceed the limits or do not have the limits set, but they are present regionally or locally in significant concentrations.

Environmental quality standards, similarly to the previous year, were most often exceeded by PAH group substances. Fluoranthene in all 46 monitored profiles in suspended matter and sediments except for the Cidlina River, the sum of five substances of the PAH group in 27 profiles (mainly in the Morava River, the Dyje River and the Oder River catchment areas) and anthracene in 24 profiles in sediments and in 11 profiles in suspended matter, again most often in profiles in the Morava River, the Dyje River and the Oder River catchment areas. As regards other organic substances, EQS were exceeded by concentrations of hexachlorobenzene (sediments failed to meet EQS in 11 profiles and suspended matter failed to meet EQS in 4 profiles), with the highest excessive value (86 times more than EQS) having been recorded, similarly to the previous year, in the Bílina River sediments in Ústí nad Labem. Compared to the last year, EQS were newly exceeded in 2 profiles by chloroalkanes C10-13, while the concentrations of tributyltin in suspended matter met the EQS level in all cases.

As regards the contents of metals, taking into account natural concentrations – a global geogene background (Turekian, Wedepohl, 1961), the EQS were most often exceeded by concentrations of lead (13 profiles for sediments, 9 profiles for suspended matter), cadmium (10 profiles for sediments, 5 profiles for suspended matter), mercury (5 profiles for sediments, 6 profiles for suspended matter) and nickel (3 profiles). The annual comparison shows an increase in exceedances of EQS for cadmium in both matrices and a decrease of exceedances for mercury. It should be noted that with the exception of long-term contaminated profiles such as the Bílina River in Ústí nad Labem, the Ohře River in Želina and the Bílina River in Záluží, multiples of exceedance for cadmium are relatively low and close to the limit, the only exception is the sediment in the Morava River profile in Raškov, where the annual average is at a level of double the EQS. Low multiples of the EQS exceedances were detected, except for the Bílina River in Ústí nad Labem, also for lead, nickel and mercury. Should a regional geogene background (which has not been verified yet for all watercourses) be taken into account, the assessment might bring a different final result.

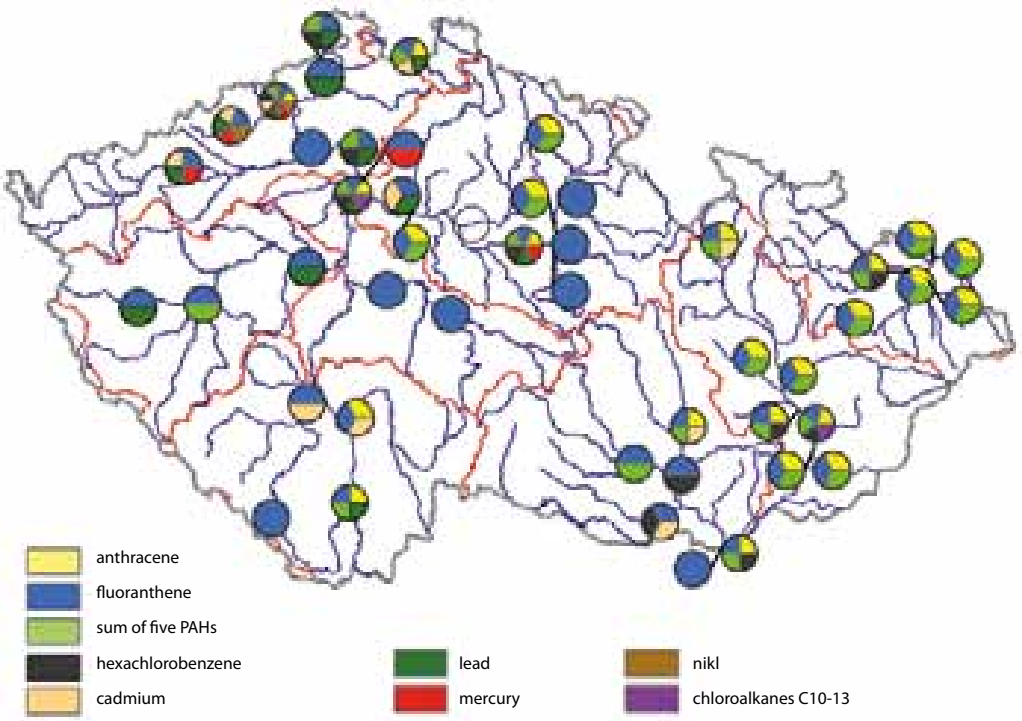
An overview of the monitoring sites in catchment areas showing the EQS exceedances in constant matrix is documented by Figures 3.1.3 and 3.1.4. The Figures show that in all sub-catchment areas some of the listed EQS were exceeded in at least one case, similarly to the year 2011 (see above – fluoranthene). 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 and hexachlorobenzene, fluoranthene, anthracene, the sum of 5 substances of the PAH group), the upper and the middle Elbe (cadmium, lead, mercury, the sum of 5 substances of the PAH group, anthracene, fluoranthen, hexachlorobenzene), the lower Vltava River (lead, mercury, chloroalkanes C10-13, hexachlorobenzene, anthracene, fluoranthene, the sum of 5 substances of the PAH group) and the Lužická Nisa River (cadmium, lead, anthracene, the sum of PAHs, fluoranthene). Typical of the sub-catchment area of the Morava River, of catchment areas of the Dyje River and the upper Oder is more flat distribution of exceedances of the EQS by the PAH group substances – anthracene, the sum of 5 substances of the PAH group, while for metals the exceedances are more local (the Oder in Bohumín, the Svratka River in Židlochovice – mercury). Definitely the highest contamination load is shown by the Bílina River profile in Ústí nad Labem, where the EQS was exceeded in sediments by 8 indicators.

Figure 3.1.3
Occurrence of substances exceeding environmental quality standards in suspended matter in 2012



Source: Czech Hydrometeorological Institute

Figure 3.1.4
Occurrence of substances exceeding environmental quality standards in sediments in 2012



Source: Czech Hydrometeorological Institute

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 constant matrices, similarly to the preceding years, largely corresponded to the level of natural values or moderate pollution. Potential risk level was reached only locally for PAH group substances, DDT group substances, arsenic, mercury, lead, cadmium, beryllium, in the case of metals most often in locations with long-term pollution load. In the category of increased pollution and risk posing pollution, for the above mentioned substances except for PAH mostly only their highest measured values occurred. In suspended matter, increased pollution and risk posing pollution (B, C categories), except for polyaromatic hydrocarbons indicated for arsenic and beryllium was detected solely in the Ohře River in Želina. In sediments, as regards heavy metals, arsenic in contents exceeding the limit was detected in all samples from the Bílina River in Ústí nad Labem and in Záluží and also in the Otava River in Topělec. Other metals in concentrations exceeding the limit – cadmium, antimony, lead and mercury were detected solely in sediments of the Bílina River in Ústí nad Labem. Samples collected in the Bílina River represent so far the highest measured levels since 1999 (Cd 24 mg.kg^{-1}, Pb 2030 mg.kg^{-1}, Hg 22 mg.kg^{-1}, Cd 24 mg.kg^{-1}) and are comparable to the levels in the years 1999–2000, when waste water from the Spolchemie plant was discharged to the Bílina River flow. Sediment samples from the Bílina River also contained increased to risk posing concentrations of p,p´DDD (500 to 3,800 µg.kg^{-1}), o,´p DDD (300 to 2,200 µg.kg^{-1}), p,p´DDT (200 to 2,100 µg.kg^{-1}). DDT group substances in the long run reach the highest levels in the country in the Bílina River and the lower Elbe downstream of Děčín and episodically occur in increased concentrations also in sedimentable suspended matter in both Czech and German side of the Elbe.

The highest number of exceedances of the limit for increased pollution and risk posing pollution was recorded, similarly to the years 2009–2011, for the PAH group substances, mainly benzo(a) pyrene, and sporadically also benzo(a)anthracene and benzo(b) fluoranthene. In 37 samples of suspended matter, concentrations of benzo(a)pyrene exceeding the limit were repeatedly detected, most often in the Svitava River in Bílovice, the upper Morava River in Raškov, the Oder River in Jakubčovice and Bohumín, the Ostravice River in Ostrava, the middle Morava River in Kroměříž, Blatec and Spytihněv, the Otava River in Topělec, the Opava River in Děhylov and sporadically also in other profiles, for example, in the Olše River in Věřňovice, the Lužická Nisa River in Hrádek nad Nisou, the Bečva River and the Svratka River downstream of Brno. In sediments, the limit for increased pollution was exceeded by concentrations of benzo(a)pyrene at identical locations in a smaller number (10) of samples. Contamination in these locations is probably related to atmospheric deposition of products of combustion of fossil fuels from industrial sources and transport, and also to heating in local sources outside urban agglomerations. The highest levels of benzo(a)pyrene (3,000 to 6,000 µg.kg^{-1}) were detected ouside urban and industrial agglomerations in the upper Morava River in Raškov and the Svitava River in Bílovice, where of significant impact on the contamination are local heating sources and probably also emissions from railway traffic.

Looking at the long-term trend in constant matrix pollution, a further reduction of contents of arsenic in suspended matter of the Bílina River in Ústí nad Labem and the Ohře River, observed since 2009, was identified. As regards other metals, the status is more or less stabilized and their levels range around the long-term average, only cadmium locally shows slightly increased contents. For the PAH group substances, a continuing slightly increasing trend in contents of mainly benzo(a)pyrene can be observed since 2008. In the case of the detected extreme pollution in the Bílina River sediments in Ústí nad Labem, pollution source can be considered material from old contaminated sites which due to rainfall-runoff situations and perhaps also due to anthropogenic activities episodically occurs in the Bílina River. Resuspended pollution load originating from old contaminated sites is also evidenced by the presence of a number of other contaminants found in high concentrations in samples (DDT, HCB, hexachlorobutadiene, PAH, bisphenol A, etc.).

Characteristics of the presence of selected hazardous substances

As regards other monitoring results, it is necessary to mention the presence of hazardous substances that were not classified

as exceeding the limit or substances for which limits have not been defined. These are especially organochlorinated pesticides from old contaminated sites – DDT group, which is usually present, in addition to the Bílina River in Ústí nad Labem, also in the lower Elbe downstream of Děčín. In 2012, in contrast to above described sediments, in suspended matter of the Bílina River and the Elbe downstream of Děčín no increased levels were detected (in average only 50 µg.kg^{-1}).

As regards other pesticides belonging to old contaminated sites, hexachlorobenzene in the highest concentrations was detected in the Bílina River sediments (1,400 µg.kg^{-1}), with the average annual content having exceeded 86 times the EQS level. Slightly increased levels were also measured in the Elbe in Valy (100 µg.kg^{-1}) and in the lower Elbe in Litoměřice (250 µg.kg^{-1}). EQS for HCB was exceeded in total in 12 profiles. In sedimentable suspended matter in Děčín, the contents ranged between 50 and 280 µg.kg^{-1}.

In terms of the currently used pesticides, chloropyriphos exceeding the value of detection limit was found in 46 samples of suspended matter with maximums (tens of µg.kg^{-1}) in the Berounka River in Srbsko, the Olše River in Věřňovice and the Ohře River in Želina, further then trifluraline in first µg.kg^{-1} was found in the Sázava River and the Chrudimka River. Overall, the pesticides in use were more frequently and in higher concentrations detected in suspended matter, compared to sediments.

Chlorobenzenes represent long-term typical pollution of the middle Elbe in the stretch downstream of Pardubice. Suspended matter samples in all profiles of the middle Elbe and also in the Elbe profile downstream of Děčín showed relatively low values (according to the MoE Guidance Document they reached max. the category of slight pollution) with maximums in Valy. In sediments, the highest concentrations were detected in the above mentioned samples from the Bílina River in Ústí nad Labem (1,2,4-trichlorobenzene between 300 and 400 µg.kg^{-1}). Significantly higher contents of especially 1,2,4- and 1,3,5-trichlorobenzene were measured, similarly to the year 2011, in mixed samples of sedimentable suspended matter in the Valy profile (1,2,4-trichlorobenzene between 100 and 1300 µg.kg^{-1}).

The contents of PCB group substances were, similarly to the previous year, measured in relatively low values, according to the MoE Guidance Document in more than 50% of samples they corresponded max. to the category of slight pollution. The highest values were detected in suspended matter of the Ohře River in Želina, in the Lužická Nisa River in Hrádek nad Nisou and in the middle and lower Elbe. In sediments, PCB contents reached values higher on order, compared to suspended matter. In the largest amounts they accumulated in the Bílina River in Záluží (1,090 µg. kg^{-1}) and in the Dyje River in Pohansko (1,160 µg.kg^{-1}).

As regards monitored priority substances listed in Annex II of the Directive 2008/105/EC, the presence of di-(2-ethylhexyl)phthalate (DEHP) was detected in suspended matter and sediments in all hydrometric profiles. The highest contents of DEHP occurred, similarly to the previous year, in the Bílina River in Ústí nad Labem (from 10,000 to 60,000 µg.kg^{-1}). The EQS value was exceeded in none of the monitored hydrometric profiles.

Chloroalkanes C10-13 which are categoried in priority hazardous substances were detected in 45% of samples. The highest concentrations were measured in the Oder River in Bohumín, the Dřevnice River in Otrokovice and the Jihlava River in Ivančice. The EQS value was exceeded in sediments in the Dřevnice River hydrometric profile in Otrokovice and in the Vltava River in Zelčín. Contamination with these substances relates to emissions resulting from leather processing and shoe making, rubber industry and metal working.

Polybrominated diphenylethers (PBDE) in the majority of suspended matter and sediment samples did not exceed the detection limit. Measurable contents were detected in 13 profiles, most often for congeners 47, 99 and 100. Their levels were very low, up to 20 µg.kg^{-1}, and their total contents did not exceed the EQS value. The dominant congener, which was present in several times higher concentrations, was PBDE 209 (forming 97% of currently most often used commercial mixtures in industry – decaBDE). It was detected in the highest concentrations most frequently in sediments and suspended matter of the middle Elbe (from 500 to 5,000 µg.kg^{-1}).

Tributyltin (cation) was measured only in suspended matter samples from 18 hydrometric profiles on major watercourses. Its level exceeding the detection limit was found only in one sample from the middle Elbe in Valy (2.4 µg.kg^{-1}). In contrast to the year 2011, the EQS value was exceeded in none of the monitored hydrometric profiles. In sedimentable suspended matter in the middle and lower Elbe, positive findings were in 25% of samples with levels of up to 13 µg.kg^{-1}.

The priority substances also include 4-nonylphenol and 4-terc octylphenol from the alkylphenol group. Their presence exceeding the detection limit was found only in suspended matter sample from the Olše River in Věřňovice. The EQS value was not exceeded. Overall, their presence in constant matrix can be assessed, similarly to the previous year, as insignificant.

In terms of the negative effects on the aquatic ecosystem and human health, persisting occurrence of high contents of metals, some organochlorinated pesticides from old contaminated sites and PAHs, 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, the Oder River and in the Elbe border profile can be assessed as a status still requiring attention. In addition to classical pollutants, in a number of rivers there are demonstrably present also other not routinely monitored chemical substances with probable toxic and endocrine effects, whose presence and cumulation in the aquatic environment may represent in the future a potential risk to aquatic ecosystems.

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 with the current EQS levels basically in all other river sub-basin areas. Of significance for the documentation of old contaminated sites and for planning of remedial measures we consider extremely contaminated sediments found in samples from the Bílina River in Ústí nad Labem. It is highly probable that such contaminated material will due to resuspendation during runoff situations further spread to river basins.

Accumulation bio-monitoring of surface waters

In the year 2012, similarly to the preceding years, the contamination of aquatic organisms with harmful substances was monitored in 21 representative profiles of the main watercourses in the Czech Republic as a part of surface water surveillance monitoring. The following biotic matrices were analyzed: mussel Dreissena polymorpha (18 localities), biofilm (21 localities), fish – Leuciscus cephalus (European chub – 15 localities), juvenile stages of fish – the fry (21 localities) and benthic organisms (Hydropsyche sp., Erpobdella sp., Gammarus sp. 21 – localities).

The assessed pollutants are substances with very low solubility in water (in water samples they are mostly below detection limit) and they easily accumulate in fats. Among heavy metals the monitored pollutants are lead, cadmium, mercury, chromium, zinc, copper, nickel and arsenic (concentrations in mg.kg^{-1}). Among specific organic substances (concentrations in µg.kg^{-1}) the monitored pollutants are indicator PCB congeners (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, PBDE (congeners 28, 47, 99, 100, 153 and 154), polyaromatic hydrocarbons PAHs (the sum of compounds: fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indenol(1,2,3–cd)pyrene), bis(2-ethylhexyl)phthalate (DEHP), perfluorooctane sulphonate acid (PFOS). Organisms that best accumulate individual pollutants were selected for the assessment (concentration is given in dry matter for biofilm, values in other matrices are given in units per wet weight).

For biota, binding EQS values except for the EQS for mercury, hexachlorobenzene and hexachlorobutadiene have not yet been defined by the EC (Directive of the European Parliament and the Council 2008/105/EC). The selected indicators were compared with these standards and the measured concentrations were assessed in comparison with the EQS according to the Government Order No. 23/2011 Coll.

PAHs were evaluated in biofilm, where the highest levels were detected. Polyaromatic hydrocarbons are substances that are produced mainly during imperfect combustion. Many of these substances have mutagenic and carcinogenic effects. The highest concentration was measured for fluoranthene. In the draft of the Directive, for fluoranthene in biota the maximum level of 30 $\mu g.kg^{-1}$ of wet weight is proposed.

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 measured concentrations in fish fry in about half of the monitored profiles exceeded the EQS proposed by the EC (9.1 $\mu g.kg^{-1}$). The values range from 1.2 to 67 $\mu g.kg^{-1}$ (the Otava River in Topělec and the Lužická Nisa River in Hrádek nad Nisou). High levels were also measured in the Bílina River, the Bečva River and the Elbe. Much higher levels exceeding the EQS in all of the monitored localities were found in the blood of adult fish.

The sum of DDT (indicator congeners o,p´and p,p´) was assessed in benthic organisms. High concentrations were detected (similarly to the previous years) in the Bílina River profile in Ústí nad Labem (50.8 $\mu g.kg^{-1}$), where this pesticide was produced in the past. Most probably this is an old pollution load in sediments. In other profiles the values ranged between 2.8 and 23.7 $\mu g.kg^{-1}$. The EQS for DDT is not proposed.

Bis(2-ethylhexyl)phthalate (DEHP) was assessed in fish. This substance is widely used mainly as a softening agent in plastics. It is classified to belong to priority hazardous substances in the field of water policy of the EU. The highest concentration was detected in the Ohře River profile in Terezín (899 $\mu g.kg^{-1}$). In the draft of Directive of the European Parliament, limit value for DEHP is not proposed. The EQS level given by the Government Order is 3,200 $\mu g.kg^{-1}$. This level was exceeded in none of the monitored sites.

Brominated diphenylethers (PBDE) are persistent substances, insoluble in water and harmful to health. The measured values in biota in all of the monitored profiles significanly exceeded the EQS proposed by the EC (0.0085 $\mu g.kg^{-1}$). The highest concentration was detected in fish in the Vltava River profile in Zelčín (22.6 $\mu g.kg^{-1}$). In other profiles, the concentrations ranged from 0.8 $\mu g.kg^{-1}$ in the Morava River in Lanžhot to 3.8 $\mu g.kg^{-1}$ in the Bílina River in Ústí nad Labem. According to the Government Order (EQS 1,000 $\mu g.kg^{-1}$) the limit value was exceeded in none of the cases. It is worth mentioning that the EQS proposed by the European Commission is by up to three orders of magnitude lower than values obtained from the monitoring conducted by the Czech Hydrometeorological Institute and the EQS according to the Government Order is by up to three orders of magnitude higher.

Mercury was evaluated in fish fry and in fish muscle tissue. The levels of mercury in both fish and fish fry in all profiles exceed the EQS of 0.020 $mg.kg^{-1}$ established by the EC and also that established by the Government Order. The maximum concentration in fish was detected in the Vltava River profile in Zelčín (0.34 $mg.kg^{-1}$), in fish fry the highest level was measured in the Elbe in Obříství (0.10 $mg.kg^{-1}$). In connection with monitoring of fish it has to be mentioned that concentration levels obtained from adult fish may not 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.

Hexachlorobenzene (HCB) was evaluated in fish fry and benthic organisms. The maximum concentrations (2.1 $\mu g.kg^{-1}$) were measured in the Bečva River. The measured values in both matrices ranged from 0.17 to 2.1 $\mu g.kg^{-1}$. The EQS established by the Directive is 10 $\mu g.kg^{-1}$, the EQS according to the Government Order was established (probably by mistake) at a level of 20 $\mu g.kg^{-1}$. These limit values were exceeded in none of the monitored sites. The Figure shows that in some cases the information obtained from benthic organisms is of higher significance, compared to fish fry.

Conclusion

The results of bio-accumulation monitoring in 2012 clearly show that the aquatic ecosystem contains (often in high concentrations) priority pollutants, 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. The draft of Directive of the EC underlines the importance of properly chosen matrix for monitoring of the aquatic ecosystem. Bio-accumulation monitoring has been carried out by the Czech Hydrometeorological Institute since the year 2000. So far, no significant decrease in values of the monitored substances in biota was observed.

3.2 Groundwater quality

In the year 2012 the national groundwater quality monitoring network monitored 651 sites comprising 174 springs (the monitoring of springs documents natural drainage of groundwaters particularly in the Crystalline complex and local drainage of Cretaceous structures), 212 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 high coefficient of filtration and rapid pace of pollution) and 265 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 deep aquifers – direct vulnerability of these waters is not very high, because the contamination there is manifested only after a longer period of time). In total, 192 indicators were measured. The national water quality monitoring network sites were samples twice in 2012, in spring and in autumn. Indicators from groups of organic substances with the exception of pesticides were monitored only in a limited number of monitoring sites, taking into account the expected presence of those substances in locations concerned, based on the evaluation of water quality monitoring from previous years.

With regard to the requirements of the Directive 2000/60/EC, the evaluation of groundwater quality results in the year 2012 focused especially on hazardous substances. The measured values of the groundwater quality indicators were compared with the reference values for groundwater under the MoA and MoE Decree No. 5/2011 Coll. of 20 December 2010, 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.

In 2012, most frequently found in concentrations exceeding the limit values were the following indicators:

Inorganic ions: manganese (40.2% of samples above the limit values), nitrates (11.1% of samples above the limit values), ammonia ions (11.1% of samples above the limit values), sulphates (3.0% of samples above the limit values), chlorides (2.9% of samples above the limit values) and fluorides (2.5% of samples above the limit values). In all monitoring sites, increased concentrations of inorganic substances are mostly shown by shallow wells, except for fluorides that are more frequently shown by deep wells, which indicates the natural presence of fluorides in geological subsoil rather than anthropogenic pollution. 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 for groundwater with regard to the fact that within the limit for drinking water (Ministry of Health Decree No. 252/2004 Coll.) this value is corrected to 0.2 mg/l in the case that it can be assumed that the increased concentration of manganese in the water is caused by its natural presence in the geological environment.

From the group of metals, most frequently failing to meet the limit are mainly barium (46.6% of samples above the limit values), cobalt (4.8% of samples above the limit values), arsenic (4.0% of samples above the limit values), nickel (2.6% of samples above the limit values) and cadmium (1.7% of samples above the limit values). For metals, there is a known fact that their toxicity to humans is often lower than to other organisms, and this is also expressed in stricter limits for groundwater than for drinking water. However, the reference value for groundwater for barium (50 µg/l), which is practically at the level of background concentrations in the environment, seems to be inadequately strict and evaluation whereby in almost half of the samples „a dangerous concentration" of barium was demonstrated, might lead almost to the panic of barium-contaminated environment.

Indicators showing generally the presence of organic substances above the limit values include chemical oxygen demand by permanganate (11.7% of samples above the limit values), dissolved organic carbon (6.9% of samples above the limit values) and determination of hydrocarbons C10-40 (11.8% of samples above the limit values) generally monitoring the presence of oil substances. The evaluation of indicator hydrocarbons C10-40 is, however, influenced by a small number of selected monitoring sites, where this indicator was monitored. It can be generally stated that the presence of above-limit values for organic substances is mainly shown by samples collected from shallow wells, i.e. sites more significantly influenced by anthropogenic pollution.

As regards the numerous group of pesticide substances, the limit values for drinking water are most frequently exceeded by metabolites of herbicides alachlor, metholachlor and acetochlor (chloroacetanilides). These are alachlor ESA (12.8% of samples above the limit values), metholachlor ESA (9.0% of samples above the limit values), acetochlor ESA (3.3% of samples above the limit values), acetochlor OA (2.2% of samples above the limit values) and metholachlor OA (1.7% of samples above the limit values). In addition, there occur triazine pesticides, especially herbicide atrazine (1.7% of samples above the limit values) and its metabolites, such as hydroxyatrazine (2.7% of samples above the limit values), desethylatrazine (1.3% of samples above the limit values). Also hexazinone (1.3% of samples above the limit values) and bentazone (0.9% of samples above the limit values were found). Other pesticides showing concentrations above the limit values occur 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 are shown by phenantrene (43.8% of samples above the limit values), chrysene (8.6% of samples above the limit values) and pyrene (3.2% of samples above the limit values). While for pyrene the reference value for groundwater under Decree No. 5/2011 Coll. equals the PNEC value (Predicted No-Effect Concentration, i.e. the concentration of a substance that is expected to show no adverse effects on the environment), for phenantrene (PNEC 0.03 µg/l) and chrysene (PNEC 6 µg/l) the reference value (0.005 µg/l) was set at a level several times lower than the PNEC value, i.e. rather strict limit.

Švihov hydraulic structure on the Želivka River

The Chrudimka River, Pardubice

As regards the group of volatile organic compounds, concentrations exceeding the limit values occur most markedly for 1,2-cis-dichloroethene (15.9% of samples above the limit values) and toluene (3.4% of samples above the limit values). For 1,2-cis-dichloroethene and toluene the reference value is identical with the criterion A under the MoE Guidance Document of 15 September 1996 (Criteria for Soil and Groundwater Pollution). Criterion A should approximately correspond to natural contents of the monitored substances in nature, which, however, does not mean that exceedances of this limit should be automatically associated with environmental pollution.

Radiochemical properties of groundwater were monitored using a single general indicator, the total volume activity alpha (17.7% of samples above the limit values). Since the limit for indicator of the total volume activity alpha is according to the State Office for Nuclear Safety Decree No. 307/2002 Coll. an indicative and not a limit value, it is appropriate also for the reference value according to the MoE and MoA 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 representative of the group of synthetic complexing agents is ethylenediaminetetraacetic acid EDTA (11.0% of samples above the limit values). Because of its wide use in industry, various products of daily use, but also in agriculture, this acid gets to the environment in large quantities. Its monitoring is clearly important, nevertheless, its reference value (5 µg/l) according to the MoE and MoA Decree No. 5/2011 Coll. in comparison with the set PNEC value of 41 µg/l again seems to be very strict.

Di(2-ethylhexyl)phthalate DEHP (25.0% of samples above the limit values) is a substance used as a softening agent in plastic products. The relatively high percentage of exceedances of the reference value is significantly influenced by the fact that this substance was monitored only at 9 locations selected with regard to its risk posing presence.

Chloroalkanes C10-30 (22.2% of samples above the limit values) is a group of substances used in industry, for example, as fire retarders, additives in the manufacture of rubber and paints. Within the framework of groundwater monitoring, they were again monitored only in a small number of selected sites.

Among inorganic indicators, more frequent occurrences of concentrations exceeding the limit values are shown by nutrients, namely nitrates and ammonia ions. Ammonia ions are closer bound to the particular areas, even particular river basins, on the other hand, nitrates are more evenly distributed in the map, thus indicating also areas with more intense agricultural activity.

The imaging of sites with above-limit concentrations of trace elements is influenced by too strict limits for barium and manganese, which are responsible for the vast majority of red points on the map. Both elements are commonly present in the soil (although barium in low concentrations), therefore they are also a common part of natural waters.

The occurrences of above-limit concentrations of most of organic substances from the groups 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 1,2-cis-dichloroethene (VOC), phenantrene (PAH) and chrysene (PAH), whose concentrations exceeding the limit were detected at a larger number of sites. However, it should be noted that for these substances relatively strict limits were set in the MoE and MoA Decree No. 5/2011 Coll. Even so, they belong to the substances, whose presence in groundwater has been demonstrated with regard to more frequent occurrences of values above the detection limit. The impression that some areas in the Czech Republic are much more significantly affected by phenantrene in comparison with others, is partly due to the different density of groundwater sites, where polycyclic aromatic hydrocarbons were monitored.

Most frequently occurring substances from the group of pesticides are above mentioned metabolites of herbicides, namely alachlor, metholachlor and acetochlor. The map shows that pesticide substances, compared to other groups of organic pollution indicators, are not strictly bound to industrial areas, which corresponds with their use mainly in agriculture. A higher frequency of occurrence of pesticides demonstrates the quantity of applied herbicide preparations as well as their ability to accumulate in the environment.

Overall, it can be summarized that most significant indicators of groundwater pollution by comparing with the reference values under the MoE and MoA Decree No. 5/2011 Coll. there appear inorganic substances (manganese, nitrates and ammonia ions), metals (barium, cobalt, arsenic and nickel), VOCs (1,2-cis-dichloroethene and toluene), PAHs (phenantrene and chrysene), pesticides (chloroacetanilides and triazines) and EDTA.

Overall, indicators exceeding the limit values are mostly found in the groundwaters of shallow wells situated in alluvial plains of the rivers that are most 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.

The table shows that there was a slight worsening in the number of sites with exceedances of the limit values for groundwater,

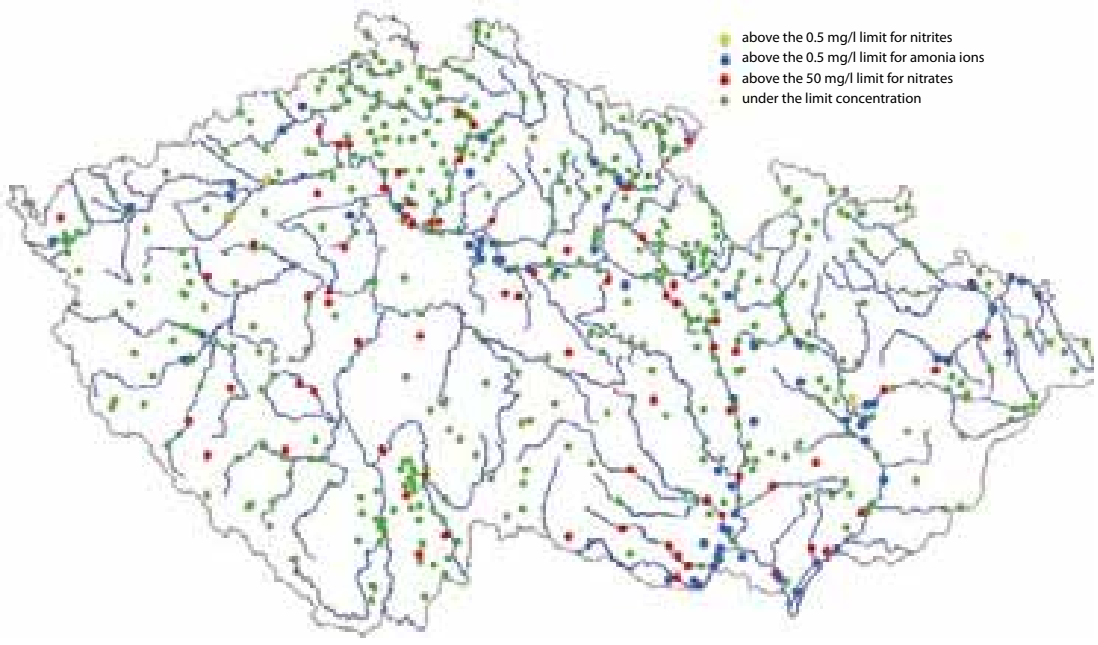
compared to 2011. The comparison with the values for the year 2011, however, is influenced by the fact that in 2011 for money-saving reasons the sampling was conducted only once a year (in spring). More informative is a comparison of values in 2010 and 2012, when the monitoring was carried out in a similar extent, i.e. the majority of sites were sampled not only in spring but also in autumn. Such comparison gives very similar values, only slightly better in 2012.

Table 3.2.1
Numbers of sites with exceedances of the limit values for groundwater in at least one indicator for the year 2012, compared to 2011 and 2010

Sites	Number of sites	Number of sites with exceedances of limit values for groundwater	% of sites with exceedances of limit values for groundwater
Shallow wells	214	203	94.8 (93.9 in 2011, 96.3 in 2010)
Deep wells and springs	439	343	78.1 (70.4 in 2011, 80.4 in 2010)
All sites	653	546	83.6 (78.1 in 2011, 85.6 in 2010)

Source: Czech Hydrometeorological Institute

Figure 3.2.1
Concentrations of nitrogenous substances in groundwaters in the year 2012 (exceedances of reference values under Decree No. 5/2011 Coll.)



Source: Czech Hydrometeorological Institute

A mountain stream – 3rd class, Vítkov primary school, Moravskoslezský kraj region

4. Water use

4.1 Surface water abstractions

The Reports on water management in the Czech Republic in the past years stated that a year-to-year decrease in surface water abstractios rather ceased. The exception was the year 2009, in which, compared to 2008, a certain temporary decline of surface water abstractions occurred. The year 2012 again shows a decrease of the total abstractions in the amount of 1,470.4 million m³, compared to the amount of 1,513.8 million m³ in 2011.

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. 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, state enterprises, no water transfers and waters abstracted for fishpond systems were included in surface water abstractions. Table 4.1.1 shows detailed information on the NACE classification of surface water and groundwater abstractions based on user groups.

Table 4.1.1
Classification of users in the individual user groups according to the NACE classification

Public water supply networks	NACE 36
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 – 34
Other (incl. construction industry)	NACE 37 – 96
Total (excl. fishponds and transfers)	NACE 01 – 96
Public sewerage systems (excl. transfers)	NACE 37

Source: Czech Statistical Office

Overall, there was a decrease of surface water abstractions by 3.8%. This is a long-term trend and in 2012 a significant increase in water abstractions (by 14.6%) was observed only in the sector of agriculture. In the year 2011, the total water abstractions in this sector amounted to 27.2 million m³, in 2012 to 31.1 million m³. This fact is associated with the provision of Section 101 of the Act No. 254/2001 Coll. (compensation for humidity deficits of agricultural crops – only a part of abstracted water is charged, nevertheless, for the purposes of Decree No. 431/2001 Coll., all abstracted water must be reported). An increase in water abstractions can be observed in the group of other users (including construction industry), namely by 13.8% (in the year 2011 the total water abstractions amounted to 8.7 million m³, in 2012 to 9.9 million m³).

As regards surface water abstractions for public water supply networks, it can be stated that in 2012, compared to 2011, there was no marked change (326.6 million m³ in 2011 and 327.3 million m³ in 2012). As for industry (including extraction of mineral resources), in the year 2012 an insignificant increase, compared to 2011, from 241.6 million m³ to 253.7 million m³, i.e. by 5.0% was recorded.

As regards surface water abstractions registered by the individual River Boards, s. e., in 2012 an insignificant increase to 100.8% in the Vltava River Board, s. e. and to 106.5% in the Oder River Board was recorded; two River Boards, s. e., compared to the year 2011, showed a decrease, namely the Ohře River Board, s. e. (to 96.6%), and the Elbe River Board, s. e. (to 93.7%). For the Morava River Board, s. e., no significant change (99.8%), compared to 2011, occurred.

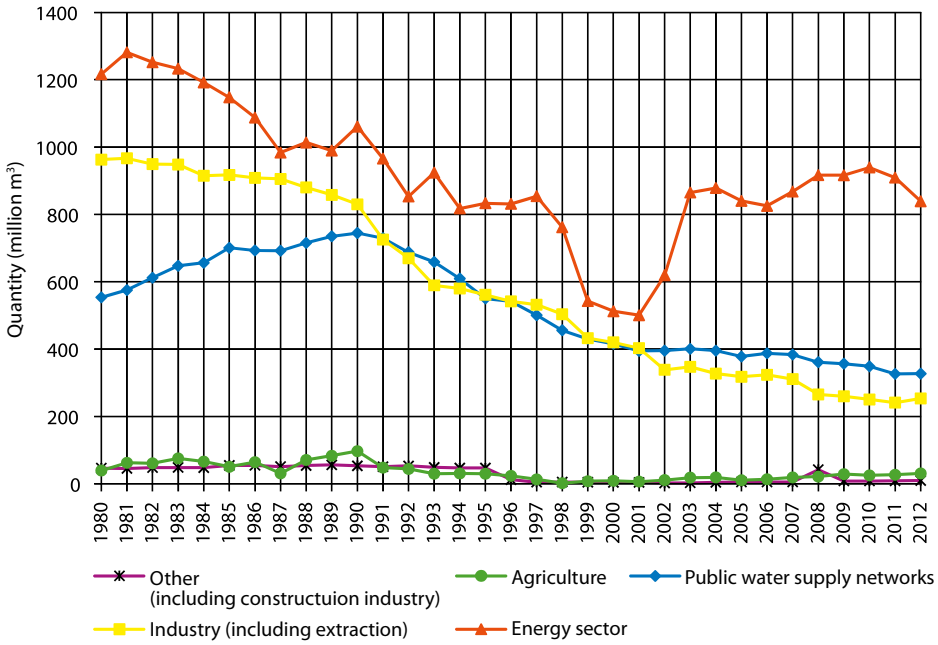
As regards surface water abstractions for public water supply networks in 2012, no marked change (0.2%), compared to 2011, was recorded by the Vltava River Board, s. e. A significant decrease was recorded by the Elbe River Board, s. e. (to 92.1%) and by the Ohře River Board, s. e. (to 97.4%). An increase was recorded by the Morava River Board, s. e. (to 105.2%) and by the Oder River Board, s. e. (to 104.2%). As regards water abstractions for agriculture, an increase, compared to the year 2011, was reported especially by the Elbe River Board, s. e., namely to 133.9%. Abstractions for the energy sector decreased most significantly in the Elbe River Board, s. e., to 92.2%. As regards water abstractions for industry (including extraction of mineral resources), a stagnation was reported by the Elbe River Board, s. e. A decrease was reported by the Vltava River Board, s. e. (to 97.1%), by the Morava River Board, s. e. (to 89.2%), by the Ohře River Board, s. e. (to 96.8%) and an increase was reported only by the Oder River Board, s. e. (to 112.2%).

Table 4.1.2
Surface water abstractions in the year 2012 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, state enterprise	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.	34.8	29	8.3	50	596.9	12	92.5	77	1.7	55	**734.2**	**223**
Vltava River Board, s. e.	141.5	43	0.1	12	59.3	17	33.2	69	6.9	43	**241.0**	**184**
Ohře River Board, s. e.	45.2	22	6.5	22	47.0	5	41.9	56	0.1	11	**140.7**	**116**
Oder River Board, s. e.	71.3	25	0.0	0	4.4	1	68.8	57	0.6	32	**145.1**	**115**
Morava River Board, s. e.	34.5	34	16.2	42	131.6	2	17.3	76	0.6	33	**200.3**	**187**
Total	**327.3**	**153**	**31.1**	**126**	**839.2**	**37**	**253.7**	**335**	**9.9**	**174**	**1,461.3**	**825**

Source: MoA, River Boards, s. e.

Chart 4.1.1
Surface water abstractions in the Czech Republic in the years 1980–2012



Source: MoA, River Boards, s. e.

The total charged abstractions insignificantly increased from 1,463.1 million m³ in the year 2011 to 1,466.3 million m³ in 2012. The proportion of charged abstractions in 2012 amounted to 99.7% of the registered abstractions in total. The structure of the registered water abstractions in the respective river basins in 2012 is shown in table 4.1.2. The overall development of surface water abstractions since the year 1985 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 in 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 327.3 million m³. Thus, the abstractions in the year 2012 amount only to 43.9% 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 253.7 million m³ in the year 2012, i.e. to no more than 30.6% of the volume abstracted in 1990. Similarly, a significant decrease can be seen in agriculture, where the abstractions decreased from 92.2 million m³ to 31.1 million m³, i.e. to no more than 33.6% of the volume abstracted in 1990. This fact, however, does not mean that water resources would be less exposed to anthropogenic impacts. On the contrary, in the energy sector, for example, there was an increase in consumptive water use (the difference between abstraction and discharge, caused primarily by evaporation in the cooling towers of thermal and nuclear power plants) from 118.7 million m³ in the year 1990 to 141.5 million m³ in the year 2012.

Remediation of flood damage to the Kněžický stream, Kněžice

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. These flows involve all water management activities.

4.2 Groundwater abstractions

The total volume of abstracted groundwater remained, compared to the year 2011, in principle, at the same level (an increase by 0.1%). This fact shows that the decrease rate in this abstraction category reached its maximum during the previous periods – at present the abstractions tend to stagnate.

A certain change in the development trends showing a steady decrease occurred already in the year 2006. As regards groundwater abstractions for public water supply networks, it can be stated that compared to the year 2011 there was stagnation in the year 2012 (an insignificant decrease from 311.3 million m³ to 309.8 million m³, i.e. by 0.1%). The pattern of registered water abstractions in the respective river basins in the year 2012 is shown in table 4.2.1. In the year 2012, in total 4,329 groundwater abstractions, amounting to 379.4 million m³ were registered (this figure includes only abstractions exceeding 6,000 m³ per year or 500 m³ per month). As regards industry (including extraction of mineral resources), in the year 2012 the abstractions increased, compared to the year 2011, from 34.9 million m³ to 36.7 million m³, i.e. by 5.1%. In agriculture, compared to the year 2011, the abstractions insignificantly increased from 11.7 million m³ to 12.1 million m³, i.e. only by 3.4%. The energy sector shows a decrease (2.6 million m³ in the year 2011 and 1.5 million m³ in the year 2012).

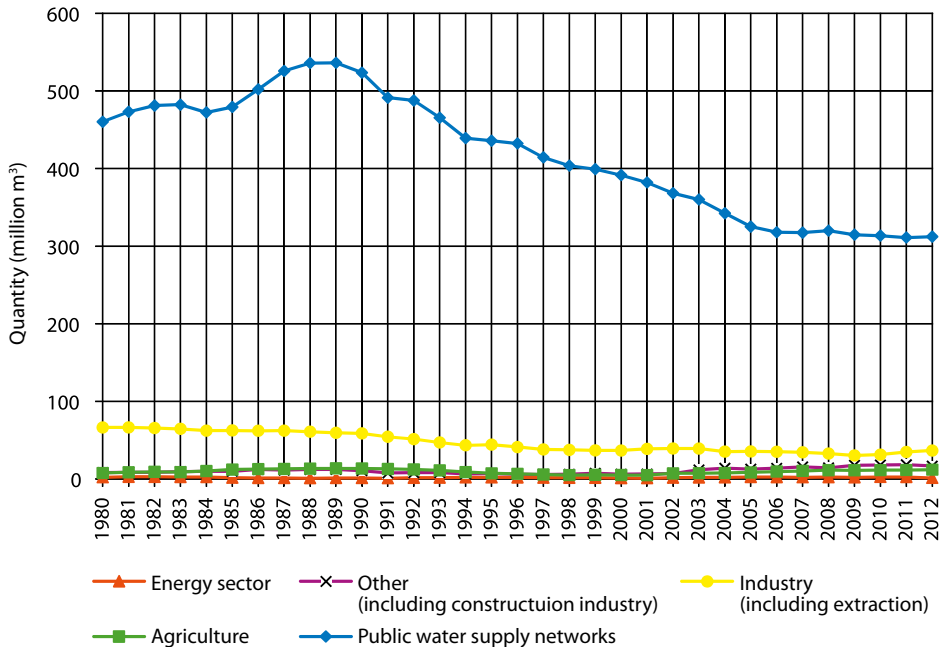
In the individual river basins the highest percentage of the total groundwater abstractions was recorded in the river basins administered by the Morava River Board, s. e. (33.1%); the lowest percentage of groundwater abstractions was recorded in the river basins administered by the Oder River Board, s. e. (5.4%).

Table 4.2.1
Groundwater abstractions in the year 2012 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, s. e.	Public water supply 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.	101.5	648	2.3	173	1.0	8	7.3	121	2.7	75	**114.8**	**1,025**
Vltava River Board, s. e.	32.5	587	4.2	311	0.4	13	10.0	136	8.1	369	**55.2**	**1,416**
Ohře River Board, s. e.	48.3	306	0.7	22	0.1	1	10.2	118	2.1	17	**61.4**	**464**
Oder River Board, s. e.	18.9	140	0.4	23	0.0	0	0.9	29	0.3	21	**20.5**	**213**
Morava River Board, s. e.	111.2	685	4.5	271	0	0	8.3	165	3.5	90	**127.5**	**1,211**
Total	**312.4**	**2,366**	**12.1**	**800**	**1.5**	**22**	**36.7**	**569**	**16.7**	**572**	**379.4**	**4,329**

Source: MoA, River Boards, s. e.

Chart 4.2.1
Groundwater abstractions in the Czech Republic in the years 1980–2012



Source: MoA, River Boards, s. e.

Dlouhé Stráně hydraulic structure

Flood control measures for the town of Strakonice

4.3 Waste water discharges

In the year 2012, in total 1,884.9 million m³ of waste waters and mine waters were discharged into surface waters. Compared to the year 2011, this represented a decrease by 4.5%. 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 largest percentual decrease in the quantity of discharge waste waters compared to the year 2011 was observed in the category of public sewerage systems (by 15.4%). An unusual change in the quantity of these discharged waters relates mainly to the fact that the previous year 2011 can be described as to have shown above-average precipitation (see chapter 1). A decrease was also recorded in the energy sector and in the category „other"

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 2012 in millions of m³

River Board, s. e	Public water supply 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.	187.9	651	0.1	3	563.3	20	87.3	168	1.6	63	**840.1**	**905**
Vltava River Board, s. e.	272.8	675	0.1	2	20.9	22	42.1	164	26.7	642	**362.6**	**1,505**
Ohře River Board, s. e.	80.2	279	6.1	3	18.5	12	85.6	169	2.3	21	**192.7**	**484**
Oder River Board, s. e.	103.2	331	0.0	0	2.0	1	32.8	56	36.4	114	**174.4**	**502**
Morava River Board, s. e.	191.6	1,059	0.3	5	100.0	3	20.3	140	2.9	88	**315.1**	**1,295**
Total	**835.7**	**2,995**	**6.6**	**13**	**704.7**	**58**	**268.1**	**697**	**69.9**	**928**	**1,884.9**	**4,691**

Source: MoA, River Boards, s. e.

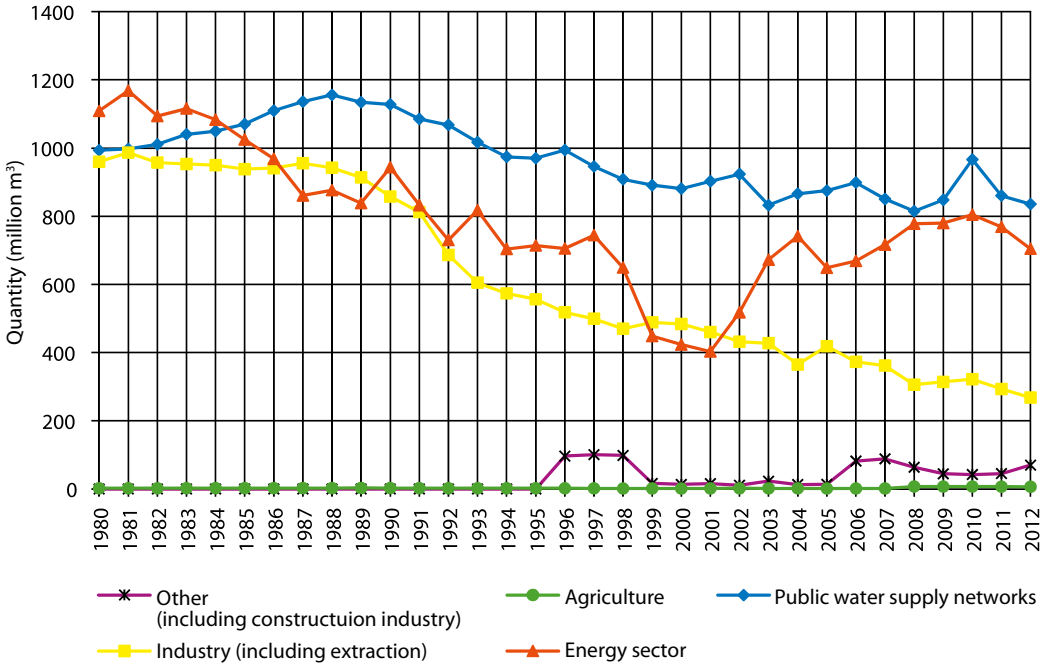
Note: Explanations relating to the items agriculture (incl. irrigation, excl. fish breeding), energy sector (incl. extraction of mineral resources), industry (excl. energy sector and water supply systems) and to the item other (incl. construction industry) are presented in chapter 4.1.

(including construction industry), by 6.8% and 6.9%, respectively. An insignificant increase was recorded in the sector of industry (including extraction of mineral resources), by 2.5%.

It is evident that compared to the year 2011 the annual quantity of discharged waste waters slightly decreased but, with regard to a necessary correction (which needs to be taken into account, considering extreme rainfalls in 2011), it can be stated that the annual quantity of discharged waste waters continued to stagnate in the year 2012, or followed similar trends from the preceding years.

The users were classified in the respective groups according to the valid sectoral NACE classification (see table 4.1.1).

Chart 4.3.1
Discharges of waste waters in the Czech Republic in the years 1980–2012



Source: MoA, River Boards, s. e.

Raška retention reservoir

Which river is better? – 3rd class, Doberská primary school and nursery school, Kladno, Středočeský kraj 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 2012, compared to the year 2011, did not change significantly. In organic pollution, BOD_5 indicator in 2012, compared to 2011, slightly increased by 6,386 tonnes (by 2.6%) and reached the level of pollution of 2010, the COD_{Cr} indicator decreased by 153 tonnes (by 0.3%), the SS indicator decreased by 9,957 tonnes (by 3.7%) and the DIS indicator decreased by 48,749 tonnes (by 7.2%). The decrease presented for the DIS indicator may be due to the lower percentage of values for the year 2012 reported by individual entities obliged to do so (Section 11 of Decree No. 431/2001 Coll.). With the exception of the BOD_5 indicator, continuing slightly downward trend in the development of produced pollution can be stated.

Discharged pollution is the contamination contained in waste waters discharged to surface waters. Compared to the year 2011, the discharged pollution decreased in the year 2012 by 648 tonnes (by 9.5%) in the BOD_5 indicator, by 1,857 tonnes (by 4.3%) in the COD_{Cr} indicator), by 740 tonnes (by 6.2%) in the SS indicator and by 43,684 tonnes (by 5.2%) in the DIS indicator. The decrease was observed for all of the data reported by the individual River Boards, state enterprises. A significant decrease was also recorded for the SS indicator reported by the Oder River Board, s. e. (by 24%). A decrease in the DIS indicator was recorded by all River Boards, s. e., only an insignificant increase (by 2.0%) was recorded by the Ohře River Board, s. e. Not a negligible effect was also a decrease in the total amount of discharged waste waters, compared to the year 2011. The development since the year 1990 in the discharged pollution and the pollution on which charges are imposed is shown in chart 5.1.1.

The Svitava River

Between the years 1990 and 2012 the discharged pollution decreased in the BOD_5 indicator by 95.9%, in the COD_{Cr} indicator by 90.0%, in the SS indicator by 94.1% and in the DIS indicator by 20.5%.

In the 1990–2012 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 so-called intensified waste water treatment plants apply the focused use of biological removal of nitrogen and biological or chemical removal of phosphorus.

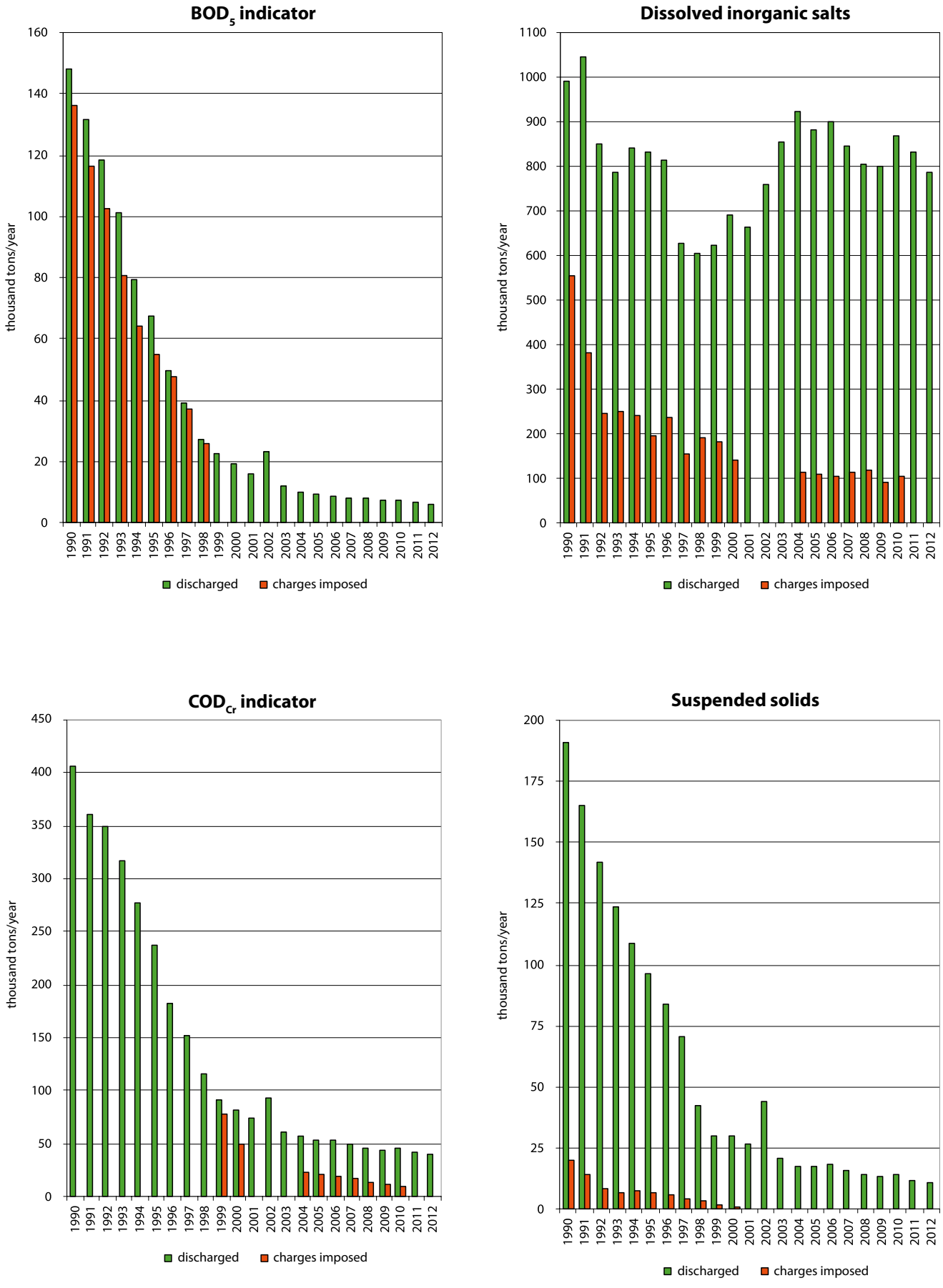
Table 5.1.1
Produced and discharged pollution in the year 2012

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.	47,263	116,293	51,369	207,137	7,187	1,094	1,534	10,842	2,916	202,688	2,857	269
Vltava River Board, s. e.	87,359	200,684	88,987	135,586*)	9,326	2,096	1,986	12,061	2,998	141,109	3,848	317
Ohře River Board, s. e.	18,882	56,057	20,943	116,451	2,360	771	463	3,963	1,654	118,026	1,311	257
Oder River Board, s. e.	37,474	74,098	31,086	223,355	3,490	640	760	6,416	1,665	223,355	1,236	144
Morava River Board, s. e.	58,773	134,751	64,671	77,808	6,202	1,471	1,398	7,540	1,926	101,268	1,898	216

Source: Czech Statistical Office and River Boards, s. e.

*Note.: *) The quantity of produced and discharged pollution should be approximately identical (by common waste water treatment methods the concentration of DIS cannot be reduced). With regard to the reporting discipline, lower completeness of the data for produced than discharged pollution can often be observed.*

Chart 5.1.1
Discharged pollution and pollution on which charges were imposed in the years 1990–2011



Source: Czech Statistical Office and River Boards, s. e.

5.2 Diffuse sources of pollution

Surface water and groundwater quality is also significantly affected by diffuse sources of pollution – runoff from agricultural land, runoff from residential areas, fishpond management, atmospheric depositions and erosive runoff in the landscape. The importance of pollution from diffuse sources therefore is increasing in parallel with the continued decrease in point source pollution. The proportion of pollution from diffuse sources is substantial especially as regards nitrates, pesticides and acidification, while it is less important as regards phosphorus.

The main measures aimed at reducing diffuse pollution of waters from agricultural sources include the Government Order No. 262/2012 Coll., on delimitation of vulnerable areas and action programme. This government order revised the definition of the „vulnerable areas" and declared the 3rd Action Programme.

The action programme can be characterized as a set of measures in vulnerable areas to reduce water pollution caused by nitrates and prevent further contamination of water. The main measures of this action programme include imposing the ban on the use of mineral nitrogenous fertilizers and fertilizers with rapidly releaseable nitrogen in winter period in dependence on the crop/culture and climatic region (Section 6), crop rotation and carrying out soil erosion control measures and the determination of the total amount of nitrogen of organic origin applied in farming land within one agricultural company. In addition, the measures include a construction of storage facilities for manure, which must meet their six-month production storage needs. The effectiveness of the action programme is regularly evaluated in a four-year period on the basis of the monitoring and evaluation of the preceding action programme efficiency.

The monitoring includes:
- a survey of whether the action programme requirements in farming companies in vulnerable areas are fulfilled,
- evaluation of the field investigation in farming companies in vulnerable areas,
- evaluation of the development of soil nitrogen content with regard to the respective arable crops and the farming equipment used, including modelling the transport of nitrogen in soil and water during the next period,
- monitoring of the development in farming methods in vulnerable areas.

Pursuant to Section 33, Subsection 2 of the Water Act, the Ministry of the Environment of the Czech Republic was obliged to carry out, according to the Government Order No. 103/2003 Coll., a review of vulnerable areas no later than four years from coming into force of this Govenment Order, i.e. by 1 September 2011 (revisions of vulnerable areas were carried out as of 31 March 2011). A review of the delimitation of vulnerable areas is carried out by the Ministry of the Environment (Section 3 of the Government Order No. 262/2012 Coll.) based on the proposal of the authorized T. G. Masaryk Water Management Research Institute, public research institution. The first reviewed delimitation of vulnerable areas was declared by the Government Order No. 219/2007 Coll. The results of the second revision of the delimitation of vulnerable areas were adopted by the new Government Order No. 262/2012 Coll.

5.3 Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In the year 2012 the Czech Environmental Inspectorate registered in total 196 events of accidental releases into surface waters and 4 releases into groundwaters.

Pursuant to Act No. 254/2001 Coll., on waters, as amended, the Czech Environmental Inspectorate keeps central records of accidents since 2002. An overview of accidents is every year entered into a separate database and it is complemented mainly by information from the Fire Rescue Department, with which the Czech Environmental Inspectorate cooperates from 2003.

In the year 2012, the Czech Environmental Inspectorate registered in total 196 accidents which in facts of the case met the definition of accident under Section 40 of the Act No, 254/2001 Coll., on waters. Additional tens of accidents were reported to the Czech Environmental Inspectorate during 2012, but due to their inconsiderable extent with no effect on the water quality they showed no attributes of an accident, and therefore they were not registered in the central records of accidents.

Registered 51 cases were caused by traffic accidents, which represents 26% of the total number of accidents. In total 31 accidents were accompanied by fish kill, which is an increase by almost 1%, compared to the year 2011. The cause (inflictor) of the accident was known in 115 events. In 58 cases, the Czech Environmental Inspectorate investigated the accident or directly participated in the investigation. Fire Rescue Department units intervened in 135 cases of registered accidents. Groundwaters were afflicted in four cases, similarly to the previous year. Two cases of accidents affecting groundwaters were classified as long-term accidents.

The most numerous group of pollutants were oil and oil products: 54.1% of the total number of registered events, followed by waste waters (9.7%) and chemical substances excl. heavy metals (7.1%). The character of the pollutants was not identified for 27 accidents (13.8%).

Classified by the cause (inflictor) of the accident, the most numerous were accidents caused in traffic (11.7%), followed by accidents associated with waste water and solid waste disposal (5.6%), accidents in agriculture, in hunting and game management and related activities (4.6%) and accidents caused by other inflictors (16.4%). The inflictor was not identified in 61.7% of all events. For breach of legal regulations in the field of water management, in 2012 the Czech Environmental Inspectorate imposed in total 410 penalties, of which 357 penalties became fully effective and amounted in total sum to CZK 15,997 million.

Most Lake

A coral reef – 3rd and 5th class, Campanus primary school, City of Prague

6. Watercourse administration

6.1 Professional administration of watercourses

The territory of the Czech Republic is an important headwater area of the European continent, and from the hydrological point of view it may be called „the roof of Europe". The basic hydrographic system according to maps on a scale of 1:10 000 is constituted by approx. 105,400 km of watercourses (with both natural and regulated stream channels). Watercourses on the territory of the Czech Republic are divided into two categories: significant watercourses and minor watercourses. In the year 2012, the professional administration of watercourses was carried out in accordance with the provision of Section 47 of the Water Act.

The main watercourse administrators are the River Boards, state enterprises and Forests of the Czech Republic, state enterprise, who report directly to the Ministry of Agriculture. From 1 January 2011, they are also responsible for the administration of minor watercourses transferred from the Agricultural Water Management Administration. Administration of minor watercourses was transferred to the respective River Boards, state enterprises according to the territorial scope and to the Forests of the Czech Republic according to the forest coverage criteria. State-owned River Boards, s. e. and Forests of the Czech Republic are responsible for the administration of about 93.9% 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 approximately 6.0% of watercourse administration.

Professional watercourse administration broken down to the individual watercourse administrators is shown in table 6.1.1.

Table 6.1.1
Professional watercourse administration

Category	Administrator	Length of watercourses in km	
		2011	2012
Significant watercourses	Elbe River Board, s. e.	3,691.8	3,586.2
	Vltava River Board, s. e.	4,961.7	5,469.8
	Ohře River Board, s. e.	2,977.3	2,333.5
	Oder River Board, s. e.	1,360.0	1,111.4
	Morava River Board, s. e.	3,847.6	3,768.1
	Total	**16,838.4**	**16,269.0**
Minor watercourses	Forests of the Czech Republic, s. e.	39,148.5	39,292.8
	River Boards, s. e. in total	43,506.0	43,442.8
	Other administrators [1)]	6,034.6	6,337.5
	Other [2)]	3,027.8	46.0
	Total	**91,716.9**	**89,119.1**
Watercourses in total		**108,555.3**	**105,388.1**

Source: MoA

Note: [1)] Including National Park Administrations, the Ministry of Defence (authorities of military districts), municipalities and other natural and legal persons (e.g. mining companies).

[2)] These are minor watercourses that spring on the territory of the Czech Republic and flow abroad. So far, the administrator for these watercourses was not designated and Section 48, subsection 4 of the Water Act cannot be applied to these watercourses.

The specific account of significant watercourses is published in the new Decree No. 178/2012 Coll., stipulating the list of significant watercourses and the method of carrying out the activities relating to watercourse administration, which came into force as of 1 June 2012. It provides an overview of 819 watercourses included in the "List of significant watercourses", which forms Annex I to the above mentioned Decree. In consequence of the issuance of Decree No. 178/2012 Coll., lengths of some of the watercourses were refined and for several watercourses the significant reach was extended as far as headspring. In addition, the mapping of defined minor watercourses was refined during 2012. This list also includes the identifiers of significant watercourses (Central Register of Watercourses). The significant watercourses, with a total length of 16,269 km, are administered under the provision in Section 4 of Act No. 305/2000 Coll., on river basins, by the respective River Boards, state enterprises: 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) with the Vltava River (433 km) in Bohemia, the Morava River (272 km) with the Dyje River (306 km) in South Moravia, and the Oder River (135 km) with the Opava River (131 km), in North Moravia and 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 drawn in maps on a scale of 1:10 000 is 89,119.1 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 organisational 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 public administration bodies and the general public find detailed information on the establishment of the administration of the respective watercourse in the „Register of Watercourses", which is available on the water management portal called WATER INFORMATION SYSTEM in the Czech Republic, i.e. www.voda.gov.cz. Currently, the produced register on a scale of 1:10 000 is presented.

The acquisition value of the non-current tangible assets relating to watercourses amounted in the year 2012 to CZK 50.41 billion. Compared to the previous period, this value shows a year-on-year growth of CZK 0.29 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 2012, 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	2011	2012
Elbe River Board, s. e.	10.10	10.13
Vltava River Board, s. e.	10.87	10.61
Ohře River Board, s. e.	9.50	9.70
Oder River Board, s. e.	5.91	5.97
Morava River Board, s. e.	8.39	8.51
River Boards, s. e. in total	**44.77**	**44.92**
Agricultural Water Management Administration	0.15	0.11
Forests of the Czech Republic, s. e.	5.20	5.38
Total	**50.12**	**50.41**

Source: MoA

Auditing activities in the individual River Boards, state enterprises, are carried out by the respective controlling bodies. The following comprehensive and selective audits were carried out in the year 2012.

Ministry of Agriculture

Similarly to the preceding years, the Ministry of Agriculture mainly carried out ongoing public inspections focusing on fulfilment of conditions, on the use of public funds and on economy of the respective enterprise. In total 12 audits were carried out in 2012, at least one for every River Board, s. e. The majority of audits were carried out by the Department of Water Management Policy and Flood Control Measures, the Department of Water in Landscape and Rehabilitation of Flood Damage and by the Establishment Policy Department. During the audits no shortcomings were identified.

Financial Authorities

In the year 2012 these state administration bodies carried out in total 4 financial audits in the Vltava River Board, the Elbe River Board and the Ohře River Board state enterprises, focused on inspecting the legitimacy of the use of subsidies and the observance of budget rules and budgetary discipline. One audit in the Vltava River Board, state enterprise was not finished until the closing date of this report. The remaining audits showed no shortcomings.

Regional Public Health Offices

The Regional Public Health Offices audited the execution of the state health supervision in the field of compliance with the public health protection regulations. In total ten audits were carried out at the Vltava River Board, the Ohře River Board and the Morava River Board state enterprises, with no shortcomings having been found.

The Occupational Health and Safety Inspectorate

The Occupational Health and Safety Inspectorate carried out one audit at the Ohře River Board, the Elbe River Board, the Oder River Board and the Morava River Board state enterprises. During the audits focused on the observance of occupational health and safety regulations at the Morava River Board and the Oder River Board state enterprises, several negative audit findings were found and remedial measures imposed. Some shortcomings were remedied in 2012 and the remaining ones are scheduled to be remedied in 2013. Other audits found no shortcomings.

Agency for Nature Conservation and Landscape Protection of the Czech Republic

At the Elbe River Board, s. e., the Agency for Nature Conservation and Landscape Protection of the Czech Republic carried out two audits concerning the revitalization. During the audits, shortcomings were found and recommendations to remedy the situation were given. Furthermore, one audit was carried out at the Ohře River Board, s. e., with no negative findings.

Other state administration bodies

Regional Authority of the Zlínský kraj Region and the Czech Accreditation Institute, public benefit company, carried out one audit each at the Morava River Board, s. e. Both audits showed no negative findings. State Environmental Fund of the Czech Republic and Federal Inspector for Occupational Health and Safety carried out one audit each at the Ohře River Board, s. e., with no shortcomings found. Fire Rescue Department and the Regional Veterinary Administration for the Moravskoslezský kraj Region carried out one inspection each at the Oder River Board, s. e., with no shortcomings found. The Regional Social Security Administration in Frýdek-Místek carried out one audit of insurance payments at the Oder River Board, s. e., with no shortcomings found. One audit each at the River Boards, s. e. was carried out by NUT II Northeast, the Regional Authority of the Pardubický kraj Region and the Ministry of Transport. These audits found no shortcomings.

At the Vltava River Board, s. e., one audit each was carried out by the Technology Agency of the Czech Republic, the Board of Customs České Budějovice and the State Office for Nuclear Safety. The State Environmental Fund of the Czech Republic carried out ongoing audit of the execution of the building project funded from the Operational Programme Environment. These audits found no shortcomings. During the audit carried out by the State Environmental Fund of the Czech Republic as regards the eligibility and purpose of the use of funds granted for the project„The analysis of selected nature-friendly flood control measures in the Nežárka River Basin" the auditing body found a minor shortcoming in administration of the project. Based on this fact, appropriate corrective measures were adopted and the shortcoming found was remedied. Fire Rescue Department of the Plzeňský kraj Region found during the inspection of fire protection measures minor shortcomings and set deadlines for their remedy. Shortcomings were remedied within the required deadlines and the auditing body was notified of it in writing. An inspection by the Czech Environmental Inspectorate was started and not completed until the closing date of this report.

6.2 River Boards, state enterprises

In 2012, the overall revenues generated by the River Boards, state enterprises reached a year-on-year increase amounting to 6.4%, i.e. in absolute figures an increase in revenues by CZK 292.4 million. This increase was generated by all items included in the revenue structure, except for other operating grants and other revenues.

The year-on-year increase in the overall revenues of the River Boards, state enterprises was mainly influenced by increased surface water sales by CZK 241.8 million, which corresponds to a year-on-year increase amounting to 7.9%. In addition, the year on-year increase in the absolute figure of CZK 46.2 million was accounted for by grants from the state budget, i.e. a year-on-year increase amounting to 12.1%. The year-on-year increase in the absolute figure of CZK 9.1 million, i.e. the year-on-year increase amounting to 7.2%, was shown by revenues from payments for the use of impounding structures. The revenues from electric power generation in the majority of River Boards, state enterprises come solely from their own small hydroelectric power plants, only at the Ohře River Board, s. e., also photovoltaic power plant takes a share, to a smaller extent, in sales figures. Their increase in the absolute figure amounted to almost CZK 25 million, which corresponds to a year-on-year increase by 4.7%. The highest year-on-year decrease by 39.2% was shown by other operating subsidies, however, in the absolute figure a decrease by only CZK 4.7 million. The year-on-year decrease in the absolute figure of CZK 25.1 million, i.e. a year-

on-year decrease amounting to 5.8% was shown, similarly to the previous year, by other revenues.

The structure of the revenues of the River Boards, state enterprises, in the year 2012 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, state enterprises. 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.

In the River Boards, state enterprises, the average price of surface water in the context of other abstractions in the year 2012 ranged around CZK 3.94 per m³, this means an increase by 9.1%, compared to the previous year 2011. These prices are the so-called factually regulated prices, which may include only eligible costs, reasonable profit and the tax pursuant to the relevant tax regulations.

Table 6.2.1
Structure of the revenues of the River Boards, state enterprises in the year 2012 in thousands of CZK

Indicator	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.	Total
Payments for surface water abstractions	890,018	778,250	510,835	528,672	607,801	**3,315,576**
Electric power generation	41,222	242,709	173,463	66,000	29,331	**552,725**
Sales from payments for the use of impounding structures	6,900	121,721	2,887	0	4,956	**136,464**
Other revenues	98,258	109,261	94,847	48,316	62,345	**413,027**
Grants from the state budget	21,942	5,168	77,588	60,493	261,722	**426,913**
Other operating grants	345	221	2,726	0	4,011	**7,303**
River Boards, s. e. in total	**1,058,685**	**1,257,330**	**862,346**	**703,481**	**970,166**	**4,852,008**

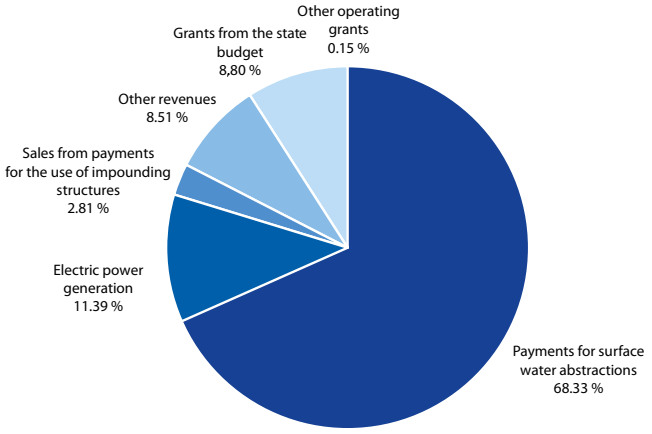
Source: MoA, River Boards, s. e.

Table 6.2.2
Surface water supplies charged for in the years 2006–2012 in thousands of m³

River Board, s. e.		2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	a)	748,522	765,070	807,073	800,772	817,645	775,223	**723,608**
	b)	46,518	39,396	36,031	36,787	38,843	37,892	**34,838**
Vltava River Board, s. e.	a)	263,685	260,008	252,659	243,528	238,582	230,817	**234,579**
	b)	161,528	155,382	153,131	146,670	144,164	140,087	**140,596**
Ohře River Board, s. e.	a)	161,071	152,636	150,115	148,330	141,308	135,730	**131,659**
	b)	55,385	52,410	51,514	50,299	49,550	46,162	**44,954**
Oder River Board, s. e.	a)	171,301	164,087	153,946	138,961	144,155	138,942	**139,124**
	b)	75,001	71,979	69,288	68,171	66,936	64,179	**67,102**
Morava River Board, s. e.	a)	162,336	174,803	179,833	174,398	173,661	182,361	**180,835**
	b)	34,128	33,554	32,553	31,233	31,063	31,861	**33,427**
River Boards, s. e. in total	**a)**	**1,506,915**	**1,516,604**	**1,543,626**	**1,505,989**	**1,515,351**	**1,463,073**	**1,409,805**
	b)	**372,560**	**352,721**	**342,517**	**333,160**	**330,556**	**320,181**	**320,917**

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

Chart 6.2.1
Structure of the revenues of the River Boards, s. e. in the year 2012



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. Except for the Oder River Board, s. e. and the Ohře River Board, s. e., in the year 2012 the River Boards, s. e. in total abstracted water for the purposes of agricultural irrigation in the amount of 203 thousand m³ which in the aggregate for all River Boards, state enterprises in the year-on-year comparison represents an increase by 42 thousand m³ compared to the year 2011. This increase in abstractions for the purposes of agricultural irrigation was shown mainly by the Vltava River Board, s. e. and the Elbe River Board, s. e. The Ohře River Board, s. e., similarly to the preceding years, is the only one reporting surface water abstractions for flooding of artificial depressions in the landscape, in the amount of 3,756 million m³, i.e. significantly lower, compared to 2011, when the Most Lake flooding was carried out.

Table 6.2.3
Price for abstractions used for through-flow cooling in the years 2003–2012 in CZK/m³

River Board, s. e.	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	0.39	0.40	0.40	0.40	0.44	0.49	0.53	0.55	0.60	0.64
Vltava River Board, s. e.	0.91	0.92	0.93	0.94	0.96	1.00	1.03	1.10	1.13	1.22
Morava River Board, s. e.	0.41	0.49	0.54	0.56	0.62	0.67	0.67	0.67	0.67	0.72

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 2003–2012 in CZK/m³

River Board, s. e.	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	2.04	2.20	2.35	2.51	2.70	2.93	3.16	3.35	3.63	3.97
Vltava River Board, s. e.	1.79	1.90	2.00	2.11	2.24	2.45	2.68	2.94	3.15	3.40
Ohře River Board, s. e.	2.33	2.41	2.53	2.71	2.85	3.01	3.16	3.31	3.53	3.88
Oder River Board, s. e.	2.08	2.12	2.40	2.53	2.70	2.89	3.10	3.35	3.58	3.80
Morava River Board, s. e.	3.06	3.12	3.26	3.49	3.88	4.19	4.65	4.97	5.47	5.88
Average price quoted by River Boards, s. e. *)	**2.23**	**2.44**	**2.42**	**2.56**	**2.68**	**2.67**	**3.13**	**3.32**	**3.61**	**3.94**

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

These prices are subject regulated 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 respective notifications issuing the list of goods with regulated prices which are published in the Price Journal.

In the year 2012, the River Boards, state enterprises reported in aggregate an increase in revenues from payments for surface water abstractions, which in absolute figures approximately amounts to CZK 244 million, compared to the year 2011, and corresponds to a year-on-year increase in this revenue category by 7.9%. The highest year-on-year increase amounting to CZK 71 million was reported by the Vltava River Board, s. e. and the Morava River Board, s. e. showed a year-on-year increase amounting to CZK 65 million. The Elbe River Board, s. e. reported a year-on-year increase in sales for surface water abstractions by CZK 44 million and the Ohře River Board, s. e. and the Oder River Board, s. e. reported an increase by CZK 32 million. Payments for surface water abstractions in a ten-year time series are shown in table 6.2.5.

In 2012, revenues from sales of electric power from small hydroelectric power plants owned by the River Boards, s. e. showed an increase by almost CZK 25 million. The total revenues in this revenue categoy amounted to CZK 550.4 million.

Revenues from sales of electric power take the second place after the main source of revenues which are payments for surface water abstractions. Compared to the previous year, one small hydroelectric power plant owned by the Vltava River Board, s. e. was put into operaton and the total number of small hydroelectric power plants now is 91. The highest revenues from sales of electric power amounting to CZK 242.7 million are reported by the Vltava River Board, s. e. which now operates 19 own small hydroelectric power plants. High revenues from sales of electric power amounting to CZK 171.1 million are also reported by the Ohře River Board, s. e. which operates the largest number of small hydroelectric power plants.

The sales achieved by the River Boards, s. e. reached their maximum of almost CZK 600 million in the year 2010. In the year 2012, compared to 2011, a significant year-on-year increase amounting to CZK 25.4 million was reported by the Vltava River Board, s. e., which put into operation a new small hydroelectric power plant. A year-on-year increase amounting to CZK 3.8 million was reported by the Ohře River Board, s. e. and the Oder

Table 6.2.5
Payments for surface water abstractions in the years 2003–2012 in millions of CZK

River Board, s. e.	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	613	669	669	678	705	735	785	833	846	890
Vltava River Board, s. e.	495	508	513	547	572	609	640	686	707	778
Ohře River Board, s. e. *)	427	420	393	434	434	450	469	468	479	511
Oder River Board, s. e.	359	347	396	433	443	445	431	483	497	529
Morava River Board, s. e.	368	359	362	394	420	440	457	481	543	608
River Boards, s. e. in total	**2,262**	**2,303**	**2,333**	**2,486**	**2,574**	**2,679**	**2,782**	**2,951**	**3,072**	**3,316**

Source: River Boards. s. e.
*Note: *) Since 2005 excluding sales from transport and abstraction of water.*

River Board, s. e. showed a stagnation. The Elbe River Board, s. e. and the Morava River Board, s. e. reported a slight decrease by CZK 3.2 million and CZK 1.5 million, respectively. In more detail, the information on the total number of small hydroelectric power plants owned by the individual River Boards, state enterprises, their installed capacity, electric power generation and sales is shown in table 6.2.6.

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 the year 2012, the overall year-on-year decrease in other revenues of the River Boards, state enterprises amounted to CZK 25.1 million. The overall year-on-year increase in sales was reported by the Elbe River Board, s. e., the Vltava River Board, s. e. and the Morava River Board, s. e. A decrease in sales, compared to the year 2011, was reported by the Ohře River Board, s. e. and the Oder River Board, s. e. The highest year-on-year decrease amounting to CZK 44.9 million was reported by the Oder River Board, s. e. The summary of other revenues of the River Boards, state enterprises in a longer time series is shown in table 6.2.7.

Table 6.2.6
Small hydroelectric power plants owned by River Boards, s. e. in the years 2007–2012

River Board, s. e.	Indicator	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	Number of small hydropower plants	19	20	20	20	20	20
	Installed capacity in kW	5,217	5,892	5,892	5,892	5,892	6,108
	Electric power generation in MWh	19,270	18,325	20,356	23,589	20,871	19,293
	Sales in thousands of CZK	34,429	34,773	40,497	49,299	44,387	41,222
Vltava River Board, s. e.	Number of small hydropower plants	17	17	18	18	18	19
	Installed capacity in kW	18,400	18,400	21,200	21,200	21,341	21,607
	Electric power generation in MWh	83,568	82,039	89,239	106,141	93,459	96,937
	Sales in thousands of CZK	151,919	181,435	208,580	238,981	217,348	242,709
Ohře River Board, s. e.	Number of small hydropower plants	20	21	21	21	21	21
	Installed capacity in kW	16,677	16,949	16,930	16,930	16,930	16,930
	Electric power generation in MWh	107,876	94,056	90,027	106,168	81,134	77,422
	Sales in thousands of CZK	209,510	197,824	194,911	214,290	167,297	171,112
Oder River Board, s. e.	Number of small hydropower plants	14	16	16	16	16	16
	Installed capacity in kW	5,103	5,731	5,731	5,731	5,731	5,809
	Electric power generation in MWh	25,827	31,964	28,662	30,937	28,113	26,068
	Sales in thousands of CZK	50,120	68,710	60,937	60,568	65,682	66,000
Morava River Board, s. e.	Number of small hydropower plants	16	15	14	14	15	15
	Installed capacity in kW	3,530	3,522	3,482	3,482	3,495	3,497
	Electric power generation in MWh	8,709	14,281	14,252	14,365	12,607	11,323
	Sales in thousands of CZK	14,982	34,922	36,024	35,623	30,831	29,331
River Boards, s. e. in total	**Number of small hydropower plants**	**86**	**89**	**89**	**89**	**90**	**91**
	Installed capacity in kW	**48,927**	**50,494**	**53,235**	**53,235**	**53,389**	**53,951**
	Electric power generation in MWh	**245,250**	**240,665**	**242,536**	**281,200**	**236,184**	**231,043**
	Sales in thousands of CZK	**460,960**	**517,664**	**540,949**	**598,761**	**525,545**	**550,374**

Source: MoA, River Boards, s. e.

Table 6.2.7
Other revenues of River Boards, s. e. in the years 2004–2012 in thousands of CZK

River Board, s. e.	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	87,233	92,256	162,403	115,334	105,185	129,663	89,889	80,646	98,258
Vltava River Board, s. e.	85,855	77,430	304,594	73,143	82,165	128,136	113,624	103,820	109,261
Ohře River Board, s. e.	59,410	73,068	80,937	74,837	110,493	117,623	101,250	109,694	94,847
Oder River Board, s. e.	34,712	35,656	41,780	34,911	61,628	58,163	108,667	93,210	48,316
Morava River Board, s. e.	48,960	58,411	61,959	46,423	78,966	69,306	56,000	50,719	62,345
River Boards, s. e. in total	**316,170**	**336,821**	**651,673**	**344,648**	**438,437**	**502,891**	**469,430**	**438,089**	**413,027**

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 2012, the total amount of grants increased by 36.4%, compared to the year 2011, however with a different proportion of the impacts of operating grants and investment grants. Grants of operating nature showed a slight year-on-year increase by 2.3% and investment subsidies showed a year-on-year increase by 43.8%. In total the grants in the year 2012 amounted to CZK 2.82 billion. Grants are especially 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 means provided by the ERDF and by the Ministry of the Environment through the funds of the Operational Programme Environment, Operational Programme of Cross-border Cooperation between the Czech Republic and the Free State of Saxony. Flood control measures were also co-financed with the contribution of certain regional authorities and municipalities. The total operating (non-investment) and investment grants allocated to the individual River Boards, s. e. in the year 2012 are shown in table 6.2.8.

In the year 2012 the total costs increased by CZK 279.7 million, compared to the year 2011. A significant year-on-year increase was shown by the item of other costs, by CZK 182.5 million. This item shows every year the highest variations. A significant increase was also shown by repairs and personnel costs.

The highest increase in costs was reported by the Morava River Board, s. e. and the Vltava River Board, s. e. The Oder River Board, s. e. as the only one reported a slight decrease in costs. The summary of costs in the year 2012 reported by the River Boards, s.e. and their comparison with the previous year is shown in table 6.2.9.

In the year 2012, River Boards, s. e. expended on investments the amount of CZK 3,259.1 million. Of this sum, the amount of almost CZK 866 million was drawn from their own resources and the additional amount of over CZK 2,393 million not covered by the River Boards, s. e. own resources was expended on investments.

Table 6.2.8
Grants used by River Boards, s. e. in 2012 in thousands of CZK

River Board, s. e.	Operating grants	Investment grants	Grants in total
Elbe River Board, s. e.	22,287	1,074,139	**1,096,426**
Vltava River Board, s. e.	5,389	448,593	**453,982**
Ohře River Board, s. e.	80,314	247,497	**327,811**
Oder River Board, s. e.	60,493	290,333	**350,826**
Morava River Board, s. e.	264,731*)	326,697	**591,428**
River Boards, s. e. in total	**433,214**	**2,387,259**	**2,820,473**

Source: MoA, River Boards, s. e.
*Note: *) The difference in this sum compared to the table showing the structure of revenues and sales is caused by the grant invoicing date.*

Table 6.2.9
Costs in 2011 and 2012 reported by River Boards, s. e. in millions of CZK

Type of cost	Year	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.	River Boards, s. e. in total
Depreciation	2011	166.4	320.4	196.6	140.2	157.2	**980.8**
	2012	169.6	323.9	195.7	142.9	154.1	**986.2**
Repairs	2011	198.0	217.9	196.5	222.3	311.0	**1,145.7**
	2012	177.4	230.9	209.7	186.6	380.3	**1,184.9**
Material	2011	48.4	27.4	19.5	39.5	47.8	**182.6**
	2012	51.0	28.1	21.3	44.7	48.6	**193.7**
Energy and fuels	2011	45.6	40.8	39.3	5.8	12.2	**143.7**
	2012	48.3	41.8	31.2	5.8	14.0	**141.1**
Personnel costs	2011	444.4	406.5	300.1	219.1	295.1	**1,665.2**
	2012	459.9	410.8	320.2	225.4	296.1	**1,712.4**
Services	2011	90.6	89.2	34.8	42.3	36.6	**293.5**
	2012	83.9	95.8	37.9	39.1	34.0	**290.7**
Financial costs	2011	0.3	3.6	0.6	0.2	0.5	**5.2**
	2012	0.3	3.1	0.4	0.2	0.9	**4.9**
Other costs	2011	14.0	30.9	-3.2*)	30.9	4.7	**77.3**
	2012	46.8	97.8	34.7	43.5	37.0	**259.8**
Total costs	**2011**	**1,007.7**	**1,136.7**	**784.2**	**700.3**	**865.1**	**4,494.0**
	2012	**1,037.2**	**1,232.2**	**851.1**	**688.2**	**965.0**	**4,773.7**

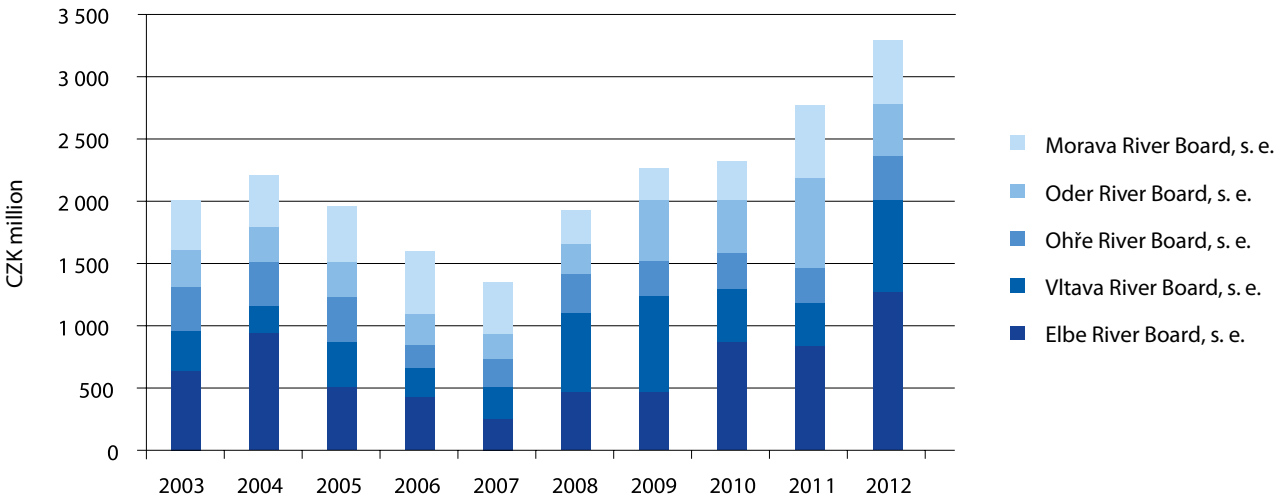
Source: River Boards, s. e.
*Note: *) accruals from the previous year were used*

Table 6.2.10
Investments made by the River Boards, s. e. in the years 2003–2012 in millions of CZK

River Board, s. e.	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	607.6	915.2	485.2	394.9	212.0	455.0	459.0	829.8	806.7	1,240.8
Vltava River Board, s. e.	321.6	219.0	362.4	236.6	275.2	611.3	761.1	428.3	346.7	729.5
Ohře River Board, s. e.	339.8	329.5	354.4	170.4	215.7	322.5	277.5	287.4	265.8	357.1
Oder River Board, s. e.	316.3	301.3	260.6	254.7	199.7	244.2	473.5	443.4	741.2	419.7
Morava River Board, s. e.	407.4	411.9	462.3	518.2	413.5	257.8	254.5	302.6	571.9	512.0
River Boards, s. e. in total	**1,992.7**	**2,176.9**	**1,924.9**	**1,574.8**	**1,316.1**	**1,890.8**	**2,225.6**	**2,291.5**	**2,732.3**	**3,259.1**

Source: MoA, River Boards, s. e.

Chart 6.2.2
The development of capital construction in River Boards, s. e. in the years 2003–2012



Source: MoA, River Boards, s. e.

Compared to the previous year the investments made by the River Boards, state enterprises, in the year 2012 increased in total by CZK 526.8 million. The summary of investment funds over a longer time series is shown in table 6.2.10 and chart 6.2.2.

The financial results reached by all River Boards, state enterprises showed only a profit. The profit reached the total amount of CZK 78 million.

Compared to the previous year, the total profit is higher by almost CZK 13 million. Except for the Elbe River Board, s. e. and the Morava River Board, s. e., all River Boards, state enterprises reached better economic results, compared to the year 2011.

Profit/loss development over the recent eight 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.

The average recalculated number of employees in River Boards, state enterprises decreased in the year 2012 by 34 employees to a total of 3,543 persons.

All River Boards, state enterprises showed a decrease in the total number of employees, the most significant decrease was reported by the Elbe River Board, s. e., by 20 employees on average. An overview of the development in the numbers of employees of the significant watercourse administrators is shown in table 6.2.13.

Table 6.2.11
Profit/loss of River Boards, s. e. in the years 2005–2012 in thousands of CZK

River Board, s. e.	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	36,777	6,132	15,798	16,692	30,050	27,509	29,908	21,488
Vltava River Board, s. e.	34,376	177,869	67,625	23,375	30,265	13,530	12,702	25,088
Ohře River Board, s. e.	17,070	47,735	71,817	22,401	30,371	11,776	4,758	11,284
Oder River Board, s. e.	16,680	56,401	24,595	29,296	13,964	13,785	12,721	15,247
Morava River Board, s. e.	13,038	11,054	12,417	13,035	15,295	8,171	5,355	5,114
River Boards, s. e. in total	**117,941**	**299,191**	**192,252**	**104,799**	**119,945**	**74,771**	**65,444**	**78,221**

Source: River Boards, s. e.

Table 6.2.12
Proposed allocation of profit of River Boards, s. e. for the year 2012 in thousands of CZK

River Board, s. e.	Profit	Allocation of profit or loss					
		Reserve fund	Fund for Social and Cultural Requirements	Investment fund	Social fund	Remuneration fund	Accumulated losses from previous years
Elbe River Board, s. e.	**21,488**	0	6,588	10,000	1,500	3,400	0
Vltava River Board, s. e.	**25,088**	11,077	7,500	0	11	6,500	0
Ohře River Board, s. e.	**11,284**	0	4,633	3,651	0	3,000	0
Oder River Board, s. e.	**15,247**	0	7,247	0	1,000	7,000	0
Morava River Board, s. e.	**5,114**	511	4,289	0	0	0	314

Source: MoA, River Boards, s. e.

The average monthly salary in the River Boards, state enterprises in the year 2012 amounted to CZK 28,942.

Compared to the previous year, the average monthly salary in River Boards, s. e. increased by approximately CZK 800. Except for the Morava River Board, s. e., all the remaining River Boards, s. e. reported an increase in the average monthly salary. The highest annual increase by CZK 1,190 is reported by the Elbe River Board, s. e. and an increase by CZK 1,187 is reported by the Ohře River Board, s. e. The Morava River Board, s. e. continues to report the lowest average monthly salary amounting to CZK 25,756. The average monthly salaries are specified in table 6.2.14.

Table 6.2.13
The number of employees of River Boards, s. e. in the years 2011 and 2012 (average recalculated number)

River Board, s. e.	2011	2012
Elbe River Board, s. e.	947.1	927,5
Vltava River Board, s. e.	846.3	841.4
Ohře River Board, s. e.	620.7	616.1
Oder River Board, s. e.	464.3	463.5
Morava River Board, s. e.	698.0	694.0
River Boards, s. e. in total	**3,576.4**	**3,542.5**

Table 6.2.14
Average salaries in the individual River Boards, s. e. in the years 2005–2012 in CZK/month

River Board, s. e.	2005	2006	2007	2008	2009	2010	2011	2012
Elbe River Board, s. e.	21,781	23,036	24,318	25,778	27,283	28,209	28,350	29,540
Vltava River Board, s. e.	21,909	23,414	24,611	27,325	28,300	28,864	28,311	29,285
Ohře River Board, s. e.	22,091	23,464	24,971	26,794	28,620	29,759	30,148	31,335
Oder River Board, s. e.	21,050	22,337	23,817	25,534	26,104	27,190	28,105	28,714
Morava River Board, s. e.	19,233	20,798	22,052	23,823	25,778	25,310	25,812	25,756
Average monthly salary in River Boards, s. e. *)	**21,243**	**22,637**	**23,954**	**25,856**	**27,283**	**27,905**	**28,126**	**28,942**

Source: MoA, River Boards, s. e.
*Note: *) Calculated by means of weighted average.*

6.3 Agricultural Water Management Administration

Based on the measure of the Ministry of Agriculture, ref. No. 192140/2011-MZE-12142 of 9 December 2011, the Agricultural Water Management Administration, organizational unit of the state, was abolished as of 30 June 2012, with all assets (except structures for reclamation of land), rights and liabilities having been transferred on 1 July 2012 to the founder.

The key priority was to ensure the fulfilment of the tasks assigned by the Minister of Agriculture and leading to the closure of the organization. During the first half of 2012 there were finalized contractual transfers of water management property to the River Boards, s. e. and the Forests of the Czech Republic, s. e. The subject of the transfer were particularly hydraulic structures located on watercourses under the historical administration of state enterprises and lands forming stream channels. In addition, the transfer to state-owned enterprises included operating assets which were not transferred in 2011 because of the needful to the Agricultural Water Management Administration.

It was important to ensure settlement of all liabilities and perform all tasks associated with the abolition of the organizational unit of the state in relation to all stakeholders. All contractual relations and financial settlement with the contractors had to be terminated.

During the first half of 2012, documents had to be collected, archived and discarded. The preparation of protocols on the transfer of assets, rights, liabilities and documents to the founder and the actual physical transfers were under way.

During the second quarter of 2012, the preparation of the protocolar transfer of MDF (main drainage facilities) structures and related documents to the administration of the Land Fund of the Czech Republic was under way. This property then was transferred to the Land Fund of the Czech Republic through the protocol on handover and takeover with effect from 1 July 2012.

Under the measure of the Ministry of Agriculture, the following steps were taken: liabilities relating to all employees in terms of termination of employment were settled, inventory of assets and outstanding liabilities was conducted, statement of account as of 30 June 2012 was prepared, bank accounts were closed and bookkeeping of the accounting unit of the Agricultural Water Management Administration was handed over to the Ministry of Agriculture. Partners were informed of the termination of activities of the Agricultural Water Management Administration and the transfer of main drainage facilities to the administration of the Land Fund of the Czech Republic.

The main subject of activity of the Agricultural Water Management Administration in accordance with the valid Deed of Foundation continued to be the execution of administration and management of

main drainage facilities and the related hydraulic structures owned by the Czech Republic. Main drainage facilities are defined under Section 14, subsection 6 of the Act No. 229/1991 Coll., on regulations of ownership of land, as amended, under Section 56, subsection 2 of the Act No. 254/2001 Coll., on waters and on amendment to some laws, as amended, and under Section 2, subsection 5 of the MoA Decree No. 225/2002 Coll., on detailed definition of structures for water management reclamation of lands and their parts and on the manner and scope of their management, as a set of structures that are used to drain excess surface water and groundwater from the land, to aerate the land and to protect the drained land from flooding with outer waters. These structures especially include open channels (collecting drainage ditches, capturing ditches and dry polders to capture outer water, damming structures and structures used for regulation), channels regulated in pipelines (inner diameter 30 cm and more), including structures on them (drops, chute spillways) and drainage pumping stations. Main drainage facilities are structures built in the public interest, mostly on foreign land.

According to the inventory of water management property as of 31 December 2011, the Agricultural Water Management Administration carrried out the administration of property falling into the category of main drainage facilities, namely 5,127 km of open channels, 3,770 km of channels regulated in pipelines, 18 reservoirs relating to drainage systems, 527 culverts and 133 pumping stations. The total acquisition value of this non-current tangible property amounted to CZK 2.527 billion.

Table 6.3.1
The use of individual non-investment financial resources of the Agricultural Water Management Administration in the year 2012 in millions of CZK

Activity	Resource	Budget	Reality
Maintenance of main drainage facilities	State budget	8.1	8.1
Operation of main drainage facilities	State budget	6.9	5.4
Total		**15.0**	**13.5**

Source: Agricultural Water Management Administration

Table 6.3.2
Non-investment expenses on maintenance and repairs of main drainage facilities administered by the Agricultural Water Management Administration in the year 2012 by river basin districts in millions of CZK

River basin district	Maintenance of main drainage facilities	Operation of main drainage facilities	Total
Vltava River	3.4	0.5	**3.9**
Elbe River	1.2	1.1	**2.3**
Ohře River	0.0	0.0	**0.0**
Morava River	3.5	3.8	**7.3**
Oder River	0.0	0.0	**0.0**
Total	**8.1**	**5.4**	**13.5**

Source: Agricultural Water Management Administration

In connection with administration of the above mentioned property, employees of the Agricultural Water Management Administration performed especially the following activities: inspection walks and reports thereof, preparation of project documentation for maintenance, supervision of performing maintenance by external suppliers until hand-over protocol acceptance including the obligation to report to the relevant state administration bodies, keeping basic information in the database information systems of the organization and inventory thereof, making statements on structures that are of concern for main drainage facilities, participation in general planning proceedings, building permit proceedings and acceptance certificate proceedings, participation in the meetings before and during construction and ensuring legal acts relating to the administration of main drainage facilities, including property rights issues.

The funds allocated to the Agricultural Water Management Administration in the first half of 2012, with the objective of ensuring the proper function and operability of the main drainage facilities and related hydraulic structures as well as the maintenance, repairs and remedying of the states of disrepair, amounted to CZK 8.1 million. The maintenance of the main drainage facilities included in particular mowing, clearing of canals to ensure runoff from the drainage systems, elimination of non-indigenous invasive plant species (hogweed, Japanese knotweed) and maintenance of riparian stand. The funds allocated for current maintenance were partially used to take immediate action due to emergency situations. To ensure the operation of main drainage facilities, especially pumping stations, the Ministry of Agriculture released the funds in the amount of CZK 6.9 million.

A summary of the actual use of funds allocated for measures of non-investment nature in the year 2012 is shown in table 6.3.1.

Non-investment expenses drawn for maintenance, repairs and operation of main drainage facilities by individual territorial units of the Agricultural Water Management Administration are shown in table 6.3.2.

The revenues of the Agricultural Water Management Administration had the nature of its own business activity income with other revenues having comprised supplementary, incidental and other revenues. Revenues received in the first half of 2012 amounted in total to CZK 1.1 million. The overall structure of revenues of the Agricultural Water Management Administration is shown in table 6.3.3.

The Ohře River – weir, Terezín

Table 6.3.3
Structure of revenues of the Agricultural Water Management Administration in millions of CZK in the years 2007–2012

Revenues	2007	2008	2009	2010	2011	2012
Payments for water abstractions	2.9	2.9	2.2	2.0	0.2	0.0
Rentals of hydraulic structures	3.4	3.4	3.9	5.1	0.4	0.1
Other revenues	4.7	11.3	7.8	8.8	1.7	1.0
Total	**11.0**	**16.6**	**13.9**	**15.9**	**2.3**	**1.1**

Source: Agricultural Water Management Administration

6.4 Forests of the Czech Republic, s. e.

Forests of the Czech Republic, s. e., performs the administration of the specified minor watercourses and torrents as one of non-production forest functions. At present, the Forests of the Czech Republic perform the administration of more than 39 thousand km of watercourses.

Watercourse management carried out by the Forests of the Czech Republic, s. e. includes the administration of non-current assets relating to watercourses, with an acquisition value of CZK 5.38 billion (in particular watercourse regulation, torrent and ravine control, flood control measures and water reservoirs). The watercourse administration was managed by the Water Management Department at the Head Office of the Forests of the Czech Republic, s. e. and was carried out by six Watercourse Administrations, with territorial responsibility according to the respective river basin districts.

In the year 2012, 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 previous years (mainly from 2010),
- 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,
- completing the processes related with the transformation of the Agricultural Water Management Administration (taking over the administration of watercourses, water management property, operating property and other property or land),
- 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 according to instructions given by the Ministry of Agriculture.

The watercourse administration and the implemented measures (repairs, rehabilitation and new investments) were 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, financial resources from the state budget allocated for the programmes of the Ministry of Agriculture „Support for Flood Prevention II" and „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 watercourse administration are of a non-commercial nature and with regard to the overall funds expended they generate virtually no profit. In the year 2012, no significant flood damage to property administered by the Forests of the Czech Republic, state enterprise was not recorded.

In connection with watercourse administration, the Forests of the Czech Republic, s. e., through its organizational units, the Watercourse Administrations, disbursed in total CZK 750.1 million, including expenditures of capital investment nature amounting to CZK 376.8 million. Its own funds used for these investments amounted to CZK 143.2 million. In total CZK 373.3 million, including CZK 325.5 million of own funds were used to perform the administration, repairs and maintenance of torrent control structures. In total CZK 302.0 million, including CZK 163.3 million of own funds were expended on remedying flood damage. The above mentioned amounts include all costs relating to watercourse administration. The revenues from payments for surface water abstractions to cover the watercourse administration amounted to CZK 13.7 million.

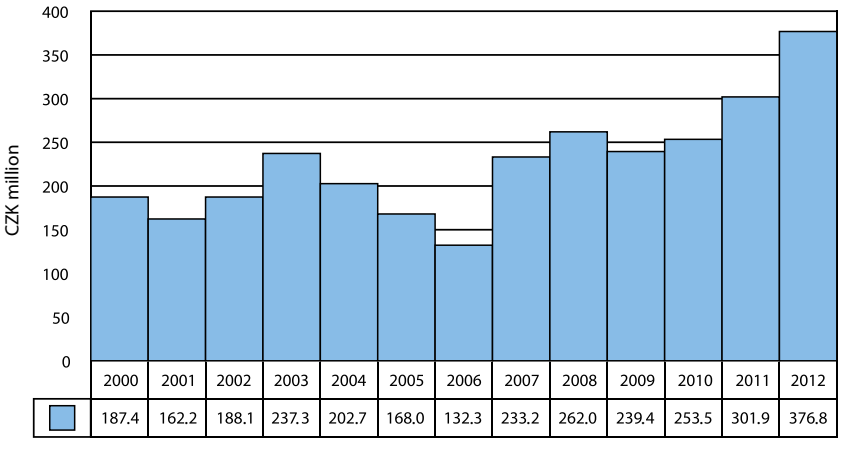
The Charts 6.4.1 and 6.4.2 provide in a longer time series an overview of the overall capital expenditures and the funds spent on repairs and maintenance.

Table 6.4.1
Structure of financing watercourse administration by the Forests of the Czech Republic, s. e. in the year 2012 in millions of CZK (full costs)

Forests of the Czech Republic, s. e.	Own resources in total	Subsidies in total	Of that flood damages	
			Subsidies	Own resources
Investments	143.150	233.644	101.582	81.572
Non-investments	325.461	47.821	37.135	81.689
Total	**468.611**	**281.465**	**138.717**	**163.261**

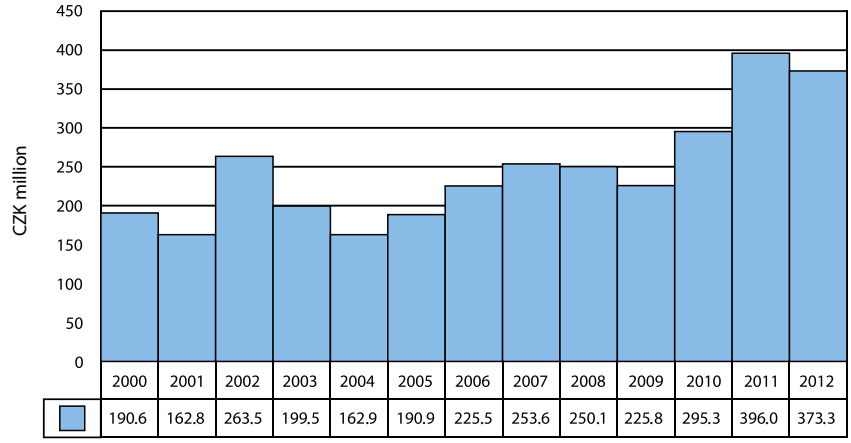
Source: Forests of the Czech republic, s. e.

Chart 6.4.1
Capital expenditures of the Forests of the Czech Republic, s. e. in the years 2000–2012 in millions of CZK – watercourses



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

Chart 6.4.2
Expenditures of the Forests of the Czech Republic, s. e. in the years 2000–2012 in millions of CZK – repair and maintenance of watercourses (gross expenditure)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	190.6	162.8	263.5	199.5	162.9	190.9	225.5	253.6	250.1	225.8	295.3	396.0	373.3

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

Measures in river basins

In the year 2012, the main activity for the Watercourse Administration for the Oder River basin district were the actions aiming to remedy flood damage from May 2010, especially in the area of the Beskydy Mountains. The most extensive completed projects include remedying of flood damage to the Čeladenka River between km 3.048 and km 5.060 in the municipality of Čeladná, the Bystrý stream between km 3.250 and km 7.000 and between km 7.200 and km 8.400 in Janovice and Lubno, the Lomná stream between km 4.000 and 6.400 in Trojanovice, the Bystrý stream between km 0.000 and km 4.200 in Frenštát pod Radhoštěm and Trojanovice, the Mionší stream between km 1.100 and km 1.400 and the Kamenitý stream between km 0.000 and km 0.500 in Dolní Lomná, the Vlašský stream between km 0.000 and km 1.700 and the Velký Lipový stream between km 0.000 and km 1.000 in Morávka and the Hluchová stream between km 0.300 and km 4.200 in Bystřice nad Olší.

On watercourses transferred from the Agricultural Water Management Administration the following projects of remedying flood damage were completed: the Čermná stream between km 8.500 and km 9.700 in Vítkov, the Stříbrný stream between km 0.000 and km 1.113 in Fulnek and the Rovňa stream between km 1.220 and km 1.320 in Oldřichovice.

Under the programme of flood control measures, the following projects aiming to remedy flood damage from the year 2009 in the Jeseník area and the Nový Jičín area were completed: the Vojtovický stream between km 13.900 and km 15.050 and its tributary in km 15.01 in Vlčice, the Červený stream between km 7.800 and km 11.200 in Stará Červená Voda, the Zrzávka River between km 0.000 and km 0.700 in Nový Jičín, the Jičínka River between km 23.550 and km 24.240 in Veřovice, the Stříbrný stream between km 0.000 and km 1.800 in Žulová and the Skorošický stream in the municipalities of Skorošice and Žulová.

Other significant completed projects of flood protection include the Bučací stream between km 0.000 and km 0.200 in Ostravice, the Sedlinka stream between km 1.450 and km 1.813 in Štítina, the Lomná stream between 0,000 and km 1.150 in Frenštát pod Radhoštěm, the Mušlov stream between km 5.900 and km 7.545 in Třemešná and the Rohovec stream between km 0.607 and km 1.260 in Návsí.

As regards measures taken in the public interest pursuant to Section 35 of the Forest Act, they include projects completed on the following watercourses: the Vilčok stream with tributary, the Lipňok stream and the Říčka stream in Staré Hamry and the Vysutý stream and the Ježanský stream in Morávka.

The Watercourse Administration for the Dyje River basin district, based in Brno, completed eight projects co-financed from the Programme of Flood Control Measures, of which the most significant included Depiping and Reconstruction of the Tresný Stream in the municipality of Rovečné and construction work on the Hodonínka watercourse upstream of the municipality of Štěpánov nad Svratkou. In addition, preparatory work for the execution of projects of flood control measures taken over within the transformation of the Agricultural Water Management Administration is under way. Most significant of these projects is construction of dry polders in the municipality of Čeložnice and increase in the Hodonínka stream channel capacity in the municipality of Olešnice.

Two projects partly receiving support from the Rural Development Programme were successfully completed, namely the Jihlava River tributary in km 100.100 in the town of Třebíč and the Bělínský stream in the municipality of Čikov.

In the territorial scope of the Watercourse Administration, five projects were completed in the form of measures taken in the public interest pursuant to Section 35 of the Forest Act. Of them, significant projects include the Račický stream tributary upstream of Račice and Čermákovice retention reservoir in the Znojmo region. Three new projects funded from the same grant resource were launched.

Within the remediation of flood damage from 2010, repair of the Kameňák dry polder in the Hodonín area was completed and the project of remediation of flood damage to the Hvězdlička stream from 2010 in the municipality of Milonice started. Own funds were used to remedy flood damage to another two watercourses from 2010.

Also the Watercourse Administration for the Dyje River basin district was afflicted in 2012 by local floods that occurred in the Jihomoravský region, namely in the Kyjov area and in the surroundings of Bílovice nad Svitavou and Podhradí nad Dyjí. Increased flows, however, did not cause major damage.

The Watercourse Administration for the Elbe River basin district, based in Hradec Králové, in 2012 completed most of the projects aiming to remedy flood damage in the Liberec area. The projects in question include the Sloupský stream and the Malý Sloupský stream in the municipality of Hejnice, the Černý stream in the municipality of Bílý Potok, the Kunratický stream in the municipality of Kunratice u Frýdlantu, the tributaries of the Lužická Nisa River in Bílý Kostel nad Nisou.

Furthermore, projects funded under the Programme of Flood Control Measures, namely the Městecký stream II in Vojnův Městec and the Žernovník stream upstream of Železný Brod were completed.

The Barovka stream, Železné Hory

Projects with financial support from the EU funds were launched. They include the revitalization of the Stříbrný stream in Malšova Lhota, the Koutský stream in Osečnice in Orlické hory Mountains, the revitalization of the Černý stream in Hejnice and the Tichá říčka stream in Janov nad Nisou.

As regards measures taken in the public interest pursuant to Section 35 of the Forest Act, the project for the Vošmenda stream in Bozkov was completed and the projects of regulations of the Knapovecký stream in Knapovec and the Lubenský stream in Horní Újezd started.

Own resources of the Forests of the Czech Republic were used to fund the execution of other major projects, including the Bělidlo stream in the municipality of Olešnice in Orlické hory Mountains, the Honkův stream in Rybnice, the Kopaňský stream in Loužnice, the Dolenský stream and the Loukotnický stream in Brandýs nad Orlicí, the Prosečský stream in Proseč, the Ruprechtický stream in Ruprechtice and the Rybenský stream in Rybná nad Zdobnicí.

The funds under the Programme 2020 „meeting the objectives of the public interest by the Forests of the Czech Republic" were used by the Watercourse Administration to continue in the reintroduction of brook minnow (Phoxinus phoxinus) and rainbow trout and the monitoring of fish passes in the Protected Landscape Area Jizerské hory Mountains, the reintroduction of crayfish (Astacus astacus) in the Broumovsko Protected Landscape Area, the elimination of non-indigenous invasive plant species (knotweed, impatients) along watercourses and the construction of information and rest facilities for the public (sheds and information boards).

Most significant construction activities performed in 2012 by the Watercourse Administration for the Vltava River basin district include the reconstruction of the historical hydraulic structure Schwarzenberg Navigation Canal in a length of 1.8 km, funded from the EU grants, and the reconstruction of part of the Budňanský stream channel in the township of Karlštejn.

Completed projects under the Programme of Flood Control Measures include the Podvecký stream in Soběšín, increase in the Pivoňka stream channel capacity in Poběžovice, the Býkov water reservoir near Hromnice and the Farský stream in Záblatí. Other significant completed projects include the construction of retention reservoir Raška I near the municipality of Kladruby and the remediation of flood damage to Od Štěpánka in Strážkovice, carried out in the public interest pursuant to Section 35 of the Forest Act.

Under the Programme of Remedying Flood Damage, the projects on the Kojetický stream in Kdyně and on the tributary of the Krásetínský stream in Holubov were completed. Due to increased flows on watercourses in the areas of South Bohemia and Central Bohemia, over 20 minor projects of securing works were executed. The EU funds were used to start a repair of the Městecký stream channel in the municipality of Městečko.

Other activities performed by the Watercourse Administration mainly focused on making inventory and repairs of property in connection with the transformation of the Agricultural Water Management Administration.

In 2012, the Watercourse Administration for the Ohře River basin district completed most of the building projects aiming to remedy flood damage from 2010. Repairs on the Těchlovický stream in Těchlovice and the Veleňský stream in Malá Veleň in the Děčín area, on the Kněžický stream in the Česká Lípa area and the Kojetický stream in Olšinky in the Ústí nad Labem area were completed, works on the Zdislavský stream in the Liberec area continued to be executed. Last and most extensive repairs started on the Rychnovský stream in Těchlovice and the Homolský stream in Velké Březno in the Ústí nad Labem area and on the Luční stream in the Litoměřice area.

Under the grant programme of flood control measures, projects on the Žalanský stream near Rtyně nad Bílinou and on the Druzcovský stream in the Liberec area were completed, newly started projects include regulations of the Bouřňák stream near Hrob, the Donínský stream and the Hradišťský stream in the Žatec area.

Funds for measures to be implemented in the public interest pursuant to Section 35 of the Forest Act were used to complete the stabilization of the forest torrent Bílý stream in Nové Hamry and the construction of the Černý rybník water reservoir.

The EU grant funds were used to start regulations of the headspring part of the Chodovský stream and its alluvial plain in the Karlovy Vary area, whose aim is to recover the natural water regime in peatbogs, deteriorated by land drainage and stream channel deepening in the past.

Own funds of the Forests of the Czech Republic were used to execute a number of repair and maintenance projects on watercourses, especially on those transferred from the former Agricultural Water Management Administration.

In 2012, the Watercourse Administration for the Morava River basin district completed the execution of nine projects co-financed under the Programme of Flood Control Measures, of which the most significant was the project on the Seninka stream between km 2.660 and km 2.980 in the Vsetín district. In addition, projects taken over from the Agricultural Water Management Administration were executed, including the Klepáčovský stream in the Šumperk district, the Bendův pond in the Ústí nad Orlicí district and flood control measures km 2.467 and km 2.893 in Loučka in the Zlín area. Other projects executed under this programme included flood control measures on the Bílá Voda stream between km 2.570 and km 3.260 in the municipality of Červená Voda, flood control measures on the Bzovský stream between km 4.810 and km 5.070 in Bzová and retention reservoir Pod Komoncem upstream of Pozlovice.

The EU funds were used to carry out one repair on the Černý stream in the municipality of Hřivínův Újezd.

Pursuant to Section 35 of the Forest Act, in total eight projects of watercourse regulations were executed, with the largest extent of work having been carried out in the Šumperk area, including project of repairs of torrent control structures on the Jelení stream and capital investment project on the Chudobský stream and a series of Rákoš flood control measures near Velehrad in the Zlín area. Significant as well was the project of the Rokytenka stream channel regulation between km 5.83 and km 6.81 in Šanov, with an increase in stream channel capacity and stabilization of stream bed.

The remedying of flood damage from the year 2010 continued. In cooperation with the Beskydy Protected Landscape Area, nature-friendly flood control measures were used to regulate watercourses in the Velké Meziříčí area and the Rožnov pod Radhoštěm area, this particularly concerned the Maretkový stream, the Sladský stream,

the Starozuberský stream and the Zašovský stream. A good deal of work was carried out on the Kněhyně stream and the Kněhyňka stream, where the work will continue in 2013. In the Hodonín district, extensive remedying of flood damage was carried out in the municipality of Blatnička on the Svodnice stream taken over from the Agricultural Water Management Administration.

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

The development of revenues of the Forests of the Czech Republic, s. e. from sales of surface water and unit prices are shown in table 6.4.2.

Table 6.4.2
Revenues of the Forests of the Czech Republic, s. e. from sales of surface water in the years 2006–2012 in thousands of CZK

Year	2006	2007	2008	2009	2010	2011	2012
Sales	9,581	10,010	10,380	10,542	11,239	12,969	13,679
Price per m^3 *)	1.39	1.42	1.50	1.55	1.60	1.90	1.96

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

6.5 Waterways

Pursuant to Act No. 114/1995 Coll., on Inland Navigation, 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 Decision of the European Parliament and of the Council No. 661/2010/EU 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. From the Ústí nad Labem at Střekov hydraulic structure 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 state border CR/FRG depends, however, on water stages based on the current flows and on the overall water management 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 2012 to CZK 433.0 million in total. Programme development of waterways was funded by CZK 430.8 million allocated from the budget of the State Transport Infrastructure Fund and CZK 2.2 million from the EU TEN-T fund.

To ensure trouble-free navigation on the Elbe water way, the key point is the completion of the Děčín navigation dam. In terms of transport and ecology it can be stated that water transport is at the Europe-wide level a significantly supported mode of transport, thanks to its efficiency and environmental friendliness, very low accident rate and the use of surface waters, which are also aquatic ecosystems.

The preparation of this key hydraulic structure is in the process of environmental impact assessment, including the assessment of the impacts of this project on bird sites protected by European legislation, sites of community importance and System Natura 2000 species. The completed EIA documentation was submitted to the Ministry of the Environment, but based on recommendation made by the reviewer the documentation was returned for refinement. During 2012, the presented EIA documentation was refined, taking into account standpoints of the environmental sector.

Significant progress achieved in the preparation of another strategic project Přelouč II Navigation Dam, which is the key project leading to the extension of the Elbe waterway to Pardubice, is the re-issuance of the zoning and planning decision in December 2012, although having not yet come into legal force.

In the year 2012, significant amounts of funds were expended on large projects, such as the capital investment project Completion of the Vltava Waterway in the stretch between České Budějovice and Týn nad Vltavou, whose complex execution started in 2008 and will proceed until 2015. The stretch between Hluboká nad Vltavou and the Hněvkovice hydraulic structure, including the new lock chamber, was completed. The continuous waterway from České Budějovice now reaches a length of 27.5 km.

In addition, projects on the Baťův canal waterway, namely wharfs in Sudoměřice – Výklopník, Spytihněv and Strážnice were completed. The aim of the projects is to strengthen port infrastructure and thus enhance tourist traffic in the areas concerned.

In the year 2012, also the modernization of four lock chamber drives on the Elbe Waterway, namely lock chambers in Roudnice nad Labem, Lysá nad Labem, Týnec nad Labem and Hradištko was completed. The modernization will significantly contribute to the safety and passability of traffic on waterways.

The next element aiming to improve the safety of traffic on the Elbe waterway is the project of modernization of navigation signs on the bridges of the lower Elbe. The aim of the project was to install on pillars at the fairway rod radar reflectors, thus ensuring the highest possible continuous and reliable signs indicating vertical clearance for ships with oversized loads and large passenger ships to the port in Mělník and further to the Vltava River.

In 2012, the boat lift for sports watercrafts on the Vltava waterway, namely at Orlík hydraulic structure, was enlarged.

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

Spring thaw – 3rd class, Krčín primary school and nursery school, Královéhradecký kraj region

7. Public water supply and sewerage systems

7.1 Drinking water supply

In the year 2012 water supply systems supplied water to 9.8 million inhabitants in the Czech Republic, i.e. 93.5% of the total population.

All water supply systems produced in total 623.5 million m³ of drinking water. 480.7 million m³ of drinking water were supplied and charged for (invoiced), including 315.9 million m³ of drinking water for households. Drinking water losses amounted to 119.0 million m³, i.e. 19.3% of water intended for consumption.

The data provided by the Czech Statistical Office was collected on the basis of information provided by 1,374 reporting units (i.e. 292 water supply and sewerage system operators and a selected set of 1,082 municipalities operating the water management infrastructure on their own; the data was provided by 100% of both operators and municipalities). Primary data collected from the VH 8b-01 statements are not published by the Czech Statistical Office since 2004.

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

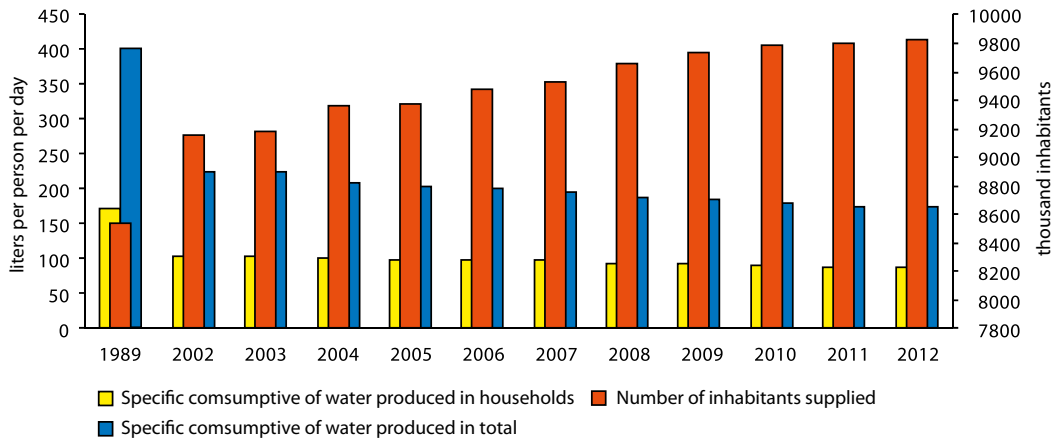
The increase in the percentage of inhabitants supplied with drinking water largely results from the construction of new water supply systems on the outskirts of towns. The quantity of water invoiced decreased by 0.6%. The specific quantity of water invoiced to households decreased by 0.5 litres per person and day and amounts to 88.1 litres. The specific quantity of water invoiced in total recalculated per one inhabitant supplied with water, decreased

Table 7.1.1
Water supply from water supply systems in the years 1989 and 2006–2012

Indicator	Measurement unit	1989	2006	2007	2008	2009	2010	2011	2012
Inhabitants (mean)	thousand inhabitants	10,364.0	10,267.0	10,323.0	10,430.0	10,491.0	10,517.0	10,495.0	10,509.0
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537.0	9,483.0	9,525.0	9,664.2	9,733.0	9,787.5	9,805.4	9,823.1
	%	82.4	92.4	92.3	92.7	92.8	93.1	93.4	93.5
Water produced by water supply systems	million m³/year	1,251.0	699.0	683.0	667.1	653.3	641.8	623.1	623.5
	% as of 1989	100.0	55.9	54.6	53.3	52.2	51.3	49.8	49.8
Water invoiced in total	million m³/year	929.4	528.1	531.7	516.5	504.6	492.5	486.0	480.7
	% as of 1989	100.0	56.8	57.2	55.6	54.3	53.0	52.3	51.7
Specific consumptive use of water produced	l/person day	401.0	202.0	196.0	188.0	184.0	180.0	174.0	173.8
	% as of 1989	100.0	50.4	48.9	46.9	45.8	44.8	43.4	43.3
Specific quantity of water invoiced in total	l/person day	298.0	153.0	153.0	146.0	142.0	137.9	135.8	134.1
	% as of 1989	100.0	51.3	51.3	49.0	47.7	46.3	45.6	45.0
Specific quantity of water invoiced for households	l/person day	171.0	97.5	98.5	94.2	92.5	89.5	88.6	88.1
	% as of 1989	100.0	57.0	57.6	55.1	54.1	52.3	51.8	51.5
Water losses per 1 km of water mains	l/km day	16,842.0*)	5,673.0	4,893.0	4,889.0	4,705.0	4,673.0	4,220.0	4,351.0
Water losses per 1 inhabitant supplied	l/person day	90.0*)	42.0	36.0	37.0	35.0	35.0	32.0	33.0

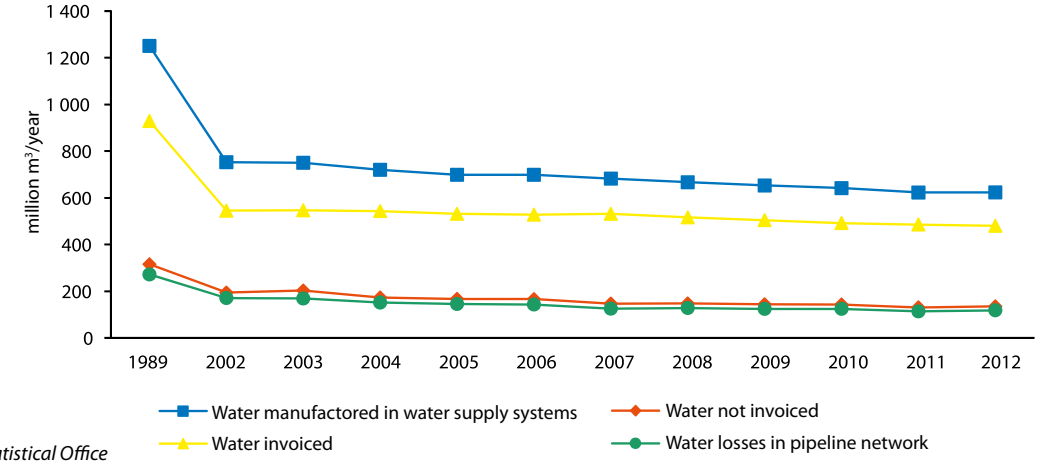
Source: Czech Statistical Office
*Note: *) Data for water supply systems run by the main operators.*

Chart 7.1.1
Development in the number of inhabitants supplied and the specific consumptive use of water invoiced in the years 1989 and 2002–2012



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 2002–2012



Source: Czech Statistical Office

by 1.7 litres. This indicates a continued decrease in consumption of households and a marked decrease in consumption of other consumers.

The highest percentage of inhabitants supplied with drinking water from water supply systems in 2012 was recorded in the Karlovarský kraj region (100%), in the City of Prague (100%) and in the Moravskoslezský kraj region (99.7%), the lowest percentage of inhabitants supplied with drinking water was recorded in the Plzeňský kraj region (83.4%) and the Středočeský kraj region (83.8%).

As regards Středočeský kraj, Plzeňský kraj, Ústecký kraj, Jihomoravský kraj, Moravskoslezský kraj and the City of Prague 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 2012, the length of water supply network was extended by the total of 774 km and reached the length of 74,915 km. New construction of new water supply systems and completion of the existing ones thus increased in 2012 the number of inhabitants supplied by 17,754. The length of water supply network per one inhabitant supplied was 7.63 m.

The number of water supply connections increased by 28,320 and amounted to 2,002,927. The number of water meters installed increased by 22,138 and amounted to 2,005,116. 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 the year 2012

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)	(thousand m³)	(thousand m³)
City of Prague	1,240,501	99.7	117,868	78,609	48,258
Středočeský kraj	1,078,077	83.8	46,960	49,676	34,943
Jihočeský kraj	576,591	90.6	33,983	25,964	18,269
Plzeňský kraj	476,977	83.4	29,594	24,325	14,252
Karlovarský kraj	302,484	100.0	20,326	14,622	9,183
Ústecký kraj	793,957	96.0	52,586	37,602	23,054
Liberecký kraj	394,740	90.0	27,012	18,727	12,136
Královéhradecký kraj	516,447	93.3	31,983	23,569	15,455
Pardubický kraj	499,771	96.8	29,115	22,885	14,543
Kraj Vysočina	483,719	94.6	24,970	21,325	14,106
Jihomoravský kraj	1,106,850	94.8	64,401	54,065	37,527
Olomoucký kraj	578,986	90.8	30,378	25,470	17,696
Zlínský kraj	549,202	93.4	30,313	23,423	15,440
Moravskoslezský kraj	1,224,817	99.7	84,045	60,484	41,015
Czech Republic	**9,823,119**	**93.5**	**623,534**	**480,745**	**315,875**

Source: Czech Statistical Office

7.2 Discharge and treatment of municipal waste waters

In 2012, in total 8.674 million inhabitants in the Czech Republic lived in buildings connected to sewerage systems, which is 82.5% of the total population. In total 473.2 milion m³ of waste waters were discharged into sewerage systems. Of this quantity, 97.1% of waste waters were treated (excluding rain water), which amounts to 459.4 million m³.

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

The number of inhabitants connected to sewerage systems increased in the year-on-year comparison by 2,561. The quantity of waste waters discharged to sewerage systems, without rain water, decreased in the year-on-year comparison by 14.4 million m³. The indicator of the percentage of the treated waste waters, without rain water, increased in the year 2012 by 0.3%.

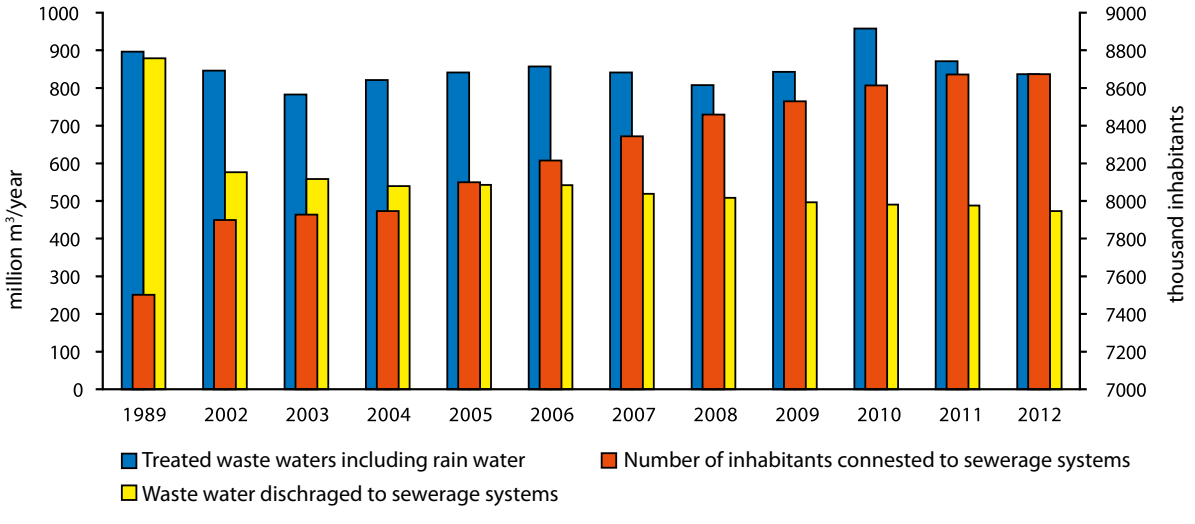
The Libina stream, the Jeseníky Mountains

Table 7.2.1
Discharge and treatment of waste waters from sewerage systems in the years 1989 and 2006–2012

Indicator	Measurement unit	Year							
		1989	2006	2007	2008	2009	2010	2011	2012
Inhabitants (mean)	thousands of inhabitants	10,364	10,267	10,323	10,430	10,491	10,517	10,495	10,509
Inhabitants living in buildings connected to sewerage systems	thousands of inhabitants	7,501	8,215	8,344	8,459	8,530	8,613	8,672	8,674
	%	72.4	80.0	80.8	81.1	81.3	81.9	82.6	82.5
Waste waters discharged to sewerage systems (excluding rain water) in total	million m³	877.8	542.0	519.3	508.8	496.4	490.3	487.6	473.2
	% as of 1989	100.0	61.7	59.2	58.0	56.6	55.9	55.5	53.9
Treated waste waters including rain water [1)]	million m³	897.4	857.4	841.2	807.5	842.9	957.9	871.0	836.7
Treated waste waters in total excluding rain water	million m³	627.6	510.6	497.6	485.0	472.7	471.5	472.2	459.4
	% as of 1989	100.0	81.4	79.4	77.3	75.4	75.2	75.3	73.2
Percentage of treated waste waters excluding rain water [2)]	%	71.5	94.2	95.8	95.3	95.2	96.2	96.8	97.1

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.

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 2002–2012



Source: Czech Statistical Office

The highest percentage of inhabitants connected to sewerage systems in 2012 was recorded in the City of Prague (100%) and the Karlovarský kraj region (94.2%), the lowest percentage was recorded in the Liberecký kraj region (66.4%) and the Středočeský kraj region (68.6%).

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 Ústecký kraj region and the Liberecký kraj region. This decrease is significant and was probably caused by a change in reporting methodology of major operators.

In the year 2012, the sewerage network was extended by 841 km and reached the total length of 42,752 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 2011 by 67 waste water treatment plants, i.e. to 2,318.

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 2012 in the individual regions

Region	Inhabitants living in buildings connected to public sewerage systems		Waste waters discharged to public sewerage systems	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	1,243,355	100.0	75,683	75,683	100.0
Středočeský kraj	882,473	68.6	51,067	50,765	99.4
Jihočeský kraj	551,453	86.7	34,884	33,235	95.3
Plzeňský kraj	453,395	79.3	29,831	28,576	95.8
Karlovarský kraj	284,851	94.2	14,678	14,625	99.6
Ústecký kraj	667,054	80.6	29,933	29,177	97.5
Liberecký kraj	291,238	66.4	14,252	14,002	98.2
Královéhradecký kraj	419,585	75.8	23,161	21,632	93.4
Pardubický kraj	373,584	72.3	21,648	21,313	98.5
Kraj Vysočina	439,273	85.9	20,089	17,504	87.1
Jihomoravský kraj	1,023,383	87.7	53,568	52,235	97.5
Olomoucký kraj	502,046	78.7	28,790	27,888	96.9
Zlínský kraj	531,854	90.4	27,515	26,136	95.0
Moravskoslezský kraj	1 010 578	82,3	48 131	46 632	96,9
Česká republika	**8 674 121**	**82,5**	**473 230**	**459 404**	**97,1**

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 2012 amounted to 32.70 CZK/m³ and the average price of sewerage charge to 29.60 CZK/m³. Compared to the year 2011, the price of water rate thus increased by 6.2% and the price of sewerage charge by 6.1%.

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 June at the latest full data on the total account of all items in the calculation of prices of water rates and sewerage charges 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 account, 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 sewage discharged. 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.

Based on the survey carried out by the Czech Statistical Office, the highest average price of water rate was established in the Ústecký kraj region, where it reached the amount of CZK 37.40/m³. Compared to the national average this price was thus higher by 13.8%. The highest average price of sewerage charges was established in the Liberecký kraj region and in the amount of CZK 40.50/m³ exceeded the national average by 36.8%. On the contrary, the lowest average price of water rate (CZK 28.20/m³) was established in the Jihomoravský kraj region. The lowest average price of sewerage charges (CZK 21.80/m³) was established in the Vysočina region. Average prices in the respective regions are shown in table 7.3.2.

Table 7.3.1
Strike prices of water and sewerage charges in the years 2011 and 2012

Indicator	Unit	2011	2012	Index 2012/2011
Water rates in total	CZK million	14,975	15,730	1.05
Water invoiced in total	million m³/year	486	481	0.99
Average price of water rate	CZK/m³	30.8	32.7	1.06
Sewerage charges in total	CZK million	13,599	14,026	1.03
Waste waters discharged to sewerage systems	million m³/year	488	473	0.97
Average price of sewerage charges	CZK/m³	27,9	29,6	1.06

Source: Czech Statistical Office

Table 7.3.2
Water consumption, average prices of water and sewerage charges excluding VAT in the year 2012

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/m³)	(CZK/m³)
City of Prague	173.6	106.5	35.8	29.1
Středočeský	126.2	88.8	35.2	27.3
Jihočeský	123.4	86.8	34.1	26.3
Plzeňský	139.7	81.9	31.3	25.5
Karlovarský	132.4	83.2	35.8	30.7
Ústecký	129.8	79.6	37.4	38.5
Liberecký	130.0	84.2	36.4	40.5
Královéhradecký	125.0	82.0	30.3	30.1
Pardubický	125.5	79.7	29.1	33.4
Vysočina	120.8	79.9	32.5	21.8
Jihomoravský	133.8	92.9	28.2	31.5
Olomoucký	120.5	83.7	29.6	28.7
Zlínský	116.8	77.0	33.1	30.1
Moravskoslezský	135.3	91.7	29.4	28.6
Czech Republic	**134.1**	**88.1**	**32.7**	**29.6**

Source: Czech Statistical Office

A rainbow – 4th class, Krčín primary school and nursery school, Královéhradecký kraj region

8. Fisheries

8.1 Fisheries in the year 2012

Fishery in the Czech Republic includes production fishery covered by fishpond management, and management in fishing districts.

Fishpond management is in the Czech Republic historically the most significant area of fishery. It is a traditional part of agriculture and in terms of fish production it belongs to successful areas of agricultural production. Fishponds have many other functions, such as landscaping, retention, flood control, and they also contribute to the preservation of biodiversity, etc. Fishpond management is further followed up with by service sector.

In the Czech Republic, fish farming is carried out in approximately 24 thousand fishponds and water reservoirs with the retention capacity of 420 million m^3, covering the total area of around 41 thousand hectares. The fishponds show annual average fish population growth amounting to approximately 490 kg fish/hectare. Representation of market fish species is fairly stable and has not changed compared to the previous years. The largest volume of fish produced by fish farming is accounted for by carp, followed by herbivorous fish (silver carp, grass carp), salmonids (in particular rainbow trout and brown trout), tench and predatory fish (pike, zander and sheat fish).

In 2012, market fish produced by fish farming reached in total 20,763 tonnes, which represented, compared to the year 2011 which in terms of fish production was the most successful year in the history, a decrease by 1.2% (i.e. by 250 tonnes). More than 96% of production come from fishpond farming and the remaining percentage comes from fish breeding in special facilities. The quantity of processed freshwater fish represented 2,317 tonnes of live weight. The consumption of freshwater fish produced by fish breeding in 2012 reached the value of 1.077 kg/person/year. For the calculation of the total consumption of freshwater fish per 1 inhabitant in 2012 (not taking into account the weight of fish caught by recreational fishermen in fishing districts), population number of 10,516,125 as of 31 December 2012 was considered.

The production of carp in 2012 showed a year-on-year decrease by 1.2%, i.e. by 226 tonnes of live weight fish to reach the amount of 17,972 tonnes of live weight fish. The supply of this fish species is balanced with both the domestic and foreign market requirements, as approximately half of the annual carp production is sold on the domestic market, largely as live fish.

Management in fishing districts is also an important part of fishery. The management in fishing districts is closely related to stocking and support for fish species that also due to increased pressure by piscivorous predators in recent years in fishing districts are significantly eliminated.

Recreational fishing and angling activities are carried out in the Czech Republic by approximately 400 thousand of registered recreational fishermen, who are largely organized in two biggest

Černý pond

Fishing Associations (Czech Fishing Association and Moravian Fishing Association). In 2012, members of these two associations caught in total about 4 thousand tonnes of fish.

Recreational fishing is associated wih many other sectors, such as stores selling fishing equipment, tourist business, etc.

Since 2003, in addition to fish produced by fish farming, also catch by fish-hooking by recreational fishermen has been included in overall parameters of fish production in the Czech Republic.

The entry of the Czech Republic into the EU extended the possibilities to obtain support for the fishery sector. At present, particularly the following support measures are used:

1) National sectoral support measures relating to aquaculture and freshwater fishing: Yield Capacity Control, Special Consultancy for Animal Production, School Production Facilities, Support for Non-productive Fishpond Functions and Genetic Resources.

Table 8.1.1
Overview of fish production in the Czech Republic in the years 2008–2012

Indicator of production and consumption of fish	2008	2009	2010	2011	2012
Fish production in thousands of tonnes	20.40	20.10	20.42	21.01	20.80
Export in thousands of tonnes	10.12	8.95	9.10	8.80	8.60
Catch in fishing districts in thousands of tonnes	4.16	4.10	3.99	4.0	4.0
Consumption per person in $kg.year^{-1}$	1.32	1.37	1.41	1.47	1.41

Source: MoA and the Czech Fish Farmers Association

Velký pařezitý pond, Řásná

2) Operational Programme Fisheries 2007–2013: where fishermen may use the respective funds within Priority Axis 2 – Aquaculture for investments into aquaculture production, equalization payments aimed at improving the aquatic environment, measures in the field of fish health and investments into fish processing and marketing. The subsidy within Priority Axis 3 – Measures in the Common Interest relates to the development of new markets, promotion campaigns, reintroduction of eel (Anguilla anguilla) and pilot projects.

In 2012, the Ministry of Agriculture issued the decision to grant subsidies within Call 11, Call 12, Call 13 and Call 14 of accepting applications for subsidies from the Operational Programme Fisheries 2007–2013.

Under measure 3.1 Common Activities, in 2012 the decisions were issued to grant subsidies for 15 business plan projects a) with the aggregate subsidy amounting to approximately CZK 5.4 million and for 7 business plan projects b) with the aggregate subsidy amounting to approximately CZK 6.5 million. In total, under measure 3.1, in 2012 the decisions were issued to grant subsidies for 22 projects with the aggregate subsidy amounting to approximately CZK 11.9 million.

Under measure 3.2 Measures for the Protection and Development of Aquatic Animals and Plants, in 2012 the decisions were issued to grant subsidies for 50 business plan projects b) (Reintroduction of Eel) with the aggregate subsidy amounting to approximately CZK 17.1 million.

Under measure 3.3 Support for the Development of New Markets and Promotion Campaigns, in 2012 the decisions were issued to grant subsidies for 1 business plan project a) with the aggregate subsidy amounting to approximately CZK 2.0 million, for 4 business plan projects b) with the aggregate subsidy amounting to approximately CZK 0.4 million and for 3 business plan projects e) with the aggregate subsidy amounting to approximately CZK 6.5 million. In total, under measure 3.3 in 2012 the decisions were issued to grant subsidies for 8 projects with the aggregate subsidy amounting to approximately CZK 8.9 million.

Under measure 3.4 Pilot projects, in 2012 the decisions were issued to grant subsidies for 14 projects with the aggregate subsidy amounting to approximately CZK 14.9 million.

In 2012, the Ministry of Agriculture continued in the pre-financing of projects under the Operational Programme Fisheries 2007–2013. In 2012, under measure 2.1, subsidies in amount of CZK 75.5 million were disbursed for 122 projects. Under measure 2.2, subsidies in amount of CZK 0.4 million were disbursed for 4 projects. Under measure 2.4, subsidies in amount of CZK 7.0 million were disbursed for 13 projects. Under measure 3.1, subsidies in amount of CZK 5.1 million were disbursed for 7 projects. Under measure 3.2, subsidies in amount of CZK 12.1 million were disbursed for 44 projects. Under measure 3.3, subsidies in amount of CZK 13.0 million were disbursed for 5 projects. Under measure 3.4, subsidies in amount of CZK 10.3 million were disbursed for 10 projects. Under measure 5.1, subsidies in amount of CZK 6.0 million were disbursed for 5 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	Investments into productive aquaculture
Measure 2.2	Protection of the aquatic environment
Measure 2.3	Measures in the field of fish health
Measure 2.4	Investments into processing and marketing
Priority axis 3 – Measures in 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 project

Source: MoA

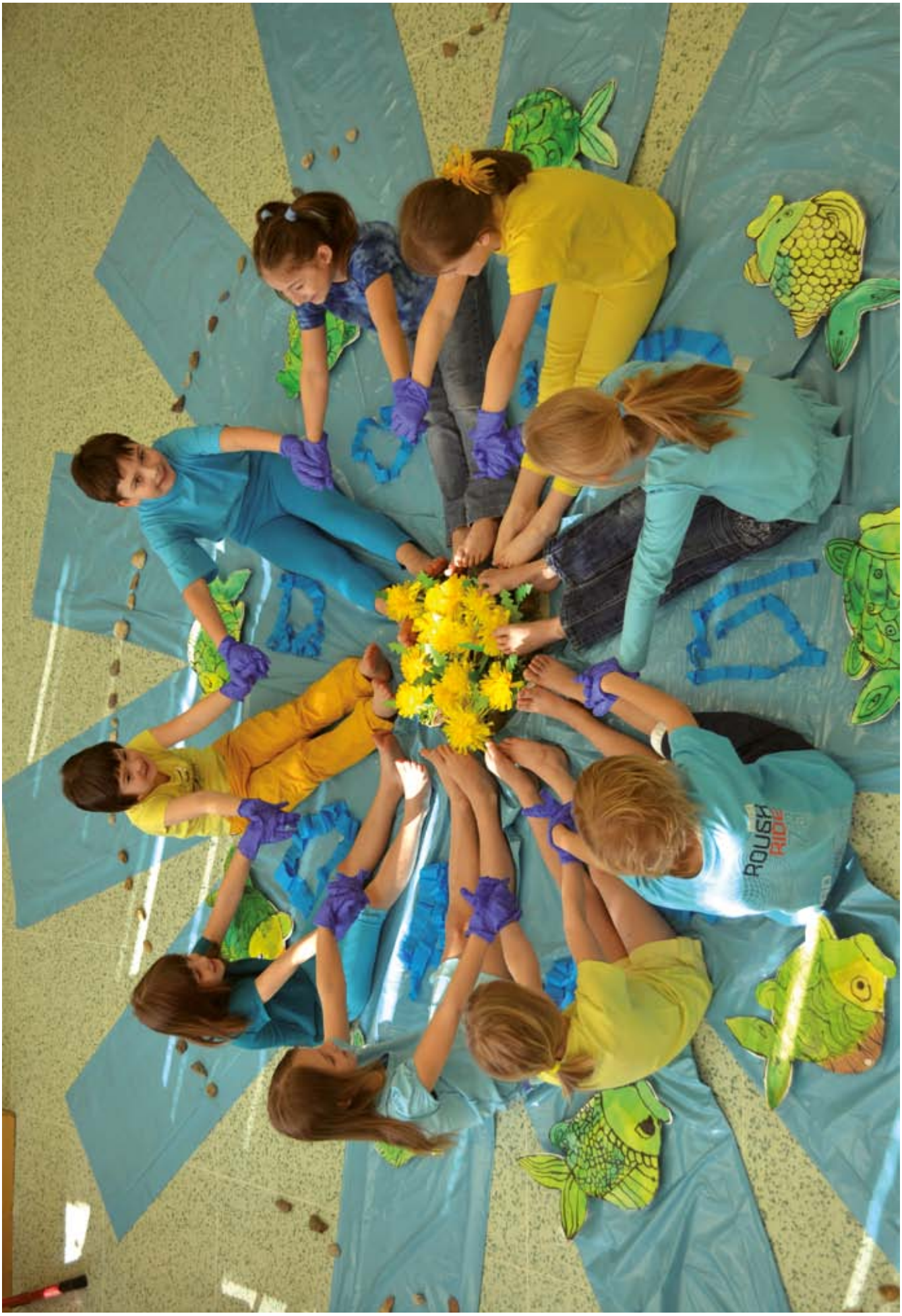
8.2 Changes in the status of the fishpond system

The programme 229 210 „Renewal, Dredging and Rehabilitation of Fishponds and Water Reservoirs" was followed in 2007 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. The focus is placed in particular on improving retention capacity. At the same time, attention is paid to improving operational safety of fishponds and reservoirs in connection with flood situations. The retention capacity is also supported by the continued dredging of the most silted ponds and it is also possible to support the construction of water reservoirs serving for flood control and protection against drought. Under the programme 129 130, in 2012 the funding of 77 projects was under way, with the total expenditures amounting to CZK 408.539 million. In more detail, the information on the programme 129 130 funding is presented in chapter 9.

Vacenovice pond

Sykovec pond



Mandala – 2nd class, Palachova primary school, Žďár nad Sázavou, kraj Vysočina region

9. State financial support for water management

9.1 Ministry of Agriculture

In 2012, the Ministry of Agriculture provided support amounting to the total of approximately CZK 1.6 billion under its programme 129 180 „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II" aimed at implementation of measures to meet the directives of the EU in the field of water supply and sewerage systems and at the development of this sector. The programme 129 180, based on the approved documentation, was scheduled for the years 2009–2013. In late 2012, the follow-up subsidy programme 129 250 „Construction and Technical Betterment of Water Supply and Sewerage System Infrastructure" was approved. This programme is scheduled for the years 2013–2015. The above support was granted to the investors both in the form of subsidies and in the form of „advantaged loans".

In 2012, in the form of subsidies, 56 projects received from the state budget support amounting to approximately CZK 333 million under the sub-programme 129 182 (measures aimed at water supply systems) and 104 projects were granted support amounting to approximately CZK 1,239 billion under the sub-programme 129 183 (measures aimed at sewerage systems).

„Advantaged loans" were provided for the projects under programmes 129 180 and 229 310. 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 2012, investors of 102 projects with loan contracts amounting to a total of approximately CZK 1,579 billion were reimbursed a part of interest on these loans in the total amount of CZK 35.4 million (this is the sum of both capital investment and non-capital investment subsidy for a part of interest, therefore, this amount is included in tables 9.1.1 and 9.1.2 on the line „subsidy").

Under the programme 129 140 „Support for Remedying Flood Damage to Infrastructure of Water Supply and Sewerage Systems" the implementation of a sub-programme in response to floods from the year 2010 was under way in 2012. Under the sub-programme 129 143 „Support for Remedying Damages Caused by Floods 2010", the last 2 projects were granted support in the total amount of CZK 24.6 million in 2012.

In 2012, the Ministry of Agriculture implemented programmes aimed at rehabilitation of water management property owned by watercourse administrators, within the process of remedying damages 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 9.1.1
State budget funds provided in the year 2012 under the programmes 129 140 and 129 180 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 floods in 2010	Ministry of Agriculture in total
Refundable financial assistance	0.000	0.000	0.000	**0.000**
Subsidy	344.306	1,262.465	24.650	**1,631.420**
Total	**344.306**	**1,262.465**	**24.650**	**1,631.420**

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 2008–2012, provided by the Ministry of Agriculture in millions of CZK

Financial resource	2008	2009	2010	2011	2012
Refundable financial assistance	0	0	0	0	0
State budget subsidy	1,947	1,819	2,092	2,194	1,631
Support from the state budget	**1,947**	**1,819**	**2,092**	**2,194**	**1,631**
Advantaged loan (EIB and CEB)	31	9	0	0	0
Support in total	**1,978**	**1,828**	**2,092**	**2,194**	**1,631**

Source: MoA

Table 9.1.3
State funds provided by the Ministry of Agriculture in the year 2012 for capital and current expenditures under programme financing in programme 229 110 in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
229 110	Remedying of the impacts of floods on state-owned water management property	820.966

Source: MoA

Table 9.1.4
State funds provided by the Ministry of Agriculture in the year 2012 for capital and current expenditures under programme financing in programmes 129 120, 129 130, 129 170 in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
129 120	Flood prevention II	1,953.439
129 130	Renewal, dredging and rehabilitation of fishponds and water reservoirs	408.539
129 170	Support for increasing the functionality of hydraulic structures	0.000

Source: MoA

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

Watercourse administrators	Name of project	Implementation period	Total costs	Subsidies in 2012
Forests of the Czech Republic, s. e.	HB Hodonínka III and IV	11/11–08/13	13.344	10.674
Elbe River Board, s. e.	The Elbe in Děčín, improving the protection of urban areas by damming structures – construction part	01/12–12/13	276.522	163.095
Morava River Board, s. e.	The Morava River in Olomouc, increase in the river channel capacity II, stage A – construction part	06/12–12/13	294.625	113.649
Oder River Board, s. e.	Těrlicko hydraulic structure – transfer of extreme floods	09/10–12/13	124.647	44.025
Ohře River Board, s. e.	Flood control measures in the town of Terezín	01/12–12/13	136.840	72.508
Vltava River Board, s. e.	České Budějovice, flood protection of the Jiráskovo embankment in the segment between Budivojova street and Nový most bridge	09/11–03/13	70.931	69.561

Source: MoA

In 2012, the Ministry of Agriculture continued to administer the programme 129 120 „Support for Flood Prevention II", which from the year 2010 includes 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 allows 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" is 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.

The Doubrava stream – fish pass, Vrdy

Sub-programme 129 123 – „Support for Flood Control Measures along Watercourses" is 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" is 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 are those that may increase the effect of other flood control measures downstream the respective hydraulic structure.

Sub-programme 129 125 – „Support for Delimitation of Flood Areas and Studies of Runoff Conditions" is in particular aimed at identification of the extent of floods and plotting this extent to maps. This sub-programmes also includes the delimitation of areas exposed to threat of special floods caused by a failure of hydraulic structure or a dam break of reservoirs impounding surface water. 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 damages 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" responds to the repeating occurrences of „flash floods" and focuses on reducing risks of floods from torrential rains on minor watercourses through a construction (reconstruction) of dry polders in combination with the possible regulation of watercourse channels.

The measures under the programme 129 120 are implemented by watercourse administrators (the River Boards, state enterprises, 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 is ensured by municipalities only.

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

In 2012, the total number of projects in progress under the programme 129 120 – „Support for Flood Prevention II" included 21 projects of flood control measures with retention, 140 projects of flood control measures along watercourses, 6 projects aimed at increasing the safety of hydraulic structures and 1 project of the delimitation of flood areas and studies of runoff conditions. The following table 9.1.5 shows some of the major projects under the programme 129 120.

In 2012, the Ministry of Agriculture continued to implement the programme 229 110 aimed at the rehabilitation of state-owned water management property administered by watercourse administrators, which was damaged by floods in the previous years. The rehabilitation is carried out in the year 2012 through the implementation of the sub-programme 229 116 „Remedying of the Impacts of Floods in the Year 2009" and the sub-programme 229 117 „Remedying of the Impacts of Floods in the Year 2010".

In 2012, under the sub-programme 229 116, financial support was granted to 17 projects. Most of them, 9 projects, were implemented by the watercourse administrator Forests of the Czech Republic, s. e. Table 9.1.7 shows some of the major projects under this sub-programme.

Table 9.1.6
Use of state budget funds in the year 2012 under the programme 129 120 by the individual watercourse administrators in millions of CZK

Owners and administrators	Use of funds in 2012	
	Investments	Non-investments
Elbe River Board, s. e.	861.026	0.000
Vltava River Board, s. e.	402.746	0.000
Ohře River Board, s. e.	186.112	0.000
Oder River Board, s. e.	105.732	0.000
Morava River Board, s. e.	244.857	1.595
Forests of the Czech Republic, s. e.	120.940	0.696
Minor watercourse administrators – municipalities	29.736	0.000
Total	**1,951.149**	**2.291**

Source: MoA

Table 9.1.7
Summary of costs of selected major projects under the sub-programme 229 116 „Remedying of the Impacts of Floods in the Year 2009" in millions of CZK

EDS/SMVS 229116	Name of project	Implementation period	Total costs of the project	Investor
2807	The Svodnice stream – flood damage 2009 inv.	10/11-10/12	7.976	Forests of the Czech Republic, s. e.
2808	The Ludina stream – flood damage 2009 inv.	11/11-10/12	3.195	Forests of the Czech Republic, s. e.
5801	The Vojtovický stream, between km 0.450 and 4.400, cadastral territory of Bernartice	05/10-12/12	27.697	Oder River Board, s. e.
5802	The Vojtovický stream, between km 4.400 and 6.600, cadastral territory of Buková	11/11-12/12	22.194	Oder River Board, s. e.
5809	The Grasmanka stream, km 0.000 – 6.725	10/11-12/12	9.380	Oder River Board, s. e.
9802	The Hluzovský stream – flood damage 2009 inv.	11/11-09/12	5.960	Morava River Board, s. e.

Source: MoA

Těrlicko hydraulic structure – spillway after reconstruction

Table 9.1.8
Use of state budget funds in the year 2011 under the sub-programme 229 116 in millions of CZK

Owners and administrators	Use of funds in 2012	
	Investments	Non-investments
Elbe River Board, s. e.	0.000	0.000
Vltava River Board, s. e.	0.000	0.000
Ohře River Board, s. e.	0.000	0.000
Oder River Board, s. e.	55.617	17.592
Morava River Board, s. e.	4.704	0.000
Forests of the Czech Republic, s. e.	8.280	0.520
Total	**68.601**	**18.112**

Source: MoA

In 2012, under the sub-programme 229 117, financial support was granted to 236 projects. Most of them, 70 projects, were implemented by the watercourse administrator Forests of the Czech Republic, s. e. The following table 9.1.9 shows some of the major projects under this sub-programme.

Table 9.1.9
Summary of costs of selected major projects under the sub-programme 229 117 „Remedying of the Impacts of Floods in the Year 2010" in millions of CZK

EDS/SMVS 229117	Name of project	Implementation period	Total costs of the project	Investor
1005	Remediation of flood damage 08/2010 – the Kamenice River, repair of river channel in Hřensko	03/12-12/12	6.254	Ohře River Board, s. e.
1015	Remediation of flood damage 08/2010 – Reconstruction of the Kamenička stream channel in Boletice	06/12-06/13	20.882	Ohře River Board, s. e.
2303	Remediation of flood damage 08/2010 – the Sloupský stream, km 4.050 – 5.850	11/11-06/13	17.310	Forests of the Czech Republic, s. e.
2713	The Kněhyně stream, km 0.250 – 3.900	12/11-06/12	20.195	Forests of the Czech Republic, s. e.
5699	The Tyra River, km 2.470 – 3.153	01/12-12/12	15.640	Oder River Board, s. e.
5803	The Olše River, km 20.900 – 23.450	11/11-06/12	9.679	Oder River Board, s. e.
6074	Oleška, Heřmanice, Dětřichov, repair of river channel, km 0.000 – 5.898	10/12-06/13	48.342	Elbe River Board, s. e.
6077	The Lužická Nisa River, Hrádek nad Nisou, repair of river channel, km 0.00 – 5.555	09/12-06/13	73.782	Elbe River Board, s. e.
9691	The Rožnovská Bečva River, km 3.025–9.910, repair of river channel, Valašské Meziříčí – Střítež nad Bečvou	08/11-06/13	9.490	Morava River Board, s. e.
9718	The Bečva River, Osek nad Bečvou, km 22.780–24.666, repair of river channel	12/11-09/12	9.054	Morava River Board, s. e.

Source: MoA

Table 9.1.10
Use of state budget funds in the year 2012 under the sub-programme 229 117 in millions of CZK

Owners and administrators	Use of funds in 2012	
	Investments	Non-investments
Elbe River Board, s. e.	156.920	21.946
Vltava River Board, s. e.	0.000	4.670
Ohře River Board, s. e.	50.381	76.907
Oder River Board, s. e.	34.650	42.900
Morava River Board, s. e.	39.499	205.786
Forests of the Czech Republic, s. e	64.776	35.821
Total	**346.226**	**388.030**

Source: MoA

In 2012, 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.

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. floods and drought.

In 2012, in total 77 projects were financed under the following breakdown: non-capital investment funds of the state budget were expended in the amount of CZK 1.381 million and capital investment funds in the amount of CZK 91.790 million, the EIB loan was used to draw non-investment funds in amount of CZK 179.805 million and capital investment funds in amount of CZK 135.763 million.

„Binding Rules" governing the submitting of project applications to be included in the programme 129 130 – „Support for the Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs" stipulate detailed terms, of which the most important are:

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.

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 some of the major projects included in the programme 129 130.

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

In 2012, the sub-programme 129 162 was not opened due to lack of financial resources under the programme 129 160.

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.

In 2012, finishing the implementation of the remaining included projects was under way, these works were no more paid from grant funds, but these construction works were funded from own resources. New applications for support under this programme were not accepted.

Programme 129 190 „Support for Agricultural Watercourses" – Agricultural Water Management Administration

The programme followed up with the sub-programme 229 013 and included expenditures on purchase and technical renovation of state-owned property administered by the Ministry of Agriculture, namely by its organizational unit – Agricultural Water Management Administration.

In 2012, the implementation of the programme did not continue due to the termination of the activity of the Agricultural Water Management Administration as of 30 June 2012.

In terms of other measures in water management pursuant to Section 102, Subsection 1, letters b), i), k) of the Water Act, i.e. support of non-investment nature for current expenditures of the specific indicator „Support for water management in total" in the budget chapter of the Ministry of Agriculture for maintenance of minor watercourses, water reservoirs and polders and related structures, as well as for maintenance and operation of main drainage facilities, this support was not granted in 2012, because the only applicant for the granting of support was the Agricultural Water Management Administration, whose activity was terminated.

Table 9.1.11
Use of state budget funds for selected major projects under the programme 129 130 „Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs", in millions of CZK

Applicant	Name of project	Implementation period	Total costs	Subsidies in 2012
Rybářství Hluboká cz. s.r.o.	Rehabilitation of the Luský Velký pond	12/11-08/12	39.919	31.462
Jan Hofbauer	Rehabilitation of the Březná pond	10/11-06/12	28.541	15.769
Pavel Zahradník	Construction of ponds in the cadastral territory of Lhota u Kamenice nad Lipou	09/11-08/13	13.357	7.115
Czech Fishing Association, local organization Dačice	The desilting and rehabilitation of the Velký Slavonický pond	03/12-06/13	14.187	10.600
Rybářství Třeboň a.s.	Repair of the Vyšehrad pond dams in the cadastral territory of Holičky u Staré Hlíny	09/11-12/12	25.423	15.783

Source: MoA

The Ondřejnice River bed regulation, Stará Ves nad Ondřejnicí

9.2 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. Water Management Infrastructure Improvements and a Reduction of Flood Risks,
2. Air Quality Improvements and a Reduction of Emissions of Pollutants,
3. Sustainable Use of Energy Sources,
4. Improved Waste Management and Rehabilitation of Contaminated Sites,
5. Reducing of Industrial Pollution and Environmental Risks,
6. Improving the State of Nature and the Landscape,
7. Infrastructure Development 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. 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 2012, the receipt of applications for the granting of support under the Operational Programme Environment was opened within five Calls. Under the priority axis 1, there were four Calls, aimed at reducing water pollution, improving drinking water quality and reducing flood risks. Under the priority axis 6, there was one Call aimed at optimization of the landscape water regime. Under the priority axis 1 – Water Management Infrastructure Improvements and a Reduction of Flood Risks, the ERDF/CF funds in the total amount of CZK 6,668.2 million were used in 2012. Under the priority axis 6 – Improving the State of Nature and the Landscape (area of intervention 6.4 – Optimization of the Landscape Water Regime), the ERDF/CF funds in the total amount of CZK 417.4 million were used in 2012.

The Elbe, flood control measures in Jaroměř

Under the Operational Programme Environment, the priority axis 1 – Water Management Infrastructure Improvements and a Reduction of Flood Risks, the Ministry of the Environment in 2012 approved 413 projects (registration sheet issued), of which 67 projects fell under the area of intervention 1.1 The Reduction of Water Pollution (the total support from the EU funds amounted to CZK 3,439.1 million), 34 projects fell under the area of intervention 1.2 Drinking Water Quality Improvement (the total support from the EU funds amounted to CZK 2,340.2 million) and 312 project fell under the area of intervention 1.3 The Reduction of Flood Risks (the total support from the EU funds amounted to CZK 1,370.3 million). In 2012, no so-called large projects in the field of water management were approved. Under the priority axis 4, the Ministry of the Environment approved three large projects, with the registration sheet having been issued for one of them until the end of 2012. The European Commission in 2012 issued no new decision for the so-called large projects approved at a national level in previous years. Under the OPE, priority axis 6 – Improving the State of Nature and the Landscape, the Ministry of the Environment in 2012 approved 96 projects (registration sheet issued) falling under the area of intervention 6.4 – Optimization of the Landscape Water Regime (the total support from the EU funds amounted to CZK 768.5 million).

Table 9.2.1.1
Grant funds from the Operational Programme Environment for the financing of measures in the area of water management in 2012

area of support	number of approved projects	total costs of approved projects (millions of CZK)	total amount of the EU support for approved projects (millions of CZK)	reimbursed by the EU (millions of CZK)	reimbursed from the State Environmental Fund/state budget in total (millions of CZK)
1.1	67	4,989.6	3,439.1	6,161.2	362.4
1.2	34	3,962.0	2,340.2	268.8	15.9
1.3	312	1,734.4	1,370.3	238.2	14.0
Priority axis 1 in total	**413**	**10,686.0**	**7,149.6**	**6,668.2**	**392.3**
6.4	96	928.9	768.5	417.4	41.2
Total	**509**	**11,614.9**	**7,918.1**	**7,085.5**	**433.5**

Source: State Environmental Fund

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. Through the accession to the EU on 1 May 2004

the Czech Republic was entitled to draw subsidies from the Cohesion Fund. Based on the Government Resolution No. 125/2004, 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 Body for the implementation of Cohesion Fund projects in the area of the environment. Due to the fact that as of the day of accession of the Czech Republic to the EU none of ISPA projects was completed, these projects were transferred to the Cohesion Fund projects, pursuant to Art. 16a of the Council Regulation (EC) No. 1164/94. In total 106 projects applying for support under ISPA programme and CF 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 39 focused on the implementation of measures in the area of water management.

The eligible costs for 38 approved projects amount to € 785.1 million. The CF/ISPA support allocated for these projects amounts to € 555.6 million. The originally approved „Jihlavsko" project was not implemented. The above mentioned projects also include a project of remediation of flood damage (comprising 13 sub-projects which were supported from ISPA fund), a non-investment project of Technical Assistance and also a project in the field of the hydrosphere monitoring (see table 9.2.1.2).

Table 9.2.1.2
The allocation of funds for types of measures (approved CF/ISPA projects) in millions of €

Type of measure	Number of projects	Eligible costs	CF/ISPA support
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: MoE

In 2012, support was granted for CF project of Technical Assistance. Since 2006, the granting of funds for the final beneficiaries has been proceeding in the form of a so-called pre-financing, i.e. through effecting payments from the state budget funds for the co-financing and pre-financing of expenditures that are to be covered from the CF funds. In the sector of environment, the payments for CF projects are effected through the chapter 315/MoE of the state budget. In 2012, support in the total amount of CZK 1,475.4 million was transferred from the state budget to the final beneficiaries. Of this amount, CZK 1,457.3 million were CF funds and CZK 18.1 million (to cover corrections) were state budget funds. Approximately 23 projects in 2012 had the so-called final report of the project to the EC submitted. The approval of this final report is bound to the release of the final payment from the EU grant funds in the amount of 20% of the total grant provided. In 2012, the European Commission approved final reports for a total of 15 CF projects and based on this final payments in the total amount of approximately € 59 million to the account of the National Fund of the Ministry of Finance were released.

The Ohře River, flood control measures in Terezín

Table 9.2.1.3
Summary of financial support provided under the national programmes of the Ministry of the Environment and programmes co-financed from the EU funds

Grant funds for the Ministry of the Environment in total	millions of CZK
National grant titles	214.30
Operational Programme Environment	7,519.06
ISPA / CF	1,475.40
State Environmental Fund*)	732.20
Total	**9,940.96**

*Note: *) Support provided to the applicants from the SEF funds in the form of loans is not included in the table above.*

9.3 The State Environmental Fund

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.

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.

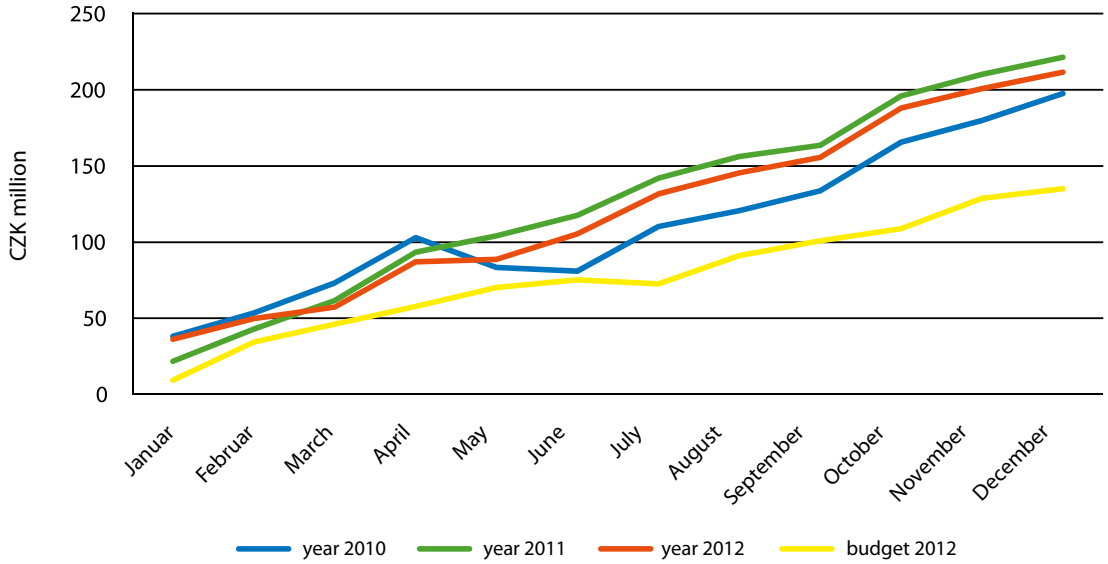
Table 9.3.1
The revenues from charges and penalties broken down to environmental compartments

Budget item	Budget 2012	Revenues as of 31 December 2012	Reality in %	Difference in millions of CZK
Waste water	135.0	211.6	156.7	76.6
Groundwater	235.0	373.6	159.0	138.6

Source: The State Environmental Fund of the Czech Republic

The collection of charges for waste water discharges into surface waters in the year 2012 reached 156.7% of the budgeted revenues. For the year 2012, the planned budget revenues for this item were exceeded by CZK 76.6 million. The limits of charges pursuant to the Act No. 254/2001 Coll., on waters and on amendments to some acts, as amended, already for some time do not reflect the state of the art of waste water treatment plants. Of decisive influence on the total amount of the reached revenues so is, in particular, the volume of discharged treated waste water, the independent monitoring of which is allowed to be performed on the basis of agreements concluded between the State Environmental Fund of the Czech Republic and accredited bodies, laboratories and measuring groups on the basis of existing valid legislation. The current version of the Water Act does not address the amendment, required in the long run, to its economic part, including obligations to pay fees and charges.

Chart 9.3.1
Development of revenues from charges for waste water in the years 2010–2012 in millions of CZK

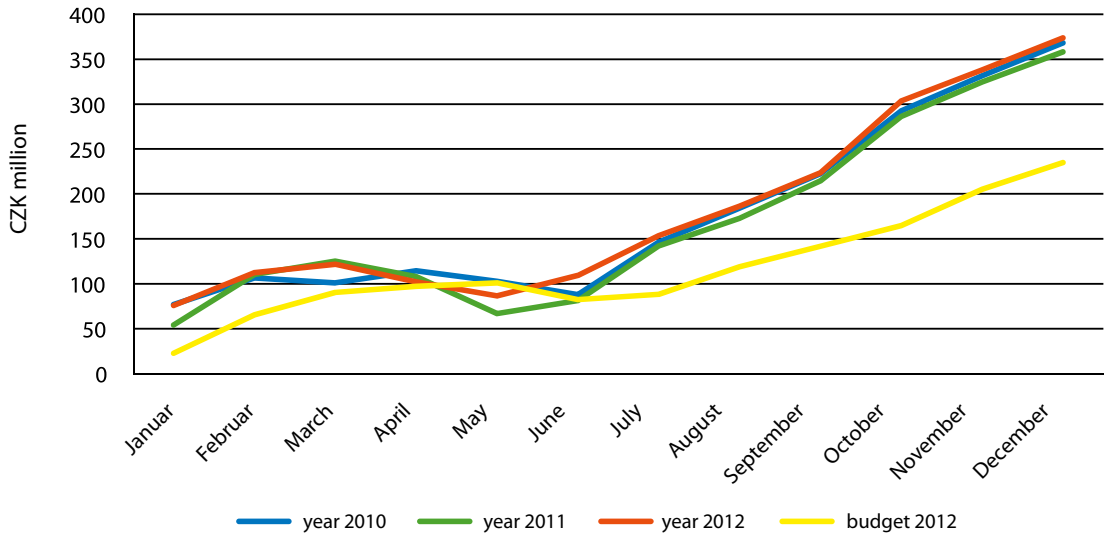


Source: The State Environmental Fund of the Czech Republic

The chart documenting the collection of charges for abstracted groundwater quantities in 2012 shows a similar trend as in the previous year. The revenues from charges reached the value of 159% of the planned annual revenues. The total budgeted value of revenues was so exceeded by CZK 138.6 million. Of significant effect on increased groundwater abstractions and thus also exceedances of the planned collection of charges is mainly obvious and groundless disproportion between the rate of charge for groundwater and the price of surface water, with the price of surface water being illogical about two times higher then the charge collected for groundwater abstractions. This leads to the plundering, especially by foreign owners of waterworks operators, of groundwater resources in the Czech Republic and their use for the activities, for which it would be fully sufficient to use surface water (such as industrial washing of sand, etc.). Also the rate of charge for groundwater abstraction has long failed to represent its true value and in contrast to water rates and sewage rates charged by water companies to businesses and households it has not changed for the last 10 years. Legislative proposals or requirements for amendments to the existing legislation made by the State Environmental Fund of the Czech Republic, which would allow, among other things, to reduce losses of funds and stabilize in the long run revenues in this area, including a change in the rate of charge, have not yet been accepted by the relevant government authorities and submitted to the Government and legislative bodies for discussion. The decline in revenues during the months of April and May is due to settlement of advance payments for the previous year, which leads to the return of overpayments to the charged water users. This settlement is fully in accordance with the Act No. 254/2001 Coll., on waters, as amended.

The State Environmental Fund provides support from its resources under the so-called national programmes and carries out the activities which were delegated to it for administration of funds granted from the EU for the area of the environment. The State Environmental Fund of the Czech Republic was appointed the Implementing Body for the Cohesion Fund and the Intermediate Body for the Operational Programme Environment. To co-finance projects supported under the Cohesion Fund, the Operational Programme Infrastructure and the Operational Programme Environment, the State Environmental Fund provides financial grants from its resources.

Chart 9.3.2
Development of revenues from charges for groundwater in the years 2010–2012 in millions of CZK



Source: The State Environmental Fund of the Czech Republic

National programmes

The original support programme to ensure monitoring of waters according to Annex V was expanded and renamed in 2012. Gradually, three Calls to submit applications for support were announced, one for monitoring, two for support of water management projects (sub-programme V.3). This new sub-programme was prepared for the purpose of covering the costs of projects that based on additional interpretation of Annex 7 of the Operational Programme Environment were taken out of administration under the OPE. The total allocation relating to these Calls in the amount of CZK 145.5 million was exhausted by three approved applications for support. In fact, in 2012 under the sub-programme V.3, support in the amount of more than CZK 82 million was drawn, of that almost CZK 55 million in the form of loans.

Under the announced Call 3 (for monitoring), the total amount of CZK 12 million was allocated to eight sub-projects of methodical management of monitoring of surface waters and groundwaters. The aim of the sub-programme to ensure monitoring of waters is to support the establishment of a comprehensive assessment system for the status or potential of waters and water bodies in accordance with the requirements of Directive 2000/60/EC, including the implementation of the system into a single assessment information system, which is administered by the National Reference Centre for Monitoring – the Czech Hydrometeorological Institute. Support is also intended to optimize existing water monitoring programmes in relation to the establishment of the assessment system. The work on the methodologies is under way, in 2012, the drawing of support still did not start.

Under the national programmes, in 2012 there were administratively completed other water management projects in the programme according to Annex IV to support municipalities in the regions of national parks, only the retention money of the order of tens of thousands of CZK were paid out. In 2012, under the sub-programme IV.4 to increase the co-financing of projects under the Operational Programme Environment, support in the total amount of CZK 9.1 million was received by 12 OPE projects.

Under the national programmes, also the completion of previously approved funding of projects in already closed programmes is under way. In most cases, not the funding itself, but the administrative termination of the project is concerned.

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 2012, especially through the individual operational programmes falling under the Objective 3 of the European Territorial Cooperation. 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 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, Slovak Republic – Czech Republic, Austria – Czech Republic, Free State of Saxony – Czech Republic and Free State of Bavaria – Czech Republic, support continues 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 focuses, among other things, in the 2007–2013 programming period also on transfer and exchange of experience in the field of environmental protection.

During 2012, the implementation of projects from previous years continued and new projects approved in this year were launched.

1. Operational Programme of Cross-border Cooperation between Austria and the Czech Republic in the field of environmental protection is represented mainly by the following projects:
- project „Nature-friendly flood control measures in the confluence area of the Morava River and the Dyje River" (with a grant in the amount of 1,801,804 € for the Czech partner) was approved in 2010, its execution is currently under way and it should be terminated in 2013;
- project „Schwarzenberg navigation canal – cultural heritage revives".

The Tichá Orlice River, flood control measures in Brandýs nad Labem

The newly approved projects in 2012 include:
- project „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 and its execution is currently under way;
- project „Flood control measures on the Malše River in Leopoldschlag (with no financial participation of the Czech partner) was approved in November 2012 and currently it starts to be executed.

2. Operational Programme of Cross-border Cooperation between the Free State of Bavaria and the Czech Republic covers the implementation of the following projects:
- „The effects of the acidification on soils and water resources" with a grant in the amount of 407,150 €;
- „Gurgling Cheb area – a river without border" with a grant in the amount of 310.564 € (scheduled termination in 2013);
- „Integrated soil and water protection in the Drachensee Basin" with a grant in the amount of 229,500 € (scheduled termination in 2014).

3. Under the Operational Programme of Cross-border Cooperation between the Free State of Saxony and the Czech Republic, the following projects continued to be executed:
- „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 €;
- „The revitalization of peat-bogs between Hora Sv. Šebestiána and Satzung – Stage 1" with a grant in the amount of 375,311 € (terminated in 2012);
- project „VODAMIN" focusing on the quality of groundwater and surface water and water supply, with a grant in the amount of 3,435,975 €;
- project „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 floods 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 €;
- project „Jointly used groundwaters on the Czech-Saxonian border" – GRACE , with a grant in the amount of 991,701 €.

The newly approved projects in 2012 include:
- „The revitalization of peat-bogs between Hora Sv. Šebestiána and Satzung – implementation stage, with a grant in the amount of 1,194,346 €;
- project „AQUAMUNDI" focusing on education, with water as the key element, with a grant in the amount of 1,408,858 €;
- „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 €.

4. Under the Operational Programme of Cross-border Cooperation between the Czech Republic and the Polish Republic, the following project was terminated in 2012:
- „The protection and rational management of surface waters and groundwaters in the Czech – Polish borderland" with a grant in the amount of 4,494,181 €.

5. Under the Operational Programme of Cross-border Cooperation between the Slovak Republic and the Czech Republic, the following projects continued to be executed:
- „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 €
- „Flood control measures and early warning system Říka-Vlára-Váh Rivers, Stage II", with the ERDF support in the total amount of 338,494 €;

In mid-2012, newly approved were 3 projects, implemented through the Morava River Board, the beneficiary on Czech part:
- „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 €.

6. The Operational Programme for Supranational Cooperation (Central Europe) is represented especially by the following projects:
- *LABEL* – Adaptation to flood risk in the LABe-ELbe river basin, where the Czech partners are the Ministry of the Environment, state-owned enterprises the Vltava River Board, s. e. and the Elbe River Board, s. e., the Pardubický kraj, Liberecký kraj, Středočeský kraj, Královéhradecký kraj, Plzeňský kraj, Jihočeský kraj and Ústecký kraj regions and the claimed ERDF support amounts to 1,803,530 €. The project execution proceeded in the period between 1 September 2008 and 29 February 2012.
- CEframe – Central European Flood Risk Assessment and Management in CENTROPE, where the Czech partners are the Ministry of the Environment, Regional Authority of the Jihomoravský kraj region and the ERDF support amounts to 599,250 €. The project execution is scheduled between 1 April 2010 and 31 March 2013.

Vyšní Lhoty weir

7. The Operational Programme for Inter-regional Cooperation (INTERREG IVC) is represented especially by the following projects:
- 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 amounts to 157,250 €. The project execution started on 1 January 2012 and is expected to be completed not later than 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 is 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 are co-financed from the EAFRD and from the state budget of the Czech Republic. The EAFRD support for the period 2007–2013 amounts to 2.8 billion € and the total support including the funds from the state budget of the Czech Republic amounts to 3.6 billion €. The funding for the Rural Development Programme proceeds in the form of pre-financing from the state budget, i.e. all payments to beneficiaries are first effected from national resources.

The Rural Development Programme through its measures significantly contributes not only to improving of living conditions in rural areas, but also supports investments in the basic water management infrastructure in municipalities with the population of less than 2,000 PE.

Measure III.2.1 Village Renewal and Development, Public Amenities and Services is divided into:
- sub-measure III.2.1.1 Village Renewal and Development,
- sub-measure III.2.1.2 Public Amenities and Services.

The sub-measure III.2.1.1 Village Renewal and Development is aimed at support for small municipalities with the population of less than 500. The support is intended for the area of traffic infrastructure including improvements in appearance of municipalities and for territorial plans of municipalities. In addition, the support is intended for water management infrastructure in municipalities with the population of less than 2,000 PE (agglomerations with the population of less than 2,000 PE). The sub-measures are further broken down to individual project schemes.

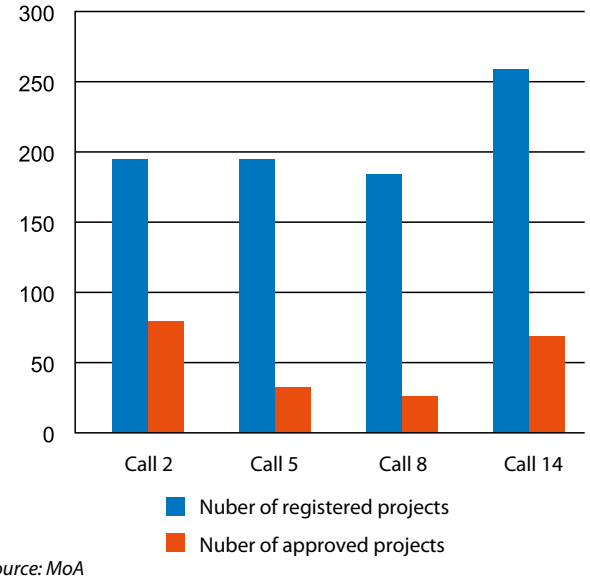
Under the project scheme b) public water supply systems, sewerage systems and waste water treatment plants, the applicants for subsidy may be municipalities and associations of municipalities. The association of municipalities may also include municipalities with the population of more than 2,000 PE,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

Under this project scheme, support is 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.

The eligible expenditures under scheme b) public water supply systems, sewerage systems and waste water treatment plants, for which subsidies can be drawn, include:
- public water supply systems,
- public sewerage systems and waste water treatment plants,
- supporting systems for the technical infrastructure,
- expenditures on operating equipment and technology in connection with the project,
- hard surfaces and laying of paved surfaces in connection with the project.

For the sub-measure III.2.1.1 Village Renewal and Development, four Calls to submit the applications for the granting of support have already taken place. The last 14th Call took place in 2011 at the turn of October and November, when there were allocated all remaining funds intended for this measure in the programming period 2007–2013. This was the reason for announcing no new Calls to submit the applications for the granting of support in 2012.

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 2012 in pcs



Source: MoA

The chart shows a sustained high applicants´ interest in this measure and the fact that despite commitments higher than the average amount of allocation in all four Calls there remains a large number of projects not approved due to lack of resources for their financing.

In the period between 2007 and 31 December 2012, in total 194 applications for support in the amount of over CZK 3 billion were approved. Of this, 130 projects in the amount of CZK 1.9 billion were reimbursed, i.e. put into operation, before 31 December 2012.

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 2012

	III.2.1.1 b
Number of registered projects	818
Amount claimed by registered projects	12,048,534.637 CZK
Number of approved applications	194
Amount covering approved projects	3,121,762.376 CZK
Number of reimbursed projects	130
Reimbursed amount	1,922,827.612 CZK

Source: MoA

H_2O – 4th class, Třebotov primary school and nursery school, Středočeský kraj region

10. Legislative measures

10.1 Water Act and implementing regulations

In 2012, in the Collection of Laws of the Czech Republic there were published and became effective three Acts that have affected the wording of the Water Act.

Act No. 85/2012 Coll., of 7 February 2012, on the storage of carbon dioxide into the natural rock structures and on amendments to some acts.

The purpose of the legal regulation was particularly transposition of the Directive of the European Parliament and of the Council 2009/31/EC of 23 April 2009, on the geological storage of carbon dioxide and amending Commission Directive 85/337/EEC, Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and 2008/1/EC of the European Parliament and of the Council and Regulation (EC) No. 1013/2006.

The related amendment to the Water Act expanded the regime of permits issued by water authorities for injection of carbon dioxide for the purpose of its storage in natural rock structures. Furthermore, the list of forbidden activities in natural water accumulation protected areas was expanded to include the storage of carbon dioxide in the hydrogeological structures with usable or used groundwater reserves. The amendment to the Water Act also forbade the storage of carbon dioxide in the hydrogeological structures with usable or used groundwater reserves or in surface waters.

Act No. 350/2012 Coll., of 19 September 2012, amending the Act No. 183/2006 Coll., on town and country planning and building code (Building Act), as amended, and some related acts.

This large (in terms of the range of amended sections) amendment to the Building Act directly and indirectly affects water management, especially in the issues of reported waste water treatment plants, binding standpoints, water management adjustments and simplification of the execution of government administration.
The related amendment to the Water Act contained in Part Thirteen brought refinements of the provisions of Section 5 par. 3, Section 15 par. 9 and Section 38 par. 5. More significant changes affected the following provisions of the Water Act:

- Section 15a par. 3 – earthwork and ground shaping in natural watercourse channels and on lands adjacent to them, through which the natural watercourse channels are not substantially altered, after the amendment to the Act do not explicitly require bulding permit or notification,
- Section 30 par. 7 – exceptions from protection zones can be established not only by the water authority´s decision, but also by a measure of general nature,
- Setion 38 par. 7 – responds to what is needed by practice after the unification of terminology of the Water Act and building regulations; individual structures through which waste water can be discharged into groundwater are redefined using concepts used in implementing regulations to the Building Act,
- Section 104 par. 9 – the amendment in particular specifies the process of issuing binding standpoints and makes it comply with Section 4 par. 4 of the Building Act,
- Section 107 par. 1 – Regional Authority will newly permit the use of surface waters for fish farming only in cases where the permission sets conditions for the use of harmful substances according to Section 39 par. 7 of the Water Act,
- Section 115 par. 6 and 7 – newly, civic associations are not participants in the building permit procedure for hydraulic structures.

The Černá Nisa River – small hydroelectric power plant Rudolfov

Act No. 501/2012 Coll., of 18 December 2012, amending the Act No. 218/2000 Coll., on budgeting rules and on amendments to some related acts (budgeting rules), as amended, and some other acts.

The amendment to the Water Act contained in Part Three eliminates the linkage of annually prepared binding rules for the provision of financial resources and the method of audit of their use with the Annex of budgeting rules so that Section 102 par. 3 of the Water Act was abolished with effect from 1 January 2014. From 2014 on, the Ministry of Agriculture will issue binding rules and make them available to the public on its website.
The second amendment contained in the transitional provision provides the necessary financial resources to support the implementation of preventive flood control measures and to support the construction and rehabilitation of water management infrastructure.

In 2012, in the Collection of Laws of the Czech Republic the following implementing legal regulations to the Water Act were published and became effective:

Decree No. 105/2012 Coll., of 21 March 2012, establishing public ports in which ice cover is to be broken, prepared by the Ministry of Agriculture in cooperation with the Ministry of Transport. The decree established three ports in which river basin administrators are obliged, pursuant to Section 47 par. 4 letter b) of the Water Act, to break ice cover.

Government Order No. 143/2012 Coll., of 28 March 2012, on the method for determining waste water pollution, reading the amounts of pollution and measuring the volume of waste water discharges into surface waters. Pursuant to the authorization in Section 91, Subsection 3 of the Water Act the Government Order replaced part of Decree No. 293/2002 Coll. It regulates, in particular, the details of the methods for determining pollution in waste waters and measuring the volume of the discharged waste waters as well as reading the amounts of pollution in abstracted water.

Decree No. 123/2012 Coll., of 30 March 2012, on fees for waste water discharges into surface waters, prepared by the Ministry of the Environment. The decree replaced Decree No. 293/2002 Coll., on fees for waste water discharges into surface waters. It regulates especially demonstrating proficiency of laboratories, the requirements of fee documents and the procedure for the Czech Environmental Inspectorate in their administration.

Decree No. 178/2012 Coll., of 23 May 2012, laying down the list of important watercourses and the method of performing activities associated with watercourse management, prepared by the Ministry of Agriculture in cooperation with the Ministry of the Environment. The decree replaced Decree No. 470/2001 Coll.; it updates the list of watercourses and provides the details of activities in watercourse management after the amendment to the Water Act by Act No. 150/2010 Coll.

Government Order No. 262/2012 Coll., of 4 July 2012, on specification of vulnerable zones and action programme. It replaced Government Order No. 103/2003 Coll., on specification of vulnerable zones and on the use and storage of fertilizers and livestock manure, crop rotation and implementation of erosion-control measures in these zones; it establishes, in accordance with the Nitrate Directive and Section 33 of the Water Act, the second revision of vulnerable zones and action programme.

Interpretation Committee for the Water Act and related legislation under the authority of the Ministry of Agriculture adopted in 2012 at its meeting one interpretation concerning the prolongation of validity of permits for water use for their energy potential, which is made available to the public on the website of the Ministry of Agriculture.

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

In 2012, neither direct nor indirect amendment to the Act No. 274/2001 Coll., on public water supply systems and sewerage systems was made. There was also made no amendment to the Decree No. 428/2001 Coll., implementing the above mentioned Act.

The Department of Water Management of the Ministry of Agriculture issued no Guidance Document. The Department of Water Supply Systems and Sewerage Systems focused on preparing the amendment to the Act No. 274/2001 Coll., on public water supply systems and sewerage systems, including amendment to the Decree No. 428/2001 Coll., implementing this Act. In connection with the amendments, no preparation of interpretations in relation to these regulations was under way.

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

Ministry of Agriculture

Auditing of the execution of the delegated authority in water management sector were carried out by the Ministry of Agriculture, through the Department for State Administration in the Water Management Sector and for River Basin Administration as the central water authority. At the regional level, auditing activities were carried out in compliance with the Government Resolution No. 1181 of 18 October 2006 and in compliance with the Plan for Audits of Regional Authorities and the City of Prague for the years 2012 and 2013 prepared by the Ministry of the Interior.

Audits carried out by the Ministry of Agriculture, in addition to examining water authority operation (such as the matters of the achieved qualifications and practice of personnel, organization of work, material background for work, etc.) focus on due application of the relevant legal regulations, in particular, the Act No. 254/2001 Coll. on Water and on amendment to certain laws (the Water Act), as amended, the Act No. 274/2001 Coll. on Public Water Supply and Sewerage Systems and on amendment to certain laws (the Water Supply and Sewerage Systems Act) as amended, as well as the related implementing legal regulations. The agenda of water right proceedings is also associated with other fields of administrative law, therefore, the audits were always also examining the compliance with the provisions of the Act No. 500/2004 Coll., Code of the Administrative Procedure, as amended. With regard to the fact that water authorities carry out the agenda of special building offices, the audits examined also the procedure according to the Act No. 183/2006 Coll., on Land-Use Planning and Building Code (the Building Act) as amended and its implementing legal regulations. In the particular proceedings, the audits are effected by examining the randomly selected documents.

The audits examining the execution of the delegated authority monitor the legality of this activity. This is corresponded to by the scope of the audits of the individual components guaranteeing legality in activities of water authorities – for instance, correct application of legal regulations in general, compliance with the relevant competence legal provisions, due conduct of administrative proceedings, compliance with administrative time-limits, provision of source documents for decisions in compliance with the Code of Administrative Procedure and the possibility to review the content of a decision.

Based on the audits that were carried out it can be stated that the execution of the delegated authority by regional authorities in the water management sector maintains its high level. Positive as well are continuing efforts of regional authorities to provide detailed methodological guidance for water authorities in their jurisdiction. This statement can also be confirmed by the fact that no measures to remedy the situation were imposed in any of the audits. The most frequent shortcomings were identified, similarly to the previous periods, in the application of the relevant provisions of the Code of the Administrative Procedure in practice. The identified irregularities, nevertheless, in none of the cases made the issued decisions unlawful.

Table 10.3.1
Audit of the execution of state administration, carried out by the Ministry of Agriculture at Regional Authorities in 2012

Region	Audit date
Ústecký	16 February 2012
Olomoucký	21 March 2012
Královéhradecký	10 May 2012
Plzenský	19 September 2012
Jihomoravský	11 October 2012
Středočeský	10 December 2012

Source: MoA

High levels of the execution of state administration are also reflected by the fact that the Ministry of Agriculture cooperates with Regional Authorities to develop water management legislation. In 2012, this cooperation consisted mainly in the preparation of changes in implementing regulations relating to the amended Water Act.

At the level of water authorities of municipalities with extended authority, the audits were traditionally carried out randomly in the period between July and September, in accordance with long-term efforts of the Ministry of Agriculture to contribute, mainly through the methodological guidance, to improvements in the level of execution of state administration

in the water management sector.

The highly positive feedback from the audits confirms their correct targeting, which helps to deepen mutual communication at all levels of the administrative hierarchy. Beneficial to all interested parties as well is the acquaintance with the regional water right issues and findings in the field of application of legal regulations under the authority of the Ministry of Agriculture.

Table 10.3.2
Audit of the execution of state administration, carried out by the Ministry of Agriculture at water authorities of municipalities with extended authority in 2012

Municipality	Audit date
Municipal Council Zlín	11 July 2012
Municipal Office Přerov	12 July 2012
Municipal Office Bystřice pod Hostýnem	12 July 2012
Municipal Office Černošice	18 July 2012
Municipal Office Brandýs nad Labem – Stará Boleslav	31 July 2012
Municipal Office Český Krumlov	7 August 2012
Municipal Office Trhové Sviny	7 August 2012
Municipal Council České Budějovice	8 August 2012
Municipal Office Cheb	21 August 2012
Municipal Office Aš	21 August 2012
Municipal Council Karlovy Vary	22 August 2012
Municipal Office Litvínov	30 August 2012
Municipal Office Bílina	30 August 2012
Municipal Office Praha 21	3 September 2012
Municipal Office Praha 16	6 September 2012
Municipal Office Praha 11	11 September 2012

Source: MoA

The audits of water authorities of municipalities with extended authority repeatedly confirmed the long-term trend of improving quality of the execution of the state administration in water management sector also at this level. In comparison with the regional authorities some larger differences in the quality of the management of the agenda continue to occur, but this is caused especially by the fact that the quality of work of the water authorities of municipalities with extended authority is influenced by personnel and material equipment. The higher quality level of the administrative proceedings is usually observed at larger water authorities, better equipped with personnel and material background, although this may not always be the case. In smaller municipalities, the delegated authority is sometimes executed by only one person responsible for several fields of administration, in some cases even including the separate authority.

In spite of that, nevertheless, most of the identified irregularities were largely of formal and procedural nature and repeatedly occurred to a larger or smaller extent practically in all of the authorities. Similarly to the regional authorities, the shortcomings were mainly identified in the application of the individual provisions of the new Code of the Administrative Procedure. Furthermore, conditions referred to in statements and opinions of the participants in the proceedings and the respective bodies were insufficiently incorporated into the conditions of the decision. These shortcomings appear repeatedly in the audit findings. It has to be emphasized, nevertheless, that despite these problems of purely formal and procedural nature the audits revealed no case of insufficient execution of the state administration.

The audit results are used for the potential legislative or methodological activities. The water management sector also organized as every year a work meeting with water authorities, which is traditionally of high interest to all participants. These events are aimed at educating and making water authorities staff members acquainted with the current water management issues. The audit findings also serve as a basis to prepare concepts of the methodological presentations. In this way, the audit findings are almost immediately applied in the methodological guidance for subordinate water authorities.

The audit results show that despite the above mentioned minor shortcomings the execution of the state administration in 2012 in the water management sector at all levels of water authorities can be assessed to be of high quality and again fully meeting the requirement for adherence to the basic principles of public administration which can be called public service.

Ministry of the Environment

The departments executing state administration at the Ministry of the Environment, in compliance with the rules of organization, similarly to the past years, dealt only with individual appeals against first instance decisions of the Czech Environmental Inspectorate, the City Council of Prague and the regional authorities.

In 2012, similarly to the years before, the Department of Water Protection organized work meetings with water authorities and the Czech Environmental Inspectorate. The purpose of this event was to make water authorities staff members acquainted with the current issues of water protection and the activities of the Department of Water Protection. Staff members of the Department of Water Protection of the Ministry of the Environment participated, whenever possible, also in other training workshops and meetings organized by the individual regional authorities.

In 2012, the Department of Water Protection in cooperation with the Czech Environmental Inspectorate conducted audit of compliance with the requirements of Council Directive 91/271/EEC at a number of waste water treatment plants in the monitored agglomerations over 2,000 PE (29 agglomerations). Information on the real state of work on projects in preparation and under way to meet the requirements of the Directive in agglomerations over 10,000 PE and also in the category of between 2,000 and 10,000 PE was obtained through on-site inspections and discussions with representatives of operator companies and city and municipal councillors. On the basis of these findings and property-related operating records of companies operating sewerage systems, the information for the Government about meeting the requirements of the Directive on waste water treatment in agglomerations over 2,000 PE was submitted to the management of the Ministry of the Environment. Status of compliance with the requirements of the Directive in the years 2010 and 2011 was stated and prospects for the years 2012–2015 were outlined.

Increase in the Blanice River flow capacity in a nature-friendly manner in Vlašim urban area

A maxiwave – 2nd class, Chýnov primary school, Jihočeský kraj region

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

11.1 Planning in the field of waters

Until the end of 2012, the implementation of Programmes of Measures adopted by River Basin District Management Plans was under way. There also continued the process of preparation of the second river basin management planning cycle for the period 2015–2021. Within the framework of this preparation, the current River Basin Management Plans are being reviewed and updated. Within the framework of preparing flood risk management plans, maps of flood hazards and maps of flood risks started to be prepared and must be completed by the end of 2013.

Preparation of the first river basin management planning cycle peaked in late 2009 by approving eight river basin district management plans by councils of the respective regions. This moment was also start of the period of implementation of the measures that were proposed in the plans. Programmes of measures to achieve the objectives of water protection should have been implemented within three years from the approval of the relevant river basin management plans, i.e. by 22 December 2012. Progress achieved in the implementation of these measures has to be reported, in accordance with Article 15, paragraph 3 of Directive 2000/60/EC, to the European Commission and, pursuant to the provision of Section 26 par. 7) of the Act 254/2001 Coll., on waters and on amendments to some acts (the Water Act) as amended, a similar summary report has to be submitted to the Government of the Czech Republic. In the course of 2012 all interested parties carried out intensive collection of data and information on the current state and progress of the implementation of the above mentioned measures. After evaluation of the data, a Report to the EC was submitted. Summary report to the Government of the Czech Republic on the implementation of the programme of measures, in accordance with the requirements of the Water Act, is presented as part of this Report on Water Management in the Czech Republic in a separate Chapter 14. The facts established for the purpose of these reports also become a prerequisite for the preparatory work and update of measures for the second river basin management planning cycle.

In preparation for the second river basin management planning cycle, in accordance with legislative requirements, as one of the main outputs of the preparatory work in 2012 there was prepared and for six months made available to the public and water users for comments the time schedule and work programme for the preparation of river basin management plans and flood risk management plans. This time schedule and work programme defines the individual tasks in the process of water management planning and assigns institutional responsibility for addressing these tasks.

Within the methodical management and coordination of the process the following documents were prepared: Standardized Model of the National River Basin Management Plan and Model of River Sub-basin Management Plan, which specify in detail the content, structure, form, data sources and methodology for the preparation of river basin management plans and contribute to a uniform shape of preparing plans at the national and sub-basin levels as well as mutual interlinking and harmonization of river basin management plans at both these levels. Within the methodical support there were also 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 newly 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 2011, in accordance with the requirements of the Directive, a preliminary assessment of flood risks and definition of areas with potentially significant flood risks was completed. The resulting material was made available to the public and can be found on the website of Flood Information System www.povis.cz. The definition of areas with potentially significant flood risks was followed in 2012 by preparatory work for the compilation of maps of flood hazards and maps of flood risks that are to be made available to the public for comments by 22 December 2013.

Integral and essential part of the planing process is also the involvement of the public and water users. All current and general information on the planning process in the water sector, including working papers and records of the meetings of the Commission for Water Planning are available to the public on the website of the Ministry of Agriculture www.eagri.cz with links to the website of the Ministry of the Environment and websites of each of the 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. In connection with the 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.

The Regional Development Plans for Water Supply and Sewerage Systems are the basis for utilization of the European Community funds and national financial resources for construction and renewal of water supply and sewerage system infrastructure. Therefore, one of the obligations of each applicant requesting the provision of the state financial support is to document the compliance of the submitted technical and economic solution with the valid Regional Development Plan for Water Supply and Sewerage Systems.

For the approved and effective Development Plans for Water Supply and Sewerage Systems in the Regions of the Czech Republic, the Ministry of Agriculture continued to issue statements on the proposed changes in the technical solutions for drinking water supply and waste water sewerage and treatment.

215 statements were issued in 2012. In total for the period 2006–2012, the Ministry of Agriculture issued 3,664 statements.

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 authority (water authorities), municipalities, owners and operators of water supply and sewerage systems as well as by both specialists community and the general public.

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, and represents a medium-term concept of the sector of water supply and sewerage

systems for the period until the year 2015. 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.

Ministry of Agriculture proposed in the draft amendment to the Act on water supply and sewerage systems a change regarding the preparation and approval of the above mentioned plans. The Regional Development Plans for Water Supply and Sewerage Systems should be open, on an ongoing basis updated plans with medium-term perspective, including interim approvals by the regional councils.

11.3 Programmes and measures to reduce surface water pollution

The programme to reduce surface water pollution by hazardous substances and especially hazardous substances

The Programme to Reduce Surface Water Pollution by Hazardous Harmful Substances and Especially Hazardous Harmful Substances (hereinafter the „Programme") was adopted by the Czech Republic Government Resolution No. 226 of 22 March 2010. The commitment to prepare the Programme is based on Article 6 of Directive of the European Parliament and of the Council 2000/60/EC of 23 October 2000, establishing a framework for Community action in the field of water policy. It was transferred into Section 38 subsection 5 of the Act No. 254/2001 Coll., on waters and on amendment to some laws (the Water Act), as amended.

The Programme is valid for the entire territory of the Czech Republic for the period between 1 January 2010 and 22 December 2013, and relates to the substances or groups of substances hazardous to (or through) the aquatic environment, listed in Annex 1 of the Water Act. The Programme specifies the main measures related to water protection and other measures not directly related to water protection, but which ultimately contribute to water protection.

Construction projects for water quality protection completed in 2012

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 2012 (N = nitrification, DN = denitrification, BP = biological removal of phosphorus, CHP = chemical removal of phosphorus):

New municipal waste water treatment plants (PE in total): Domašov (2,133 PE, N, DN, CHP), Budišov (2,010 PE, N, DN, CHP)

New industrial waste water treatment plants: BorsodChem MCHZ, s.r.o. (29,500 PE, N, DN), Danisco Smiřice (56,000 PE, N, DN)

Furthermore, the existing municipal waste water treatment plants were reconstructed or extended in 2012:

The existing municipal waste water treatment plants: Ivančice (19,303 PE, N, DN, CHP), Velké Meziříčí (22,300 PE, N, DN), Blatnice (8,890 PE, N, DN, CHP), Bílovice nad Svitavou (7,750 PE, N, DN, CHP), Hrotovice (2,200 PE, N, DN, CHP), Blučina (2,819 PE, N, DN, CHP), Hrušovany u Brna (3,877 PE, N, DN, CHP), Hradčany (9,000 PE, N, DN, CHP), Nový Bor (13,400 PE, N, DN, CHP), Česká Lípa (48,150 PE, N, DN, CHP), Svijany (90,000 PE, N, DN, CHP), Studénka (N, DN, CHP), Blovice (3,300 PE, N, DN, CHP), Chodová Planá (9,000 PE, N, DN, CHP), Kobeřice (N, DN, CHP), Přeštice (8,200 PE, N, DN, CHP), Kostelec na Hané (3,500 PE, N, DN, CHP), Nový Malín (4,420 PE, N, DN, CHP), Česká Skalice (11,000 PE, N, DN, CHP), biological waste water treatment plant Pardubice (270,000 PE, N, DN, CHP), Dolní Újezd (2,500 PE, N, DN, CHP), Dolní Roveň (2,300 PE, N, DN, CHP), Česká Třebová (20,000 PE, N, DN, CHP), Moravská Třebová (20,070 PE, N, DN, CHP), Městečko Trnávka (4,800 PE, N, DN, CHP), Moravany (5,500 PE, N, DN, CHP), Kunštát na Moravě (2,100 PE, N, DN, CHP), Velké Opatovice (5,200 PE, N, DN, CHP).

Action Programme under the Directive of the Council 91/676/EEC (Nitrate Directive)

In 1991, Council Directive 91/676/EEC on the protection of waters against pollution caused by nitrates from agricultural sources, the Nitrate Directive, was adopted. The transfer of the Nitrate 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 promulgated 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 Nitrate Directive, at least every four years from their promulgation. The first review of vulnerable zones was carried out in 2007 and promulgated through the amendment to the Government Order No. 219/2007 Coll., with effect from 1 September 2007. The second review of the specification of vulnerable zones was carried out in March 2011 and promulgated 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 land block. The Action Programme is the most effective system of measures in the implementation of the Nitrate Directive.

The general measures of the Action Programme in the Czech Republic which is produced in compliance with Annex III to the Nitrate 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. Reduction of the application 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 GAEC requirements and by the end of 2013 the increase in the capacity of farmyard storage facilities for six-month production.

11.4 Czech Republic´s reporting to the EU

The reporting pursuant to the Council Directive 91/271/EEC, concerning urban waste water treatment

In February and March 2012, data on sewerage systems and waste water treatment plants as of 31 December 2010 was submitted to the European Commission as part of regular reporting under Article 15 of Directive 91/271/EEC, concerning urban waste water treatment (hereinafter the Directive). The data was reported in three terms as required by the European Commission, the corrected data then as of 31 March 2012. The data will be made available to the public on the EIONET.

The actual state as of 31 December 2010 in terms of waste water treatment plants in agglomerations is as follows: Of the total of 633 agglomerations with the population of more than 2,000 PE the limits of the Directive were met by 576 agglomerations. At the end of 2010, in total 57 agglomerations failed to meet the limits of the Directive, of that 29 agglomerations with the population of more than 10,000 PE and 28 agglomerations with the population of between 2,000 and 10,000 PE.

As of 31 December 2011, the state of compliance with the limits of the Directive after completing the current data for 2011 for the total of 633 agglomerations is as follows:

- 521 agglomerations have a satisfactory waste water treatment plant,
- 28 agglomerations with the population of more than 10,000 PE have unsatisfactory WWTP,
- 14 agglomerations with the population of between 2,000 and 10,000 PE have no WWTP,
- 68 agglomerations are connected to a WWTP in another agglomeration, 59 agglomerations are connected to a satisfactory WWTP (of that 2 agglomerations build connections to a satisfactory WWTP in another agglomeration), and 9 agglomerations are connected to an unsatisfactory WWTP.
- 2 agglomerations with the population of less than 10,000 PE fail to meet the limits of the Directive, but have a WWTP completed, at present in trial run.

In 2011, limits set by the Directive on urban waste water treatment were met by 578 agglomerations of the total of 633 agglomerations, which is 70.2% of discharged pollution after conversion by PE in the monitored agglomerations.

Reporting pursuant to Directive of the European Parliament and of the Council 2006/7/EC of 15 February 2006, concerning the management of bathing water quality and the repeal of Directive 76/160/EEC

In terms of the European legislation, the issues of bathing waters are governed by the following Directives: Council Directive 76/160/EEC of 8 December 1975, concerning the quality of bathing water, which will be repealled with effect from 31 December 2014, and Directive of the European Parliament and of the Council 2006/7/EC of 15 February 2006, concerning the management of bathing water quality and the repeal of Directive 76/160/EEC.

Every year, before the start of the bathing season, a list of waters identified as bathing waters is prepared pursuant to Section 6g par. 1 letter a) of the Act No. 258/2000 Coll., as amended by the Act No. 151/2011 Coll. This list is prepared by the Ministry of Health in cooperation with the Ministry of the Environment and the Ministry of Agriculture. In the Czech Republic, waters used for open air bathing of persons are divided into natural open air bathing pools operated on surface waters used for bathing (surface waters where bathing services are offered by the pool operator) and surface waters where large numbers of persons are expected to bathe and for which no permanent ban on bathing or permanent warning against bathing was issued by the relevant public health protection authority (so-called other surface waters used for bathing). Before the start of the bathing season 2012, a list of waters identified as bathing waters for the recreational season 2012 was submitted to the European Commission.

Ministry of the Environment in cooperation with the Ministry of Health submitted to the European Commission a report on the results of monitoring and assessment of quality of surface waters specified in the List for bathing season 2012. This report for the year 2012 was prepared for the first time according to the requirements of Directive 2006/7/EC. Bathing waters were classified on the basis of their quality as poor, acceptable, good or excellent. The assessment was newly carried out based on the quality data set compiled for the bathing season 2012 and the three preceding bathing seasons. Reports from European countries after processing of the results are annually presented on the portal of the European Commission http://ec.europa.eu/environment/water/water-bathing/index_en.html.

The most frequent problems of water quality in the Czech Republic are associated with the mass presence of cyanobacteria, which during the bathing season 2012 led to the ban on bathing at 9 sites. At 6 sites, the ban on bathing was imposed due to exceedances of the microbiological indicators. At one site, the ban on bathing was imposed due to a risk of cerkaria dermatitis. Of the total number of 160 reported bathing waters, only 4 sites were classified as failing to comply with the requirements defined by Directive 2006/7/EC.

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

The report served to inform the European Commission on the process and results of the preliminary flood risk assessment and definition of areas with significant flood risk in accordance with Articles 4 and 5 of the Directive.

Flood risks were preliminarily assessed in accordance with the requirements of the Directive for the entire territory of the Czech Republic, using the same approach and the means of GIS spatial analysis. A detailed description of the procedure followed is set out in the Methodology of the Preliminary Flood Risk Assessment in the Czech Republic. The basis for that were information and standard data bases available in the Czech Republic.

To select areas with potentially significant flood risk under Article 5 of the Directive, two basic criteria in accordance with the selected aspects of flood threat were used for each assessed municipality:

- 25 or more residents affected by flood hazard per year,
- CZK 70 million and more of the value of assets affected by flood hazard per year.

Information on the locations of significant potential sources of pollution in flood areas under the Q_{100} scenario and information on significant protected historical monuments in flood areas under the Q_{100} scenario were used as additional aspects. The basic application of the above mentioned criteria for selection of municipalities with potentially significant flood risk was carried out by T. G. Masaryk Water Management Research Institute in the GIS environment. The assessment of flood risk in the longitudinal profiles of watercourses and linking into continual segments with potentially significant flood risk was carried out by individual river basin administrators.

In total 2,965 km of watercourses with significant flood risk were defined in the Czech Republic, which means 26% of the length of assessed watercourses. The results of this stage ae described in detail in the report „Preliminary Assessment of Flood Risks in the Czech Republic", which was made available to the public at Flood Information System (www.povis.cz) on 22 December 2011. In March 2012, in accordance with the Directive, all the required reporting schemes were completed and forwarded to the Commission.

Titanic – 2nd class, Doberská primary school and nursery school, Kladno, Středočeský kraj region

12. International cooperation in the field of water protection

International cooperation of the Czech Republic in the field of water protection is based on the principles arising from the UN ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which the Czech Republic is a party to.

This cooperation is realized on the basis of international agreements governing cooperation between states within integrated river basins and also at the level of bilateral cooperation with neighbouring states in the field of water management on transboundary watercourses. International cooperation builds on the long-time basis, which cannot be compared to any similar cooperation in the world. This has resulted in the fact that cooperation of the Czech Republic with other states in the field of water management can be considered higher than standard. In principle, international cooperation in the protection of waters can be divided into three levels:

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

12.1 Cooperation within UN ECE

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) is intended to strengthen national measures for the protection and ecologically sound management of transboundary surface waters and groundwaters. The Convention obliges Parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure their sustainable management.

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

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

The UN ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (hereinafter 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, monitoring and assessment of water status, flood control, adaptation to climate change, protection of waters against accidental pollution from industrial sources, support for international cooperation on transboundary watercourses and in integrated international river basins as well as to the field of water and human health. The supreme body of the Convention is the Meeting of the Parties, held once every three years.

The sixth Meeting of the Parties took place between 28 and 30 November 2012 in Rome, Italy. It was attended by 330 representatives of the Parties and other countries and intergovernmental and non-governmental organizations from and outside the UN ECE region (such as Afghanistan, Iran, Congo and others). Parties to the Convention at this meeting adopted a decision to simplify the process of accession to the Convention by non-member countries of the UN ECE. Currently, in some of these countries there is a process under way, which should lead to the accession of these countries to the Convention after the entry into force of the amendments to Articles 25 and 26 of the Convention, allowing the accession for countries outside the UN ECE region. Any future application for accession to the Convention submitted by any Member State of the UN will be considered approved by the Meeting as soon as the amendments to Articles 25 and 26 shall enter into force for all Parties which adopted them in 2003. It is assumed that countries outside the UN ECE region will be able to be full members by the end of 2013. Furthermore, there were adopted two decisions concerning the cooperation with relevant international institutions – the Global Environmental Fund (GEF) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Both these institutions will help in involving countries outside the UN ECE in the process of implementation of the Convention. The meeting discussed the issue of ratification of the Protocol on Civil Liability, providing for a comprehensive regime for civil liability and for compensation for damage resulting from transboundary effects of industrial accidents on transboundary waters (hereinafter the „Protocol"). Meeting of the Parties highly appreciated the elaboration of the Second Assessment of Status of Transboundary Watercourses, International Lakes and Groundwaters and agreed to prepare a similar extensive assessment not sooner than after six to eight years. In the period 2013–2015, thematically focused assessments of selected sub-basins will be prepared. The theme focused on will be the links between the areas of water, food, energy and ecosystems.

Protocol on Water and Health

Within the UN ECE 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. The Czech Republic has been a party to the Protocol since 2001. The Protocol entered into force in 2005, Czech Republic set national targets already in 2008.

In 2012, gradual meeting of the set national targets was under way. Interdepartmental work team involved in the implementation of the Protocol prepared a draft update of national targets. The reason for this update was that some of the national targets have already been met or achieving these targets in the future is ensured by the legislation. In some cases, on the contrary, the deadline for meeting the set targets had to be prolonged. Adoption of the updated targets by the Government of the Czech Republic is expected in 2013. Currently, Czech Republic along with the Federal Republic of Germany lead the work area focusing on small-scale drinking water supply and waste water disposal systems (Small-scale water supply and sanitation). In 2012, an international team of authors with Czech participation worked on the publication, which should bring good examples and best practices from different European countries to improve the situation for small water sources. This publication includes the area of waste water management in small settlements with reference to the close links to drinking water sources. This team also prepared a questionnaire on the situation of water supply from small sources, which WHO in October 2012 sent to all European countries and which will be evaluated in 2013. Evaluation of the questionnaire will be presented at the third meeting of the Parties to the Protocol (November 2013, Norway).

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

12.2 International cooperation in the field of water protection in the integrated Elbe River, Danube River 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 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 (hereinafter the Water Framework Directive (2000/60/EC)).

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 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 (hereinafter the Flood Directive).

The key documents that were prepared within the International Commission for Protection of the Elbe in 2012 include the International Warning and Alarm Plan for the Elbe and Final Report on the implementation of the Action Plan for Flood Protection in the Elbe River Basin (2003–2011).

Currently, the work is under way to prepare the second International Elbe River Basin District Management Plan according to the EC Water Framework Directive and the first International Plan for the Management of Flood Risks in the Elbe River Basin according to the EC Flood Directive. Both plans will be published in December 2015 after prior consultation with the public.

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 15th meeting of the Magdeburg Workshop (10 – 11 October 2012, Hamburg) was held under the auspices of the Ministers of the Environment of the

Výrovice hydraulic structure

Lipno II hydraulic structure, safety measures for the hydraulic structure during floods

Czech Republic and the Federal Republic of Germany. The event was attended by more than 180 experts from the Czech Republic, Germany, Austria and Poland. The main topic of „the Elbe and its sediments" was dedicated to by 23 special papers and 50 posters.

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. This river basin is shared by 19 European states. 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.

In 2012, at the level of heads of delegations of the Parties, two meetings were held. The first of them, the meeting of heads of delegations of the International Commission for Protection of the Danube River (Standing Working Group), took place on 27 – 28 June 2012 in Innsbruck. The second meeting was the 15th plenary session of the International Commission for Protection of the Danube River, which took place from 11 to 12 December 2012 in Vienna.

The main issues discussed during these meetings include:
- the issue of sustainable operation and planning of hydroelectric power plants in the Danube River Basin,
- implementation of the third Joint Survey of the Danube River,
- adoption of the report on implementation of the programmes of measures in the International Danube River Basin District,
- issues of cooperation within the framework of the EU Strategy for the Danube Region,
- issues of adaptation to climate change,
- implementation of the Flood Directive (2007/60/EC) in the International Danube River Basin (preparation of maps of flood hazards and maps of flood risks).

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

The Agreement on the International Commission for Protection of the Oder River against Pollution is implemented through the International Commission for Protection of the Oder River against Pollution, which is seated in Wroclaw in the Polish Republic. The activity of this 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 performed in 2012 was evaluated at the 15th plenary session of the International Commission for Protection of the Oder River against Pollution, which took place from 4 to 5 December 2012 in Wroclaw. The reports presented at this session included reports on the activities of the individual expert working groups aimed primarily at:
- elaboration of strategies to address the significant water management issues in the International Oder River Basin,
- the question of publishing and delivering data from data sets of the International Commission for Protection of the Oder River against Pollution,
- data collection for the project „Modelling of nutrient emissions for the International Oder River Basin District from point sources and various diffuse sources of pollution for the historical, current and future volumes of nutrient emissions",
- preparation of a report on implementation of the programmes of measures in the International Oder River Basin District,
- implementation of the Flood Directive (2007/60/EC) in the International Oder River Basin (preparation of maps of flood hazards and maps of flood risks),
- update of Emergency Plan including the International Warning and Alert Plan for the Oder River for the Events of Accidental Pollution and the creation of interactive map of potential sources of accidental pollution.

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", i.e. that more than 30% of the state border are constituted by watercourses and water bodies.

Transboundary waters are considered not only these watercourses and water bodies, but also segments of watercourses or of their main branches, surface waters and groundwaters in the vicinity of the state border, where the water management measures implemented on the territory of one party would substantially affect water management conditions on the territory of the other party. To avoid potential international conflicts, the Czech Republic has with neighbouring states international agreements concluded. These agreements set basic rules for cooperation in the field of water management. This cooperation focuses on:

- ensuring the stability of the state border in segments which are constituted by transboundary watercourses,
- regulation and maintenance of transboundary watercourses including construction and operation of structures on these watercourses, water supply and amelioration of border reaching territories,
- ensuring the access to water from both sides of the border,
- the protection of transboundary waters against pollution (including the respective monitoring, joint monitoring of the quality of transboundary waters, exchange of data and organization of warning and alert service in case of emergency),
- hydrology and flood warning service (including monitoring, joint measurements, exchange of data and organization of warning and alert service in case of emergency),
- water management planning and balancing on transboundary waters – proposals for coordinated use of transboundary waters,
- protection of water resources for water supply,
- water right proceedings regarding transboundary waters,
- cooperation in matters of the state border administration on transboundary watercourses,
- protection of aquatic and littoral habitats.

The concluded international agreements are implemented through the relevant Commissions for Transboundary Waters.

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 2012, the following meetings took place:

- 14th session of the Standing Committee Bavaria (2 – 4 April 2012, Regensburg, Federal Republic of Germany),
- 14th session of the Standing Committee Saxony (28 – 30 August 2012, Prague, Czech Republic),
- 15th session of the Czech-German Commission for Transboundary Waters (25 – 26 October 2012, Prague, Czech Republic).

The signing of the minutes of the meeting of the Sub-Commission II of the Czech-Austrian Commission for Transboundary Waters

The key points that were discussed during the above mentioned meetings include:

- the issue of realization of emergency profile on the Elbe in Hřensko profile, particularly the possibilities of funding for this project,
- 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 of surface waters.

The results of these meeting are included in the „Protocol on the 15th 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.

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. Approximately 37 % of this length (i.e. 173 km) are constituted by the so-called wet line. The cooperation in this segment of the state border 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. The fulfilment of this international agreement takes places through the Czech-Austrian Commission for Transboundary Waters. In 2012, at the level of this Commission, the following meetings took place:

- 20th session of the Czech-Austrian Commission for Transboundary Waters (30 – 31 May 2012, Prague, Czech Republic),
- meeting of the representatives of the Governments (20 – 21 November 2012, Vienna, Austria).

The main topics discussed during the meetings included:

- the impacts on the Dyje River caused by the Austrian chemical plant Jungbunzlauer AG in Pernhofen (agreeing mutually acceptable procedure for issuing a new permit for the discharges of waste water from this chemical plant),
- joint cross-border projects aimed at improving flood protection in the Morava River and the Dyje River basins,

- the completion of the list of all watercourses on the Czech-Austrian border to reach the form that will be in accordance with the applicable State Border Documentation.

The result of the meeting of the Commission is included in the mutually agreed and signed „Protocol on the 20th meeting of the Czech-Austrian Commission for Transboundary Waters", which was subjected to interdepartmental discussion and approved by the Minister of the Environment.

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

The length of the state border between the Czech Republic and the Slovak Republic is 252 km. Watercourses and water areas constitute approximately one third of this border (71 km). Cooperation in the field of water management is regulated 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. The implementation of this agreement takes place through the Czech-Slovak Commission for Transboundary Waters. In 2012, at the level of this Commission, only one meeting took place (15 – 17 May 2012, Prague, Czech Republic). In addition to the issues of maintenance of transboundary watercourses, the exchange of information in the field of hydrology and water quality of streams, both representatives of the Governments agreed to discuss the following themes:

- navigation issues (the use of the Morava River and the Dyje River for recreational boating and the plan to extend the navigability of the Otrokovice – Rohatec waterway),
- joint cross-borders 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 result of the meeting is included in the „Protocol on the 12th meeting of the Czech-Slovak Commission for Transboundary Waters", which was subjected to interdepartmental discussion and subsequently approved by the Minister of the Environment.

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. Approximately 28% of this length (218 km) can be considered the so-called wet line. 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. In 2012, the meeting of this board took place on 13 – 15 November in Opole in the Republic of Poland. At this meeting, both parties informed each other about the discussions on the new Agreement between the Government of the Czech Republic and the Government of the Republic of Poland on Cooperation in the Field of Water Management on Transboundary Waters. In 2013, legislative steps towards signing a new convention are expected to be completed on both sides. In addition to the issues of maintenance of transboundary watercourses, the exchange of hydrological data, etc., the following significant areas of Czech-Polish cooperation were discussed at the level of both delegations:

- joint monitoring in the area of Police nad Metují-Kudowa zdroj, Adršpach-Krzesów and the Stěnava River Basin,
- next steps in addressing the impact of Turów mine operations on surface waters and groundwaters,
- reducing flood risks to the Upper Opava River by means of the Nové Heřminovy water reservoir, etc.

The result of this meeting is included in the Protocol on the 14th meeting of the 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.

Těšetice hydraulic structure

The river is our friend – combined class, Sulejovice primary school and nursery school, Ústecký kraj region

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

In 2012, the Ministry of Agriculture provided special-purpose funding for research and development projects in the field of water management in the amount of CZK 52 million.

In 2012, the funds to support water management R&D amounted in total to CZK 52,048 thousand. The R&D projects launched in 2008 were funded by the amount of CZK 19,009 thousand, the R&D projects launched in 2009 were granted support amounting to CZK 7,438 thousand, the R&D project launched in 2010 was granted support amounting to CZK 2,315 thousand and the R&D projects launched in 2011 were granted support amounting to CZK 5,519 thousand. In 2012, nine new R&D projects tackling the issues of water management were launched and were granted support amounting to CZK 17,767 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 13.1.1. Publicly accessible data on these projects are available on the website of the Council for Research, Development and Innovations at www.vyzkum.cz in the section Information System R&D&I (the Central Register of R&D Projects). The information on the results of the R&D projects is available on the same website in the Information Register of R&D Results.

Water management R&D projects resulted from public tenders called under the research programmes of the Ministry of Agriculture, namely the Programme of Research in Agricultural Sector 2007–2012, 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 Sector 2007–2012 includes the sub-programme Effective Approaches in Agricultural Sector, where one of the research trends is the Sustainability and Enhancement of Water Resources and Reducing the Impacts of Climate Change. One of the research trends under the sub-programme Effective and Friendly Management Practices is the research trend Interactions between Water, Soil and Environment.

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 2012, the Research Institute for Soil and Water Reclamation, public research institution continued to conduct the work under research scheme No. MZE0002704902, Integrated Systems of Soil, Water and Landscape Protection and Use in Agriculture and Rural Development. Under this scheme, the chapters relating to water management received support in the amount of CZK 12,000 thousand.

Landštejn hydraulic structure

Table 13.1.1
Research and development projects in the field of water management financed from the budget chapter of the Ministry of Agriculture in 2012

project No.	Name of project	from - to	coordinator	funds (thousands of CZK)
QH81046	Optimization of the bio-manipulation effect of predatory fish in ecosystems of water reservoirs	1 January 2008 31 December 2012	Biology Centre of the Academy of Sciences of the Czech Republic, public research institution	1,476
QH81170	Multidisciplinary evaluation of impacts of special territorial protection of hydrologically important areas in the Czech Republic	1 January 2008 31 December 2012	Czech Agricultural University in Prague	1,529
QH81200	Optimization of water regime in the landscape and increasing its retention capacity through application of compost from biologically degradable waste on arable land and permanent grassland	1 January 2008 31 December 2012	Research Institute of Agricultural Engineering, public research institution	1,636
QH81326	New cultivation technologies in potato production aimed at higher efficiency of fertilization and water protection	1 January 2008 31 December 2012	Potato Research Institute Havlíčkův Brod	1,198
QH81331	Research of adaptation measures to eliminate the impacts of climate change in the regions of the Czech Republic	1 January 2008 31 December 2012	T. G. Masaryk Water Management Research Institute, public research institution	1,420
QH82089	Non-production function of soils in the Czech Republic in relation to their production function, their assessment and their influence on soil, water and landscape protection	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	712
QH82090	Changes in soil properties due to grassing, afforestation or in the long-term abandoned arable land, with impacts on soil, water and landscape protection	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	570
QH82095	The impact of land use type location on runoff and wash loss of selected substances	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	1,876
QH82096	Development of conceptual model for generation of groundwater vulnerability synthetic maps and its comparison with model DRASTIC	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	1,252
QH82106	Recultivation as a tool for landscape water regime function regeneration after opencast brown coal mining	1 January 2008 31 December 2012	University of South Bohemia in České Budějovice	1,676
QH82117	Environmentally friendly and effective fishpond management with maximum utilization of current trophic potential and maintaining good quality of water and fish production	1 January 2008 31 December 2012	University of South Bohemia in České Budějovice	2,470
QH82191	Optimization of batching and placement of organic matter into soil with the aim to reduce surface water runoff during intensive rainfall	1 January 2008 31 December 2012	Research Institute of Agricultural Engineering, public research institution	1,004
QH82283	Research of interaction of water, soil and environment from the viewpoint of barnyard manure management in sustainable agriculture	1 January 2008 31 December 2012	Research Institute for Crop Production, public research institution	2,190
QI91C008	Optimization of drafting of technical erosion control measures	1 June 2009 31 December 2013	Research Institute for Soil and Water Reclamation, public research institution	1,683
QI91C054	Soil Climate Atlas of the Czech Republic – definition of thermal and hydric regimes and their impact on productive capacity of soils	1 June 2009 31 December 2013	Mendel University in Brno	1,160
QI92A012	The assessment of implementation of erosion control and water management facilities in comprehensive land adaptations in terms of farming landscape protection and creation	1 June 2009 31 December 2013	Research Institute for Soil and Water Reclamation, public research institution	963
QI92A139	Research of methods improving the efficiency of water management of small reservoirs with respect to risks posed by expected climate change	1 June 2009 31 December 2013	Czech Technical University in Brno	518

project No.	Name of project	from - to	coordinator	funds (thousands of CZK)
QI92A207	Recovery and long-term nature friendly management of watercourse bank vegetation	1 June 2009 31 December 2013	Silva Tarouc Research Institute for Landscape and Ornamental Gardening, public research institution	3,114
QI102A265	Determination of the proportion of phosphorus in eutrophication of standing surface water bodies at risk	1 January 2010 31 December 2013	Czech Technical University in Prague	2,315
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	2,197
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	1,580
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	1,742
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	1,367
QJ1220029	The planting and maintenance of pond dam vegetation with regard to its use	1 April 2012 31 December 2016	Mendel University in Brno	2,000
QJ1220033	Optimization of water regime on the Morava River floodplain model	1 April 2012 31 December 2015	Mendel University in Brno	1,506
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	2,986
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	1,891
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 Tarouc Research Institute for Landscape and Ornamental Gardening, public research institution	1,892
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	1,598
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	1,977
QJ1230319	Water regime of soils on sloping agricultural land	1 April 2012 31 December 2015	Czech Agricultural University in Prague	2,550
Total				**52,048**

Source: MoA

Stanovice hydraulic structure

Mirroring the spring in a drop of dew – 5th class, Dolní Domaslavice primary school and nursery school, Moravskoslezský kraj region

14. Implementation of programmes of measures adopted by river basin management plans in 2009

The provision of Section 26, Subsection 7 of the Water Act No. 254/2001 Coll. requires the Ministry of Agriculture in cooperation with the Ministry of the Environment and the regional authorities to submit to the Government every three years a summary report on the implementation of the programme of measures and the status of surface waters and groundwaters and water management in river basin districts. The programme of measures is intended to help respond to the pressures identified and achieve good status of the river basin or water body. Monitoring and assessment of the effectiveness of the measures is a source of important information needed to interlink the successive water management planning cycles.

This chapter on the implementation of the programme of measures to achieve the objectives set out in the river basin management plans will address this task every three years, while the status of surface waters and groundwaters is described annually in Chapter 3. Water management planning process is also annually described in Chapter 11.

14.1 Description of the adopted river basin management plans

In 2000, the European Union through Water Framework Directive (2000/60/EC) defined new ambitious targets for the protection and rehabilitation of aquatic ecosystems to serve as a basis for long-term and sustainable water use by people, businesses and nature. The requirements of this Directive were incorporated into the Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), as amended, and as the main tool for the implementation of the Water Framework Directive there was established river basin management plan and the relevant programme of measures proposed by the river basin management plan. The programme of measures was prepared by the end of 2009 for each river basin district. The responsibility for water management planning process shall be borne by the Ministry of Agriculture and the Ministry of the Environment.

The river basin management plans include all measures that were to be adopted in the relevant river basins to achieve good status of all water bodies by 2015 in terms of the objectives of good ecological and chemical status of surface waters and good quantitative and chemical status of groundwaters. The Water Act established for the first water management planning cycle, beyond the requirements of the Water Framework Directive, also objectives in the area of protection against floods and other harmful effects of water, and objectives for sustainable use of water resources, especially for the purposes of drinking water supply. As part of water management planning process, the following documents were prepared and approved by the end of 2009:

- Main River Basin Management Plan of the Czech Republic, which represents a long-term concept and strategy in the area of protection and use of waters and protection against floods and drought. It integrates the aims and objectives of departmental policies of the central water authorities in sharing competencies in accordance with the provision of Section 108 of the Water Act, and it especially follows up with the Concept of Water Management Policy of the Ministry of Agriculture for the period after the accession to the EU for the years 2004–2010 and the National Environmental Policy 2004–2010.
- Plans of eight river basin district management plans (the Upper and the Middle Elbe River Basin, the Upper Vltava River Basin, the Berounka River Basin, the Lower Vltava River Basin, the Ohře River and the Lower Elbe River Basin, the Oder River Basin, the Morava River Basin and the Dyje River Basin), which are policy documents that summarized information on the current status of water bodies in river basin districts and set specific objectives aimed at achieving their good status, preventing deterioration of the status of aquatic environment, support for sustainable water use, reducing the effects of extreme flow conditions (floods and droughts) and propose measures to ensure the achievement of these objectives by 2015. The relevant river basin district management plans were approved by the end of 2009 by the councils of individual regions.
- Plans of national parts of international Elbe, Oder and Danube River Basin Districts were prepared on the basis of the Government Resolution No. 562 of 23 May 2007 to the Main River Basin Management Plan of the Czech Republic, and they build on river basin district management plans. These plans were made available to the public pursuant to Article 13.6 of Directive 2000/60/EC and their copies were submitted to the European Commission.
- International Elbe, Oder and Danube River Basin District Management Plans were prepared in accordance with Article 13.2 of Directive 2000/60/EC, on the basis of which Member States sharing the relevant international river basin ensured the preparation of a single international river basin management plan. The plans were prepared by the International Commission for Protection of the Elbe, International Commission for Protection of the Oder against Pollution and International Commission for Protection of the Danube River. Czech Republic within these commissions through its experts actively participated in the preparation of the relevant international river basin management plans.

The adopted River Basin Management Plans, including regulations through which their binding parts were promulgated, and information from the process of compiling these plans are made available to the public on the website of the Ministry of Agriculture www.eagri.cz in the section Water –> Water Management Planning –> River Basin Management Plans for the 1st period and on the website of the Ministry of the Environment www.mzp.cz in the section Water –> Water Management Planning.

14.2 Report to the European Commission on the progress made in the implementation of the planned programme of measures

Among other requirements of the Water Framework Directive, Member States are also required to submit to the European Commission the mandatory reports, the so-called reporting. These reports are then evaluated by the Commission and summarized to produce the so-called implementation reports, in which you can find summary information on the progress made in individual Member States, but also specifically addressed recommendations for the countries to improve the implementation of the identified requirements.

In the system of the submitted reports probably the most important and the most comprehensively prepared document are River Basin Management Plans, which were forwarded by the Czech Republic to the European Commission in 2010. An important part of these plans are above mentioned programmes of measures. So far the latest piece of reporting is an interim report describing the progress made in the implementation of the planned programme of measures, which was forwarded to the European Commission in accordance with Article 15, paragraph 3 of the Water Framework Directive. The text below brings the basic information on the preparation of this report in the Czech Republic and a summary of information that was submitted to the European Commission.

The collection of information using forms for each measure in each of the three national parts of the international river basins was ensured by the Ministry of the Environment in cooperation with the Ministry of Agriculture, river basin administrators and regional authorities.

Data collection was focused mainly on data for individual projects under five selected types of key measures that were chosen from the following list of key types of measures:

1. Construction or intensification of waste water treatment plants and sewerage systems beyond the requirements of Directive on urban waste water treatment,
2. Reducing nutrient pollution in agriculture beyond the requirements of the Nitrate Directive,
3. Reducing pesticide pollution from agriculture
4. Remediation of old contaminated sites,
5. Improving the longitudinal passage through watercourses (for example, the construction of fish passes),
6. Improving the hydromorphological conditions of water bodies (in addition to the longitudinal passage through watercourses),
7. Improving flow conditions and/or creating minimum residual flows,
8. Water use for irrigation (technical measures),
9. Progress in water pricing policy to apply return on costs of water management services in households,
10. Progress in water pricing policy to apply return on costs of water management services in industry,
11. Progress in water pricing policy to apply return on costs of water management services in agriculture,
12. Consultancy services in agriculture,
13. Water protection measures (for example, drinking water protection zones, etc.),
14. Research and improving knowledge, leading to reducing uncertainties,
15. Measures to gradually eliminate emissions, discharges and releases of especially hazardous substances,
16. Intensification or reconstruction of industrial waste water treatment plants (including agricultural) beyond the requirements of the IPPC.

Key measures Nos. 1, 4, 5, 6 and 14 were selected.

The sources of data for the key measure No. 1 were projects funded from the Ministry of Agriculture programme 129 180 Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II and implemented in agglomerations with the population of less than 2,000 PE + projects in municipalities with the population of more than 2,000, where the territory in question or part of the territory were not included in agglomeration with the population of more than 2,000 (the projects address mainly outlying local parts) and data provided by the regional authorities and municipalities with extended powers. The source of data for the key measure No. 4 was the Department of Rehabilitation, Department of Environmental Risks and Ecological Damage of the Ministry of the Environment.

The source of data for key measure types No. 5 and No. 6 were river basin administrators. For the key measure type No. 14, information prepared by the Department of Water Protection of the Ministry of the Environment in cooperation with the Department of Water Management Policy and Flood Control Measures of the Ministry of Agriculture was used.

Information and data on basic measures were collected in cooperation with relevant departments of the Ministry of the Environment, Ministry of Agriculture and Ministry of Health. Information on other basic measures and complementary measures were collected during the preparation of the report in cooperation between the Ministry of the Environment and Ministry of Agriculture.

Ministry of the Environment in cooperation with the Ministry of Agriculture prepared the final report, which was sent to the European Commission on 4 January 2013. The final form of the report, including the completed tables, in the total extent of 59 pages is available on the website of the Ministry of the Environment.

14.3 Implementation of the programme of measures adopted by the Main River Basin Management Plan of the Czech Republic

Main River Basin Management Plan of the Czech Republic was approved by the Government Resolution No. 562 of 23 May 2007 and its binding parts were promulgated by the Government Order No. 262/2007 Coll. It represents a long-term concept in the area of waters. It integrates the aims and objectives of departmental policies of the central water authorities, especially the Concept of Water Management Policy of the Ministry of Agriculture for the period after the accession to the EU for the years 2004–2010 and the National Environmental Policy 2004–2010, and became the basic document for the preparation of the river basin district management plans.

The binding part of the Main River Basin Management Plan of the Czech Republic contains general objectives and framework measures for individual areas of public interest:

- protection of water as the environmental compartment,
- protection against floods and other harmful effects of water,
- sustainable use of water resources and water management to meet the requirements for water services, especially drinking water supply.

Hereinafter, the state of implementation of measures for individual areas by numerical designation of Annex to the Government Order No. 262/2007 Coll. is described.

1.2 Measures in protection of water as the environmental compartment

1.2.1 From 2007 on, to launch operation of the system for monitoring and detecting water status so that all significant anthropogenic pressures in terms of both the chemical and the ecological status of water, including monitoring of hydromorphological conditions are included, while providing the necessary documents for assessing the status of water bodies and for drafting river basin district management plans and providing data to evaluate the effectiveness of implementation of the programmes of measures.

Since 2007, monitoring of water status has been ensured by river basin administrators and accredited professional bodies. The summary report on monitoring programmes established under Article 8 and Article 15, par. 2 of the Water Framework Directive was for the Czech Republic submitted to the European Commission as part of the individual reports on International River Basin Districts http://eagri.cz/public/web/mze/voda/planovani-v-oblasti-vod/plany-povodi-pro-1-obdobi/zpravy-evropske-komisi/zprava-2007-mezinarodni-oblasti-povodi.html

1.2.2 Based on the evaluation of monitoring results, status assessment of water bodies, expert assessment of the options for improving the status of water bodies, and development plans for water supply and sewerage systems for the regions to identify projects in the river basin district management plans and evaluate the effect of:

a) missing urban waste water treatment plants and sewerage systems in agglomerations with the population of more than 2,000 PE,
b) rehabilitation or intensification of urban waste water treatment plants to improve waste water treatment technologies in agglomerations with the population of more than 2,000 PE,
c) missing adequate waste water treatment in municipalities with the population of less than 2,000 PE, where there is a functional public sewerage system with operation permit,
d) missing adequate waste water treatment in municipalities with the population of less than 2,000 PE, where the impact of municipal pollution is a significant factor affecting the status of the water body.

For individual projects in agglomerations with the population of more than 2,000 PE included in the current list which was approved by the Government within the Updated Strategy of Funding the Implementation of the Council Directive 91/271/EEC concerning urban waste water treatment as well as for relevant specific projects in agglomerations with the population of less than 2,000 PE to prepare in the river basin district management plans time schedules of implementation for projects unfinished in 2008, including details of funding. For this purpose to use supporting financial resources under the national programmes and the EU funds, in particular the Operational Programme Environment, and follow the deadline of 31 December 2010, which shall mean the compliance with the EU requirement concerning urban waste water treatment in accordance with the Treaty of Accession to the EU between the Czech Republic and the European Communities.

Each of the river basin district management plans included lists of specific measures to meet the requirements of the Council Directive 91/271/EEC. The state of their implementation in 2010 was reported to the European Commission on 30 March 2012 under the regular reporting pursuant to Article 15 of the Council Directive 91/271/EEC. Reported data have already been evaluated by the European Commission and will be made available to the public.

1.2.3 In the river basin district management plans to identify priority projects of reconstruction of obsolete sewerage systems showing frequent failures to reduce the risk of uncontrolled pollution of groundwater due to releases of discharged waste water. Upon agreement of river basin district management planners with the owners of the infrastructure to prepare time schedules of the preparation and the gradual execution of relevant projects. In doing this, to use supporting financial resources of the national programmes and the EU funds, in particular funds under the Operational Programme Environment. The selection of projects shoud be especially based on the analysis of the effectiveness and effects in favour of water protection and also on approved development plans for water supply and sewerage systems in the regions.

In each of the river basin district management plans there were identified obsolete sewerage systems showing frequent failures, although their influence on the status of groundwaters could not be assessed due to lack of necessary data. Measures in the form of several tens of projects addressing this issue were included in Chapter C.4.6. Measures to reduce the discharges of pollution from point sources and other activities having impact on water status; they were mostly included in the plans as the so-called binding measures, issued in the form of order by the regional authority. These measures are gradually implemented with financial support granted from the EU funds (Operational Programme Environment), national programmes and also using own funds of owners of the technical infrastructure.

1.2.4 Update development plans for water supply and sewerage systems for the regions, if evaluations of water monitoring or other data indicate that the objectives of water protection by implementing the programme of measures are not likely to be achieved for the relevant body of water.

This task will be addressed after the evaluation of monitoring for the year 2012 in preparing the river sub-basin management plans, which will update the river basin district management plans until 2015. This evaluation of monitoring will be one of the impulses for updating development plans for water supply and sewerage systems, which are prepared by the regional authorities.

1.2.5 In the river basin district management plans to identify projects:

a) to improve the hydromorphological parameters and the ecological status of watercourses, including riparian structures,
b) to improve the passage through watercourses for fish and other aquatic animals and further supporting the development of natural fish communities.

In selecting priority projects to build on the results of water monitoring, assessment of the effectiveness of the proposed measures and the Action Plan for Construction of Fish Passes. In doing this, to use especially supporting financial resources of the national programmes and the EU funds, in particular funds under the Operational Programme Environment.

Appropriate measures were adopted in the river basin district management plans and their status is commented in Chapter 14.4 of this report.

1.2.6 Into the programmes of measures under the river basin district management plans to propose, based on the evaluation of water monitoring and the analysis of erosion threat to soils, systemic measures for the protection of water and water-dependent ecosystems, relating to agricultural and forest land management (derived from adherence to the principles of „good agricultural and environmental status" and standards) and also measures to improve the quality of life in rural areas. In making these efforts, to use especially supporting financial resources under the Rural Development Plan for the period 2007–2013 and also under the Operational Programme Environment for the period 2007–2013. In particular, to apply measures derived from the implementation of land consolidation, sustainable use of agricultural and forest land (mainly grass planting along watercourses, reforestation, reducing the negative effects of water erosion, etc.), measures to meet the requirements for management in vulnerable zones, environmentally friendly management practices and measures derived from the implementation of minor water management projects in municipalities with the population of more than 2,000 PE (sewerage systems and waste water treatment plants).

The required measures focusing on protection of soils against water erosion are met by B type programmes of measures (measures in the water body without specification of the site); erosion control is targeted by some measures under Axis II of the Rural Development Programme 2007–2013. On agricultural land this includes, for example, grassing of arable land threatened by erosion under agri-environmental measures, including maintenance of grasslands, growing intercrops or using environmentally friendly management methods, of course, including protection of water resources, as well as measures to support farming in less favourable areas and Natura 2000 measures.

Measures in vulnerable zones are ensured through measures for the implementation of the Nitrates Directive 91/676/EEC – Action Programmes pursuant to the Government Order No. 262/2012 Coll., evaluated and revised after 4 years, setting measures – requirements for storage capacity of fertilizers, crop rotation and carrying out erosion control measures (since 2009, compliance to the conditions is also reflected in Cross-Compliance Controls).

Measures to improve the quality of life in rural areas are implemented through Axis III of the Rural Development Programme in the Czech Republic 2007–2013, specifically under measure III.2.1.1 Revitalization and development of villages, plan b). Support is granted for the construction and rehabilitation of water supply systems, sewerage systems and waste water treatment plants in municipalities with the population of less then 2,000 except for areas requiring special protection, for which grants are provided under the Operational Programme Environment. In the period 2007–2013, under sub-measure III.2.1.1, in total 4 rounds of accepting the applications for the granting of support took place. During these 4 rounds, a total of 194 water management projects in the amount of approx. CZK 3.1 billion were aproved. As of 31 December 2012, a total of 130 projects in the amount of approx. CZK 1.9 billion were completed or reimbursed.

1.2.7 Based on the assessment of water monitoring and the analysis of assessing the status of water bodies to identify in the river basin district management plans facilities designed for waste water treatment or disposal and sewerage systems from industrial sources of pollution that pose risks to meeting the requirements of national legislation, and for selected industrial sectors also the requirements of the Council Directive 91/271/EEC concerning urban waste water treatment.

In the river basin district management plans, industrial sources of pollution were identified in Chapter B.1.1.1. and their impact assessed on the basis of monitoring and indirect evaluation (where data was not available) in Chapter B.4.1.I., where also risk posing and potentially risk posing surface water bodies were identfied. This assessment was conducted primarily in terms of the impact of hazardous substances. It was subsequently included in the draft measure by a general measure of B type "Measures to reduce or stop the entry of especially hazardous substances (elimination of pollution from industrial waste waters)". The purpose of this measure is to either eliminate hazardous substances from manufacturing processes through the application of appropriate manufacturing technologies (for example, the application of higher-level manufacturing technologies) or elimination of hazardous substances from waste water using appropriate water treatment technology (for example, using membrane filtration, ultrafiltration, reverse osmosis, etc). Implementation of this measure takes the form of decision-making activities of relevant water authorities and administrative and opinion-expressing activities of the river basin administrators.

In the Oder River Basin District Management Plan there were identified three industrial sources of pollution, where the implementation of the proposed measures to reduce inputs of biogenic and specific pollutants is under way. They include Borsodchem MCHZ s.r.o. in Ostrava, ArcelorMittal Ostrava a.s. and Bochemie s.r.o. in Bohumín.

1.2.8 By 24 March 2008 to transpose the new Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC.

The transposition was done by Act No. 151/2011 Coll., amending the Act on protection of public health (Act No. 258/2000 Coll.). Pursuant to Section 6a, every year by 31 March the List of surface bathing waters is established and the river basin administrators in cooperation with other stakeholders prepare, pursuant to Decree No. 155/2011 Coll., the so-called bathing water profiles.

1.2.9 In the river basin district management plants to take into account measures under the Programme to Reduce Pollution of Surface Waters and based on this programme to propose specific changes to the current definition of surface waters suitable for the life and reproduction of indigenous species of fish and other aquatic animals, in order to update and modify the definition of these waters.

Programme to Reduce Pollution of Surface Waters was adopted by amendment No. 169/2006 Coll. to the Government Order No. 71/2003 Coll. and includes especially measures to meet the requirements of the Council Directive 91/271/EEC. Requirements for the quality of fish waters in relation to permitting the discharges of waste water to surface waters are also reflected in Annex 3 of the Government Order No. 61/2003 Coll., as amended. The definition of surface waters suitable for the life and reproduction of indigenous species of fish and other aquatic animals has not been updated and yet is not expected to be updated.

1.10 Strive to complete the establishment of protection zones to protect the yield, quality and health safety of major water resources in use.

In 2012, the Ministry of the Environment failed to realize invitation for tenders concerning the issue of establishing protection zones. This will be realized in 2013.

2.3 Measures to protect against floods and other harmful effects of waters

2.3.1 For effective proposals for preventive flood control measures to seek a suitable combination of measures in the landscape, which will improve the natural retardation of water in the area, with technical measures influencing flood flows. In designing flood control measures to build on hydromorphological mapping of the river network, on conceptual studies of runoff conditions and studies of flood control measures in integrated river basins, including analyses of the factors influencing erosion and runoff conditions, with indications of areas and lands that are sources of erosion and surface runoff, as well as analyses of various options of flood protection designs, including cost-benefit analysis and risk analysis.

The task was further developed under the Concept of Addressing the Issues of Flood Protection in the Czech Republic Using Technical and Nature Friendly Measures, adopted by the Government Order No. 799 of 10 November 2010, into subtasks for use to prepare flood risk management plans by the end of 2015. Information on fulfilment of the Concept tasks will be submitted to the Government of the Czech Republic by the end of 2013.

2.3.2 In 2007, under the responsibility of the Ministry of the Environment to gradually prepare a concept of nature-friendly flood control measures in selected priority areas – in the main Elbe River Basin (the Nežárka River Basin, the Dědina River Basin, the Ploučnice River Basin), in the main Oder River Basin (the Opava River Basin) and in the main Morava River Basin (the Bečva River Basin, the Dyje River Basin, the Svratka River Basin).

Outputs of the concept are available on the website www.vodavkrajine.cz.

In the priority area of the upper Opava River – Flood control measures to protect municipalities on the upper Opava River – under way is a preparation of the complex of measures to protect against floods in the upper Opava River Basin in the variant of a smaller water reservoir of Nové Heřminovy using nature-friendly measures in accordance with the Czech Republic Government Resolution No. 444 of 21 April 2008 and No. 119 of 16 February 2011.

2.3.3 By the end of 2007, under the responsibility of the Ministry of Agriculture and Ministry of the Environment to define, on the basis of the conceptual studies, a proposal of specific measures in each of the priority areas.

These measures shoud be targeted in accordance with the objectives of the Operational Programme Environment for the period 2007–2013, the Rural Development Programme for the period 2007–2013 and the programme Flood Prevention II for the period 2007–2012. After a positive assessment to reflect these measures into the river basin district management plans, to reflect them into land use plans and start preparations for investment.

In the programme Support for Flood Prevention II, until 2013, the following projects were completed or are being completed in the identified priority areas:

The complex of flood control measures on the Lužnice River and the Nežárka River – seven measures (Reconstruction of the Novořecká Dike km 3, 52 – 6, 25, Distribution Structure of the Novořecké Weirs, Flood Control Measures in Soběslav, in Veselí nad Lužnicí, in Planá nad Lužnicí, in Dráchov and in Bechyně – Zářečí.

The complex of flood control measures in the lower Vltava River Basin in the segment between Štěchovice and Mělník – six measures, of that five to protect the Capital of Prague in the areas of Zbraslav – Radotín and Troja and the municipality of Veltrusy.
The complex of flood control measures in the area of the middle Elbe in the segment between Kolín and Mělník – five measures in Turnov, Mnichovo Hradiště, Benátky nad Jizerou, Poděbrady and Mělník.

Flood control measures in the Dědina stream valley – their preparation is under way (design using water reservoir or polder Mělčany).

The complex of flood control measures in the area of the lower Elbe in the segment Štětí – Křešice – Hřensko. Six measures to protect Štětí, Křešice, the Lovosice area, Ústí nad Labem (Střekov and the town centre on the left bank of the Elbe) and Děčín.

Protection of Česká Lípa and municipalities in the flood area of the Ploučnice River, including flood control measures in the Svitávka River Basin – reconstruction of the Ploučnice River channel in Lázně Kundratice.

The complex of flood control measures and protection of municipalities in the area of confluence of the Ohře River and the Elbe – two measures to protect the towns of Bohušovice nad Ohří and Terezín.

Flood control measures to protect municipalities on the upper Opava River – preparation of the complex of measures to protect against floods in the upper Opava River Basin in the variant of a smaller water reservoir of Nové Heřminovy using nature-friendly measures in accordance with the Czech Republic Government Resolution No. 444 of 21 April 2008 and No. 119 of 16 February 2011. Investment Plan for measures on the upper Opava River was prepared and documents for building permit were prepared (for dry polders Jelení, Loděnice, Lichnov, for the revitalization of the Opava River in the segments Zátor – Brantice – Krnov, Kostelec and in the same segment also for the protection of land against floods). Under way is the preparation of construction of precipitation measuring and limnigraphic stations, also under way is property settlement (the Oder River Board, state enterprise owns and has ensured by contracts a total of 86.5% of the future flooded area of the water reservoir of Nové Heřminovy. In addition, land-use planning documentations for five municipalities were updated, with the inclusion of the prepared measures, in four other municipalities the update is in progress. Preliminary hydrogeological and engineering-geological survey was carried out along with land survey. Environmental impact assessment (EIA) was carried out and a report by the EIB strategic expert was prepared.

Flood control measures in the Liberec-Jablonec agglomeration – the Lužická Nisa River, Jablonec nad Nisou – flood control measures through the Mšeno hydraulic structure – project documentation and construction part.

Flood control measures in the area of Olomouc – measures to increase the river channel capacity, stage II A – project documentation and construction part and stage II B – project documentation.

Flood control measures in the area of Litovel – study of runoff conditions Litovelské Pomoraví, measures for the Třebůvka stream, Moravičany – damming and the Morava River – Mitrovice, protective dikes.

Flood control measures in the area of Uherské Hradiště and Staré Město – measures on the right bank of the Morava River in Napajedla, increasing the river channel capacity stage I for the Morava River – Staré Město, Uherské Hradiště.

The complex of flood control measures on the lower Bečva River and the confluence with the Morava River – Flood Control Dike Juřinka II, Pobečví – study of runoff conditions in preparation of flood control measures in the Bečva River Basin, using technical and nature-friendly measures, including dry polder Teplice, in accordance with the Government Resolution No. 259 of 13 April 2011.

Reconstruction of dry reservoirs (polders) and controlled inundations downstream of the Nové Mlýny hydraulic structure – the following flood control measures were completed, are under way or their preparation is under way: the Kurdějovský stream – increase in the stream channel capacity – completed under Flood Protection II; Feasibility study of nature-friendly flood control measures in the Dyje River and the Kyjovka River basins – its preparation is funded from the Operational Programme Environment (part is addressed also by Flood Protection in the following priority area „Improving retention at the confluence of the Morava River and the Dyje River"); Břeclav – flood protection – measures proposed by the town of Břeclav – under preparation for Flood Protection III; Bulhary – stabilization of the slope above the Dyje River, regulation of the Dyje River – failed to meet the conditions of Flood Protection II, now under preparation by the municipality of Bulhary from other sources; Protection of the Lednice Castle Park – failed to meet the conditions of Flood Protection II, currently the National Heritage Institute prepares measures to protect against damage caused by European beaver, which also address flood protection from other sources.

Improving retention at the confluence of the Morava River and the Dyje River – the following flood control measures were completed, are under way or their preparation is under way: Flood protection for the municipality of Prušánky (two polders upstream of the Lučnice watercourse), carried out within land consolidation; Feasibility study of nature-friendly flood control measures in the Dyje River and the Kyjovka River basins – its preparation is funded from the Operational Programme Environment (part is addressed also by Flood Protection in the previous priority area „Reconstruction of dry reservoirs (polders) and controlled inundations downstream of the Nové Mlýny hydraulic structure"); Flood protection for the town of Lanžhot – stage II (problems with the preparation under Flood Protection II – preparation under way for Flood Protection III).

Controlled inundations in the area of Kroměříž – in this priority area the following flood control measures were completed or their preparation is under way: Increasing the Mlýnský náhon stream channel capacity in the municipality of Vlkoš, completed (the project taken over from the Agricultural Water Management Administration); Hruška polder on the Žlebůvka stream – the preparation of this measure, taken over from the Agricultural Water Management Administration, is under way for Flood Protection III; The Bečva River in Troubky – protective dikes – under preparation for Flood Protection III.

Controlled inundations in the area of the Mohelnice Furrow – the preparation of the following flood control measures is under way: the Morava River in Dolní Bohdíkov – protective dikes – under preparation for Flood Protection III; the Merta stream, polder Sobotín – under preparation for Flood Protection III; the Desná River, polder Velké Losiny – under preparation for Flood Protection III.

2.3.4 Into the river basin district management plans to reflect the priority measures of flood prevention with demonstrable effect of reducing the risk of floods. The implementation of these measures will be ensured by river basin administrators, watercourse administrators, regions and municipalities. They will include, in particular:

a) nature-friendly measures in the landscape (natural overflowing, polders, stream channel modifications in built-up areas of municipalities),

b) measures to optimize the water regime of the landscape, increase its retention capacity and protect against water erosion (in particular, to carry out the revitalization of improperly regulated watercourses, inappropriate drainage and other interventions negatively affecting the water regime in the landscape, to reduce the occurrence of adverse effects of water erosion, to reduce the negative effects of surface runoff of water – infiltration belts, renewal of retention areas),
c) technical measures specified in the sub-programmes of the Ministry of Agriculture (Support for flood control measures with retention, Support for flood control measures along watercourses, Support for increasing the safety of hydraulic structures),
d) torrent control in forests (Section 35 of the Act No. 289/1995 Coll., on forests and on amendments to some acts (the Forest Act)), as amended.

2.3.5 By the end of 2008 to complete the definition of flood areas along major watercourses in built-up areas, in potential development areas according to land-use planning documentation, or as appropriate in other areas in order to determine the extent of potentially threatened areas and subsequently to reflect the identified facts in the river basin district management plans.

Defining flood areas was financially supported under the programmes Support for Flood Prevention, stages I and II. Currently, of the total length of 16,269 km of major watercourses, river basin administrators defined flood areas for a length of 12,170 km. This status can be considered satisfactory with regard to the fact that it is not practical to define flood areas along the entire length of watercourses, especially in foothills streams, and of filled water reservoirs. Of the defined flood areas, water authorities so far set flood areas, in accordance with Section 66 of the Water Act, along the watercourses in a length of 11,805.2 km, i.e. 97%.

2.3.6 In the river basin district management plans, in cooperation with the regions there will be defined areas that require flood protection in terms of significance, including standards for their protection, and the areas to be used to mitigate floods.

Relevant categorization of areas is specified in each river basin district management plan in chapters D.1.5. Areas with accelerated runoff of precipitation waters and inadequate pace of water storage, D.1.6. Places reducing flow capacity of watercourses and floodplains and areas where there is excessive sediment load and D.1.7. Definition of built-up areas that are unprotected or inadequately protected against floods.

2.3.7 In 2008–2009 to establish a long-term programme of research of extreme hydrological events, through coordinated actions at the level of the Ministry of the Environment, in agreement with the Ministry of Agriculture and the Ministry for Regional Development, in cooperation with universities and other professional institutions.

Koryčany hydraulic structure

In 2008, there was terminated the possibility of support from the Ministry of the Environment for new long-term research programmes. It is possible to make use of the Technology Agency of the Czech Republic. In 2012, there was completed a multi-year R&D project SP/1c4/16/07 supported by the Ministry of the Environment „Research and implementation of new tools for prediction of floods and runoff within flood warning and prediction service in the Czech Republic", addressed by the Czech Hydrometeorological Institute in cooperation with the Vltava River Board, state enterprise.

2.3.8 By 30 June 2009 to update on the precautionary principle the existing system of territorial protection of the sites that are hydrologically and morphologically suitable for the accumulation of surface waters in the long term, as one of the measures to adapt to expected climate change in the next 50 to 100 years, which may result in increased extremity of the occurrence of drought and flood situations. For this purpose to amend the Water Act (Natural Water Accumulation Protected Areas) by the addition of areas suitable for artificial accumulation of surface waters, while setting the regulators for territorial protection and authorizing to declare these sites by the Government Order effective no later than the adoption of the river basin district management plans. In preparing the list of sites suitable for accumulation of surface waters to take into account the socio-economic consequences of land preservation and consultation with the affected regions and municipalities.

Amendment No. 181/2008 Coll. incorporated into the Water Act the provision of Section 28a Areas protected for the accumulation of surface waters, according to which the Ministry of Agriculture in cooperation with the Ministry of the Environment prepared the General Plan of areas protected for the accumulation of surface waters and basic principles of the use of these areas. After discussions, the General Plan reduced the scope of territorial protection from 211 sites to 68 sites and is the basis for drafting the policy of land use development and land use planning documentation. It is made available to the public on the website of the Ministry of Agriculture http://eagri.cz/public/web/file/133229/Generel_LAPV___vc._protokolu.pdf.

2.3.9 Further develop, improve and modernize the equipment of information systems in the field of flood prediction and warning services at the national, regional and local levels. To do this, make use of the financial support under the Operational Programme Environment.

Department of Water Protection of the Ministry of the Environment issued a new Guidance Document to ensure flood prediction and warning services (Journal of the Ministry of the Environment 12/2011). Under 5 Calls, grants from the Operational Programme Environment supported more than 300 projects of local warning systems and reporting systems, where the condition for the granting of support was also the preparation of digital flood management plans and the availability of current information.

3.2 Measures in water management services

3.2.1 In the river basin district management plans identify priority projects to improve the quality of supplied drinking water and ensure drinking water supply for the population, so that these projects meet the objectives of grant programmes and allocated financial resources under the Operational Programme Environment, the Rural Development Programme for the period 2007–2013 and the programme of the Ministry of Agriculture „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure".

The relevant measures were included in the Chapter C.4.2 Measures applied to waters used or to be used for abstraction of water intended for human consumption. Here as well are a number of measures addressing the issues of reconstruction of sewerage systems which are included in Chapter C.4.6 Measures to reduce the discharges of pollutants from point sources and other activities impacting water status. There were identified priority projects only to improve the quality of surface waters used for the abstraction for drinking purposes, contributing also to improvements in the quality of supplied drinking water. Projects solely to improve the quality of supplied drinking water, such as construction and reconstruction of water treatment plants or reconstruction of distribution systems of drinking water were not included, after consultation with the water supply companies, in the river basin district management plans.

A specific measure to protect the water supply reservoir Fláje against pollution is a joint Czech-German project „Research of minimization of organic harmful pollutants in water sources in the Krušné hory Mountains" by the end of 2013; the results will allow to propose measures also in other catchment areas of water supply reservoirs with long-term deterioration of the quality of water from natural resources in the basin (peat bogs).

3.2.2 In the programmes of measures adopted by the river basin district management plans to apply, in locations using water sources with poor quality of surface water for abstraction for the purpose of treatment for drinking water, measures specified in the Plans to improve the quality of raw water.

Plans to improve the quality of raw water were prepared in 2003 within the framework of the implementation of Directive 75/440/EEC and since 2008 they are included in the river basin management plans; these conceptual materials served as a basis for preparation of river basin district management plans, e.g. for proposals for the construction of sewerage systems and waste water treatment plants and a general measure (B type) applied in several bodies of standing surface water is the measure called „Management in the protection zones of water resources", or under measure called „Measures in the catchment area". These measures impose a ban on or restrict activities that may affect yield, quality or health safety of a particular water source. In addition, they specify what technical measures should be carried out in the protection zones of a water source, or the manner and time limits for the use of land and buildings situated in these zones.

In the case of the Plan of Measures to improve water quality in the Myslivny water reservoir, based on declaration of the water supply company to ensure treatability (application of activated carbon in sand filters) exemption was obtained from the EU for the source of raw water fom the Myslivny water reservoir.

3.2.3 In updating regional development plans for water supply and sewerage systems to take into account relevant measures included in adopted river basin district management plans concerning the requirements for water services and water protection. In preparing development plans for water supply and sewerage systems to further focus on ensuring especially the following objectives: a) achieve improvements in the quality of supplied drinking water, b) improve dependable yield of water sources and the degree of meeting the demands for drinking water especially in extreme climatic conditions, c) rehabilitation of obsolete water supply systems showing frequent failures to reduce the negative effects of accidents and loss of water.

The regions under their own responsibility prepare and approve development plans for water supply and sewerage systems for their territories. Updates of these plans are prepared by relevant regional authorities on the basis of suggestions arising from the needs of individual towns and municipalities and other owners and operators of water supply and sewerage system infrastructure. The priority is to achieve improvements in the quality of supplied drinking water and to improve dependable yield of water sources and the degree of meeting the demands for drinking water.

3.2.4 With a view to improve the degree of meeting the demands for the provided water services to identify in the river basin district management plans, especially on the basis of the outputs of the technical and safety supervision, priorities of gradual renewal of hydraulic structures on watercourses associated with the provision of water services, to assess the degree of their long-term sustainable use, and/or the necessary level of financial support to be granted from the national sources in accordance with Section 102 of the Water Act.

In the river basin district management plans there were identified a total of 43 priority projects to improve the safety of hydraulic structures and to improve the degree of meeting the demands for the provision of water services, of which many were completed or are in progress. It should be noted that other projects are addressed by the River Boards, state enterprises beyond the river basin district management plans within the framework of multi-year plans of repairs and investments and under the Programme of flood prevention in accordance with Section 102 of the Water Act.

3.2.5 On the basis of economic analyses in the river basin district management plans to assess the social, environmental and economic consequences of covering all costs of water services from revenues from users.

This assessment was made in Chapter F Economic Analysis, which is an integral part of the adopted river basin district management plans. To evaluate the aspect of social acceptability of the level of water rate and sewage rate (in which also other fees and charges in water management are reflected), the methodology of the Ministry of the Environment for financial analysis of projects under the Cohesion Fund was used. This methodology considers the acceptable level for water rate and sewage rate 2% of the average net household income, counted on the basis of the average invoiced water per person in a given area.

Overall, it was stated that the pricing policy applied in accordance with relevant laws (especially the Water Act, Act on Water Supply and Sewerage Systems and Act on prices) provides for water users sufficient incentives for effective use of water resources. The application of higher payments in favour of the achieved environmental objectives and effectie use of water sources are mainly limited by social acceptability of prices for water rate and sewage rate and economic acceptability after reflecting relevant payments in products and services in the sectors of industry, power engineering and agriculture.

It was also stated that while socially acceptable level of water rate and sewage rate in the Czech Republic is considered the level of 2% of the average net household income and the reality already approximates this level, in advanced EU countries the level of water rate and sewage rate ranges only between 1.0 and 1.5% of the average net household income. Therefore, due to social acceptability of the price for this water service it will not be possible to markedly change the pricing policy towards an increase in environmental payments.

14.4 Implementation of the programme of measures adopted by the River Basin District Management Plans

The base for the River Basin District Management Plans there became results of the analysis of general and water management characteristics (hereinafter referred to as „the characterization of the River Basin District"), which was completed in 2004 within the framework of the so-called „Preparatory Work". A key step in the characterization was the designation of the basic units of the river basin district management, the water bodies. Standing surface water

bodies, running surface water bodies and groundwater bodies were designated. All water bodies were then assessed in terms of the impact of human activity on the status of water. The outcome was a list of risk posing water bodies that due to the impact of human activity will likely fail to meet by 2015 the limits for good water status.

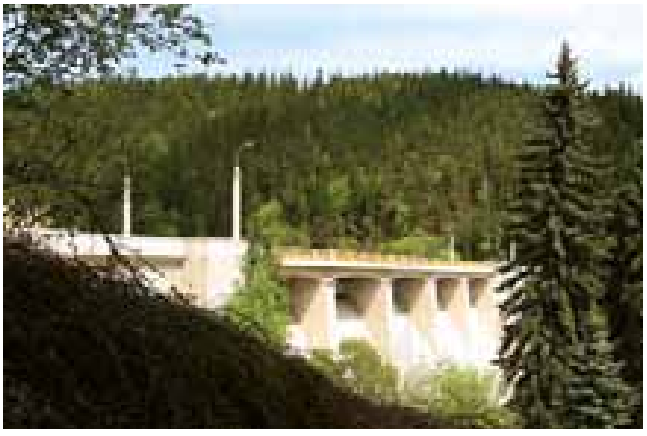
For the significant water uses, within the framework of the economic analysis, socio-economic data was collected and return on costs of water services provided in the relevant water basin district was evaluated.

In 2005–2007, additional data was collected and especially the characterization was refined. In 2006, the programme of operational monitoring focused on monitoring parameters to assess the status of water bodies was prepared.

The preparatory work was terminated by compiling a Preliminary Overview of Significant Water Management Issues, which along with risk assessment and status assessment of water bodies became a basis for the draft of the River Basin District Management Plan with the programme of measures, whose aim is to achieve good status of the river basin or water body.

River Basin District Management Plans were prepared in accordance with the then applicable Decree No. 142/2005 Coll., on water management planning and have 6 parts.

- **Description of the River Basin District (part A)** describes the designated river basin district and its characteristics and provides contact points and procedures for obtaining basic information on the stages of preparing the Plan.
- **Water use and its impact on water status (part B)** describes the current water uses, assesses the impact of such uses on water status and provides a list of risk posing water bodies. In addition, part B defines the requirements for water uses and proposes measures to meet these requirements.
- **Status and protection of water bodies (part C)** includes the description and results of status assessment of water bodies and protected areas, indicators and their limits that were used for the assessment, draft of the Programme of Measures and the final lists of water bodies that are likely to achieve good status and water bodies with expected extension of deadlines for achieving the objectives. Part C includes assessment lists of water bodies (presenting the results of status assessment, the proposed measures and estimated impact of the measures) for surface water bodies and groundwater bodies. A key part of this chapter is represented by lists of measures (including a description of each measure).
- **Flood protection and landscape water regime (part D)** describes the objectives of protection against the negative effects of extreme hydrological situations and for improving the landscape water regime, including the proposed measures. It contains lists of measures.



Březová hydraulic structure

- **Estimation of the impact of the measures on water status (part E)** deals with estimating the impact of the measures proposed to achieve the objectives.
- **Economic analysis (part F)** defines the economic importance of water use in the river basin district and predicts the trend of volume, prices and costs related to water services. Furthermore, cost-effectiveness of the measures is assessed.

In the following part, for the purposes of this report, the selected key information on eight River Basin District Management Plans is presented. Information includes:

- the number of surface water bodies defined in each river basin district,
- significant water management issues, identified in the river basin districts,
- ecological and chemical status of surface water bodies that was identified during the preparation of the river basin district management plans,
- the number and structure of the proposed measures.

The above mentioned information is further complemented by a review of the status of implementation of the proposed measures as of 31 December 2012 and the quantification of the costs of implementing these measures.

14.4.1 Key information from each River Basin District Management Plan

Key information from the River Basin District Management Plans is presented in eight separate sub-chapters – in the information sheets – for each River Basin District Management Plan.

In order to better orientate oneself in this chapter of the Report we present below basic explanatory text for the categories of information/sub-chapters, subsequently used to describe the characteristics and progress in the implementation of measures for each River Basin District Management Plan.

Water bodies

Bofy of water (surface water or groundwater) is the basic unit in the river basin district. A water body is considered to be one of the main tools for achieving the objectives of water management planning. Water bodies are characterized by ecological status/potential, chemical status and quantitative status and environmental objectives are set for them. The basic criterion for the designation of water bodies were their natural characteristics.

In the case of surface waters we distinguish running surface water bodies and standing surface water bodies. A specific category of surface water bodies are the so-called heavily modified water bodies. Heavily modified water body is a body of surface water which as a result of physical (hydromorphological) alterations by human activity is substantially changed in character.

Significant pressures on the status of waters in the river basin district

The essence of pressure assessment is the identification, localization and quantification of human activities (hereinafter referred to as pressures), which significantly affect the status of surface waters and groundwaters. In preparing the Plans, the following pressures were subjected to assessment:

- Point sources of water pollution (particularly with regard to nitrogen, phosphorus and hazardous substances)
- Diffuse sources of water pollution (with regard to nitrogen, phosphorus, pesticides, acidification)
- Morphological alterations on watercourses (watercourse covering or piping, watercourse straightening, impoundment,

bank reinforcement, longitudinal dikes and cross barriers)
- Water abstractions
- Other pressures (thermal pumps, land use)

Summary charts of the presence of significant pressures indicate the number of water bodies, in which the specific pressure was identified. The total sum of water bodies in these charts may, however, be higher than the total number of water bodies in the river basin district, as in one water body more significant pressures could be identified.

Status of water bodies

Status of surface water body is determined by the poorer of its ecological and chemical status. Status of heavily modified surface water bodies is determined by the ecological potential and chemical status. Status of groundwater body is determined by the poorer of its quantitative or chemical status. For the period of the first River Basin District Management Plans, i.e. until 2015, limits for good status of surface water bodies, groundwater bodies and protected areas were proposed.

Ecological status of water bodies is determined by the status of physico-chemical element and the status of biological element. In assessing the physico-chemical element, general physico-chemical parameters (such as BOD_5, nutrients, dissolved oxygen) and specific pollutants (especially synthetic substances that are not classified as priority hazardous substances).

Chemical status of surface waters and groundwaters is determined by concentrations of priority hazardous substances in water. These are synthetic substances (for example, some pesticides, solvents) and metals (cadmium, lead, nickel, mercury). In assessing the chemical status of groundwaters, also general physico-chemical parameters (such as nitrates, chlorides, sulphates, etc.) are assessed.

The resulting status of water body is determined by the poorest result of partial assessment of the status. This means that if a single parameter fails to achieve limits for good status, the water body is assessed to show poor status (even though for the remaining parameters the limits for good status are met).

The proposed measures

For water bodies that at the time of preparing the River Basin District Management Plans failed to achieve good status, there has been prepared the Programme of Measures, representing the integral part of the Plans. Requirements relating to the Programme of Measures are specified in amendment to the Act No. 254/2001 Coll., on waters and on amendments to some acts (the Water Act), and Decree No. 24/2011 Coll., on river basin management plans and flood risk management plans. The Programme of Measures is designed either as a set of specific measures for each of the river basin districts or as general legislative or other tools to cover all river basin districts. Two categories of measures are distinguished:
- basic measures
- additional measures

The basic measures include:
- measures to meet the set objectives of water protection
- measures to meet the requirements of environmental legal regulations of the EC (Chapter C.4.1)
- measures applied to waters used or to be used for the abstraction of water intended for human consumption (Chapter C.4.2)
- measures resulting from the water balance of perspective quantities and quality of surface waters and groundwaters (Chapter C.4.3)
- measures to regulate water abstractions and impoundments, including the justification for any exemptions (Chapter C.4.4)
- measures to prevent direct discharges into groundwaters, indicating the cases of permitted discharges (Chapter C.4.5)
- measures to reduce the discharges of pollutants from point sources and other activities impacting the status of waters (Chapter C.4.6)
- measures to reduce or stop the entry of especially hazardous substances into water (Chapter C.4.7)
- measures to prevent and reduce the impact of accidental pollution (Chapter C.4.8)
- measures for water bodies, which are unlikely to achieve the objectives of protection of water as the environmental compartment (Chapter C.4.9)
- additional measures necessary to meet the adopted objectives of protection of waters as the environmental compartment (Chapter C.4.10)
- measures relating to the application of the „polluter-pays" principle (Chapter C.4.12)
- measures to ensure adequate hydromorphological conditions of water bodies, allowing to achieve the required ecological status or good ecological potential (Chapter C.4.13)
- measures to regulate pollution from diffuse sources (Chapter C.4.14)
- measures to protect the area against floods (Chapter D)

Additional measures are proposed in the case that the basic measures will not be sufficient to achieve good water status. They include mainly legislative, administrative and economic instruments, codes of good practice, concluded environmental agreements, emission controls and water abstraction controls, revitalization projects, etc.

Measures included in the Programme of Measures of the River Basin District Management Plans are divided into three categories:
- **A type measure** is a measure, for which there is known the location in which the measure is to be implemented and is specified in predetermined units (for example, for measure such as the revitalization of watercourses there is known the length of the watercourse to be revitalized, etc.). Implementation plan, expected costs and funding strategy are specified for A type measures. Examples of such measures include the construction of sewerage systems, intensification of waste water treatment plants, revitalization of the watercourse, elimination of migration barriers on the watercourse, remediation of old contaminated sites, etc.
- **B type measure** is proposed in the event that the body of water in which the problem occurs is known, but the specific location for the implementation of the measure is not known. Examples of such measures include proper technological practices or principles of sound management, such as measures to protect waters against pollution caused by nitrates from agricultural sources, etc.
- **C type measure** is applied in the entire river basin district area and includes approved legislative procedures for protection of water bodies (for example, measures to prevent and mitigate the impact of accidental pollution).

Status of implementation of measures

Summary charts showing the status of implementation of measures were prepared on the basis of collected data on the status of implementation and the costs of specific measures in river basin district as of 31 December 2012. For the purposes of this report, the status of implementation and quantification of costs is presented only for A type measures. For B type and C type measures, which are measures of a general nature, only their proposed number in the River Basin District Management Plans is presented.

In case that the current status of implementation of the measure could not be identified or the costs of this measure could not be quantified (for example, if the investor was a private company, which refused to provide this information), this fact is referred to by a note indicating the number of measures in question.

14.4.1.1 The Upper and Middle Elbe River Basin District Management Plan

Characterization of the River Basin District

14.4.1.1.1 An overview map of the Upper and Middle Elbe River Basin District

Source: MoA

The most important watercourse of the backbone river network in the Upper and Middle Elbe River Basin District is the Elbe, which springs at Labská louka in the Krkonoše Mountains (Giant Mountains) at an altitude of 1,386 m a. s. l. Downstream of Vrchlabí the Elbe leaves the mountain region and flows through the foothills of the Krkonoše Mountains (Giant Mountains). In Jaroměř the Elbe receives left-hand tributaries, the Úpa River and the Metuje River, and downstream of Jaroměř the Elbe valley markedly widens and the river flows throuh the wide Elbe lowlands. In the stretch between Jaroměř and Mělník, the Elbe is joined by two major left-hand tributaries, the Orlice River in Hradec Králové and the Chrudimka River in Pardubice and near Brandýs nad Labem – Stará Boleslav the Elbe is joined by the right-hand tributary, the Jizera River.

In this river basin district there are 16 significant permanently operated water reservoirs, used for different purposes (water supply, flood protection, energy generation, recreation, etc.).

The Upper and Middle Elbe River Basin District covers an area of 14,735 km^2 and lies at an altitude of between 157 and 1,602 m a. s. l. Administratively, its area belongs to the Královéhradecký, Pardubický, Liberecký and Středočeský regions, marginal parts reach also the Vysočina region and the City of Prague.

The highest mountains in the Upper and Middle Elbe River Basin District are the Krkonoše Mountains, which are westwards followed by the Jizerské hory Mountains. The third highest mountain range in this area are the Orlické hory Mountains. The ridges of these mountains form the European divide separating the drainage areas of the Baltic Sea and the North Sea.

The Upper and Middle Elbe River Basin District includes the Krkonoše National Park and fully or partly also eight Protected Landscape Areas (fully included are the Broumovsko, Český ráj, Jizerské hory, Orlické hory and Železné hory Protected Landscape Areas, partly included is the Žďárské vrchy Protected Landscape Area and the river basin district is marginally reached by the Lužické hory and Kokořínsko Protected Landscape Areas). A separate category of protected areas are Nature Parks. In the river basin district, a total of 21 Nature Parks are situated, of which Orlice, Divoká Orlice, Ještěd, Maloskalsko, Hrádeček, Sýkornice, Chlum, Jabkenicko, Kersko and Suchý vrch – Buková hora can be considered the most significant Nature Parks.

In the Upper and Middle Elbe River Basin District, approximately 1.7 million people live in 1,443 municipalities. The average population density is 136 inhabitants per km^2. The least populated areas are located close to the border with Poland in the Krkonoše Mountains and the Orlické hory Mountains, where the population density ranges around 10 inhabitants per km^2. On the contrary, the most populated areas are in the vicinity of large cities (Prague, Liberec, Jablonec nad Nisou, Pardubice and Hradec Králové), where the average population density reaches more than 400 inhabitants per km^2.

Industrial production in the Upper and Middle Elbe River Basin District is concentrated in the line of towns Náchod – Hradec Králové – Pardubice – Chrudim, along the Middle Elbe as far as Mělník, in the agglomeration of Liberec – Jablonec nad Nisou, in Jičín, Kolín and Mladá Boleslav. In particular, the chemical, engineering, automobile, glass and textile industries are concerned.

14.4.1.1.1 Number of water bodies designated in the Upper and Middle Elbe River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	125
Number of heavily modified water bodies	11	78
Number of artificial water bodies	0	0
The total number of water bodies	**11**	**203**

Source: River Boards, s. e.

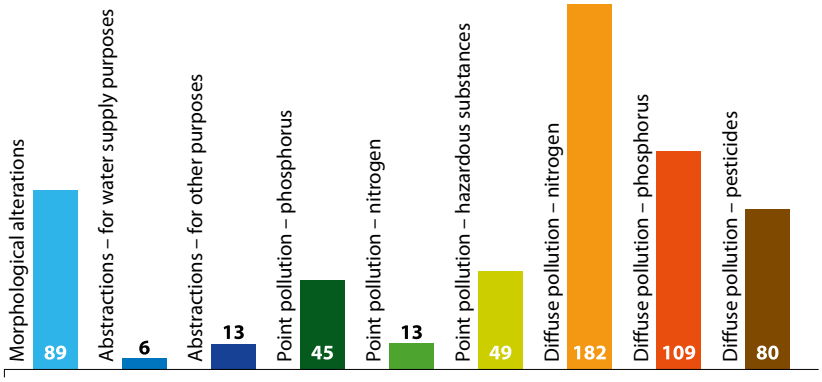
Significant pressures on the status of waters in the river basin district

In terms of pressures on the status of surface waters in the Upper and Middle Elbe River Basin District, a very significant impact is surface water pollution caused by nitrogen and phosphorus from diffuse sources. In terms of pesticide pollution from diffuse sources, a higher risk of pollution load by pesticides is concentrated in areas with a higher degree of tillage, which is present only in 80 water bodies (37%) and a very high degree of tillage exceeding 70% of the area of water body was found only in 32 water bodies. High degree of tillage is shown by watercourses that are largely situated in the most fertile areas of the Elbe lowlands. Due to changes related to reducing high-risk pesticide application in the entire Czech Republic, pesticide pollution of waters is of no crucial impact on the vast majority of water bodies.

In terms of pollution from point sources, the discharges of waste water from public sewerage systems were identified as the largest source of input of pollutants into the aquatic environment. The total volume of waste water discharged from public sewerage systems in 2005 amounted to 157 million m^3. The discharges of waste water from industrial sources were identified as the second largest source of point pollution. Agriculture produces a negligible amount of pollutants from point sources in comparison with other sectors.

A significant impact in the river basin district is also represented by morphological alterations consisting in covering or piping of streams, straightening of stream segments, shortening of stream segments, impoundment of stream segments, bank reinforcement, technical alterations of flow profile, longitudinal dikes, urbanization and cross barriers.

14.4.1.1.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

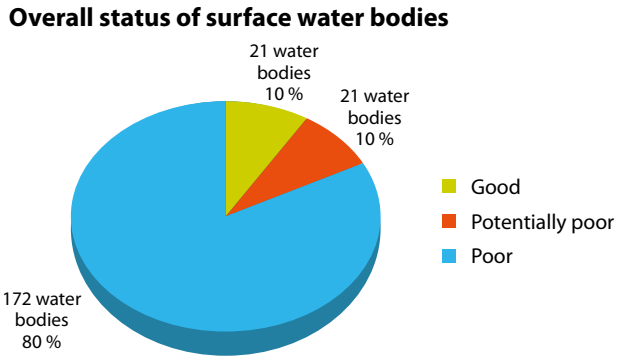
Within the Upper and Middle Elbe River Basin District, a total of 214 surface water bodies were identifed in the first river basin management planning cycle. Of the total number, 203 were running surface water bodies („river" type) and 11 were standing surface water bodies („lake" type). From the overall assessment (synthesis) it follows that 163 surface water bodies of river type showed poor status, 19 showed potentially poor status and 21 showed good status. From the overall assessment of standing surface water bodies it follows that 9 water bodies showed poor status, 2 showed potentially poor status and none of the water bodies showed good status. Furthermore, a total of 46 groundwater bodies were identified, of that 14 upper layer groundwater bodies, 31 main (base) layer groundwater bodies and 1 deep layer groundwater body. From the overall assessment (synthesis) it follows that 33 groundwater bodies were assessed to show poor status, 7 were assessed to show potentially poor status and 6 were assessed to show good status.

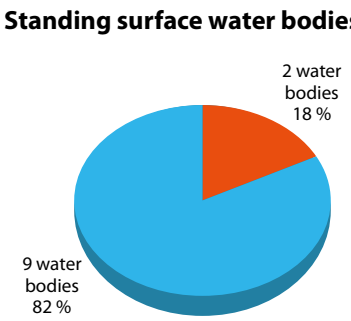
The proposed measures

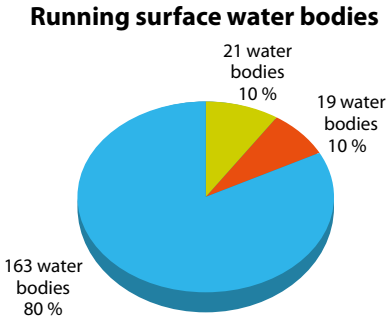
The draft of the measures was based on the estimated status of water bodies as of 2015 and on the Overview of the Significant Water Management Issues identified in the Upper and Middle Elbe River Basin in 2007. The key aspect for the selection of measures was the assessment of their contribution, impact and adequacy of expended costs. The selection of measures was first conducted at the level of individual water bodies, and afterwards was followed by the aggregation of measures for the entire river basin district.

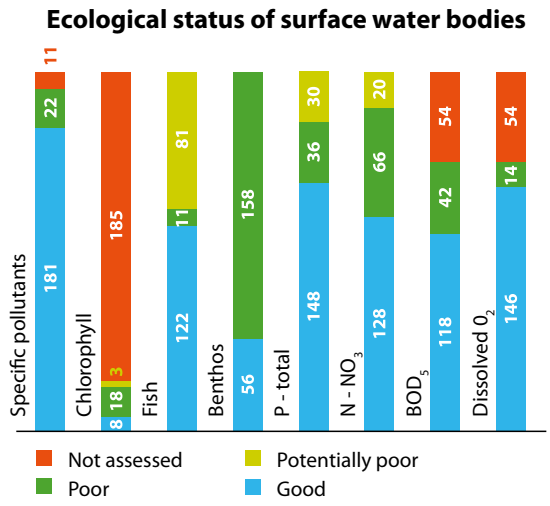
In the Upper and Middle Elbe River Basin District Management Plan, a total of 331 measures were proposed, of that 287 were A type measures, 34 were B type measures and 10 were C type measures. The most common is the measure to reduce the discharges of pollutants from point sources and other activities impacting water status (122), which includes primarily the construction, intensification or modernization of waste water treatment plants and the construction or reconstruction of sewerage systems. Furthermore, the most numerous measures include measures to ensure adequate hydromorphological conditions of the water body, allowing to achieve the required ecological status or good ecological potential (84). The measures in question are intended to remedy the impacts of the technical measures taken on watercourses. The most frequent measures in this category are fish passes, the removal of covering of the watercourse, restoration of the natural contours of the watercourse in the stream channel, activation, restoration and establishment of the lateral branches, pools and wetlands. In addition, measures to reduce or stop the entry of especially hazardous substances to water (55), which are focused on the elimination of pollution from industrial sources in relation to surface waters and in relation to groundwaters impacted by old contaminated sites. The last of the numerous measures is the measure to protect against floods (41), which includes the construction of dry reservoirs and polders, adaptation of stream channels, improving the retention of the landscape and other flood control measures.

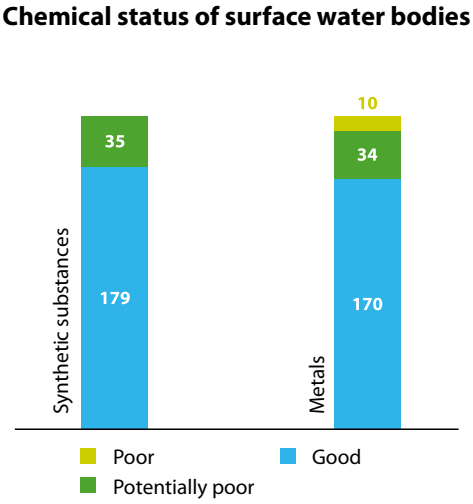
14.4.1.1.3 Surface water bodies





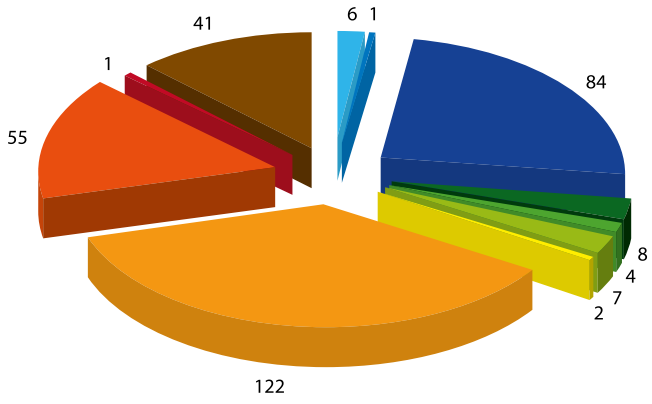






Source: River Boards s. e., MoA

14.4.1.1.4 Number of measures proposed in the River Basin District Management Plan by the measure types



- Additional measures necessary to meet the adopted objectives of protection of waters as the environmental compartment (Chapter C.4.10)
- Measures relating to the application of the „polluter-pays" principle (Chapter C.4.12)
- Measures to ensure adequate hydromorphological conditions of water bodies (Chapter C.4.13)
- Measures to regulate pollution from diffuse sources (Chapter C.4.14)
- Measures applied to waters used or to be used for the abstraction of water intended for human consumption (Chapter C.4.2)
- Measures to regulate water abstractions and impoundments (Chapter C.4.4)
- Measures to prevent direct discharges into groundwaters, indicating the cases of permitted discharges (Chapter C.4.5)
- Measures to reduce the discharges of pollutants from point sources (Chapter C.4.6)
- Measures to reduce or stop the entry of especially hazardous substances to water (Chapter C.4.7)
- Measures to prevent and reduce the impact of accidental pollution (Chapter C.4.8)
- Measures to protect against floods (Chapter D)

Source: River Boards, s. e., MoA

Status of implementation of measures

Under Chapter C.4.13 Measures to ensure adequate hydromorphological conditions of the water body, allowing to achieve the required ecological status or good ecological potential, 20% of measures in the total amount of CZK 157.2 million were completed. The remaining measures are in progress, mostly because of complicated property relations or financial coverage of the measures. Under Chapter C.4.6 Measures to reduce the discharges of pollutants from point sources and other activities impacting water status, 25% of the measures in the total amount of CZK 1,475,200 million were completed. The remaining measures are in progress and 10% of the measures have not been launched. The responsibility for the measures under Chapter C.4.6 is in most cases borne by operators and owners of sewerage systems and the Elbe River Board, state enterprise so has not a direct influence on the implementation. Under Chapter C.4.7 Measures to reduce or stop the entry of especially hazardous substances to water, approximately 25% of the measures in the amount of CZK 469.8 million were completed. The remaining measures are in progress and two have not been launched. Under Chapter D, Measures to protect against floods, 50% of the measures in the total amount of CZK 833.2 million were completed. Five measures are in progress and 30% have not been launched, mostly because of complicated property relations. Most of the projects are implemented by river basin administrators with financial support granted from the EU Funds, national sources of financial support (co-financing of the Operational Programme Environment), Programmes of the state budget of the Czech Republic (MoA and MoE) and own and other sources.

14.4.1.1.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	1	5
C.4.12	0	0	0	0	0	0	0	1
C.4.13	71	14	157.2	57	785.4	0	12	1
C.4.14	0	0	0	0	0	0	8	0
C.4.2	2	0	0	2	45.0	0	2	0
C.4.4	0	0	0	0	0	0	7	0
C.4.5	0	0	0	0	0	0	0	2
C.4.6	120[1)]	30	1,475.2	73	8,234.7	12	2	0
C.4.7	53[2)]	15	469.8	23	8,760.3	2	2	0
C.4.8	0	0	0	0	0	0	0	1
D	41	22	833..2	5	108.8	14	0	0
Measures in total	**287**	**81**	**2,935.4**	**160**	**17,934.3**	**28**	**34**	**10**

Source: River Boards, s. e., MoA

Note: [1)] Costs could not be quantified for 4 measures, the status and costs of implementing the measure could not be given for 5 measures.

[2)] The status and costs of implementing the measure could not be quantified for 13 measures.

14.4.1.2 The Ohře River and the Lower Elbe River Basin District Management Plan

Characterization of the River Basin District

14.4.1.2.1 An overview map of the Ohře River and the Lower Elbe River Basin District

Source: MoA

14.4.1.2.1 Number of water bodies designated in the Ohře River and the Lower Elbe River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	134
Number of heavily modified water bodies	10	2
Number of artificial water bodies	1	1
The total number of water bodies	**11**	**137**

Source: River Boards, s. e.

The territory of the Ohře River and the Lower Elbe River Basin District is situated in the northwest part of the Czech Republic. Its total area is 9,518.9 km^2. It covers the Elbe River Basin downstream of the confluence with the Vltava River as far as the state border with Germany (including marginal river basins of the Elbe tributaries in Germany) and the Mandava River Basin. The entire western and northern boundary of the area is identical with the state border.

The Ohře River and the Lower Elbe River Basin District reaches a total of five regions, namely the Ústecký, Karlovarský, Liberecký, Středočeský and Plzeňský regions and the administrative territories of 33 municipalities with extended authority.

Backbone watercourse in the River Basin District is the Lower Elbe from the confluence with the Vltava River as far as the state border of the Czech Republic. The largest left-hand tributaries of the Elbe are the Ohře River and the Bílina River, draining most of the Krušné hory Mountains system. The Ohře River, the second most important watercourse in the River Basin District, flows to the territory of the Czech Republic from the west from the Federal Republic of Germany, further generally trending northeastwards as far as Litoměřice, where it empties into the Elbe. The Ohře River Basin covers an area of 5,613.7 km^2. The most significant right-hand tributaries of the Elbe are the Ploučnice River and the Kamenice River, draining waters from as far as the Lužické hory Mountains, the other tributaries are mostly shorter watercourses from the Bohemian table. In the Ohře River and the Lower Elbe River Basin District there are a number of water reservoirs, of which the Nechranice water reservoir on the Ohře River has the largest volume.

For the protection of habitats and species a total of 137 areas were identified. Of that, 60 areas represent sites of European importance and 75 areas are selected small-scale specially protected aras. There are two water-related bird protection areas. In addition, five Protected Landscape Areas and a National Park are situated in the River Basin District.

In the Ohře River and the Lower Elbe River Basin District, a total of 148 surface water bodies were defined, of that 137 running water bodies and 11 standing water bodies. In addition, 29 groundwater bodies were defined, of that 2 upper layer groundwater bodies, 25 main (base) layer groundwater bodies and 2 deep layer groundwater bodies.

Significant pressures on the status of waters in the river basin district

For the purposes of the River Basin District Management Plan, water uses were divided as follows: morphological pressures, then by the type of impact on water status into water uses affecting the quality and quantity of water (point sources of pollution), water uses affecting only the quality of water (diffuse sources of pollution) and water uses affecting only the quantity of water (abstractions, transfers, accumulation). Water uses were assessed separately for surface waters and groundwaters.

Water use is very significantly manifested by morphological pressures, causing variations from the natural state of watercourse channels.

A significant pressure in the River Basin District is represented by the discharges of waste water. In 2006, in the River Basin District a total of 648 millions m^3 of waste water were discharged. Of the registered 526 sources of the discharges, 35% of the total amount of the discharges were accounted for by 77 largest waste water producers (over 500,000 m^3/year). In terms of the share of each sector in the total amount of the discharged waste water, dominant is the energy sector (60%), followed by municipal sources (16%), industry (13%) and the discharges of waste water from mining operations (10%). The share of agriculture and other not included sources in the total amount of the discharged waste water reaches only 1%.

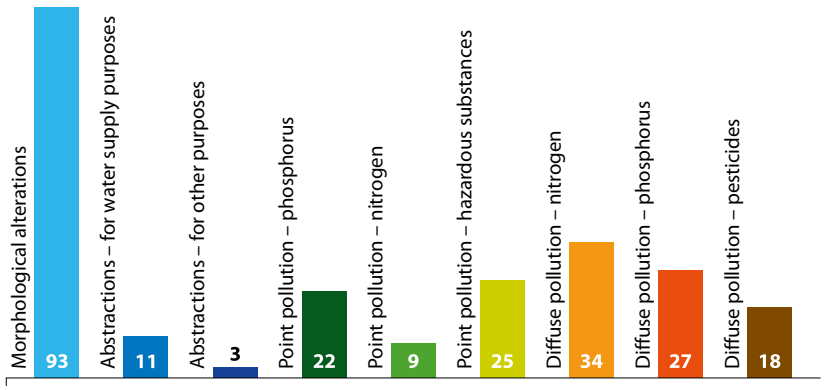
Significant pressures in the River Basin District also include diffuse pollution. One of the most important sources of nitrogen, phosphorus and pesticides is diffuse pollution from agriculture. Another important source of nitrogen is atmospheric deposition. Very high nitrogen load was identified in 3%, and high nitrogen load in 13% of the total number of water bodies.

Another significant pressure is documented by the distribution of the total amount of abstracted surface water in 2006, which amounted to 618 million m^3 of water. Of this amount, 72% are accounted for by the energy sector and 15% by the sector of industry.

In terms of point sources of pollution that represent a significant pressure in the River Basin District, a total of 573 old contaminated sites were identified, of which 69 were assessed to be risk posing.

In diffuse pollution of groundwaters, similarly to surface waters, the most important are inputs from agriculture (nitrogen and pesticides) and atmospheric deposition (sulphur and nitrogen).

14.4.1.2.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

The basic problem at the time of preparing the Ohře River and the Lower Elbe River Basin District Management Plan was lack of data from monitoring of biological elements and some unclarity as to the procedure of their assessment.

Because it is clear, however, that even in the future River Basin District Management Plan there will not be available all monitored data (again, mainly for biological elements) for all surface water bodies, the further work will have to focus on defining and demonstrating the relationship between classical measured indicators, anthropogenic pressures, complementary assessment (hydromorphological elements) and the status of biological elements.

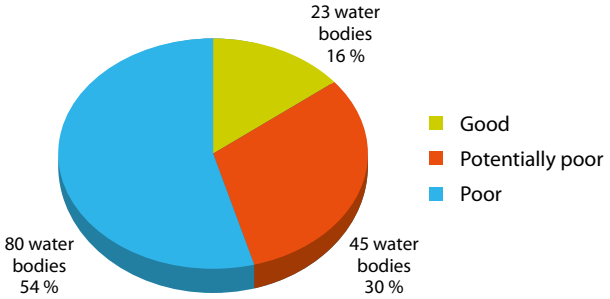
For the assessment of the chemical status it was necessary to use some procedures and results from the characterization of the river basin district, i.e. the assessment of anthropogenic pressures and effects. For the assessment, both direct assessment (results of monitoring) and indirect assesment (assessment of significant anthropogenic pressures) was used.

The resulting ecological status is determined by the poorer of the results of assessment of biological and physico-chemical elements. In the procedure performed, both assessments were conducted independently and the resulting ecological status was determined by the poorer of them. If necessary, the results of morphological assessment were taken into account.

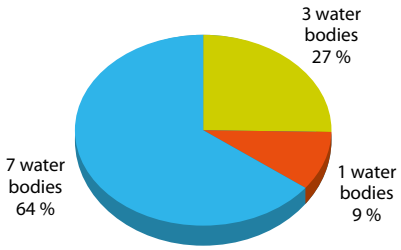
The Elbe, Vliněves

14.4.1.2.3 Surface water bodies

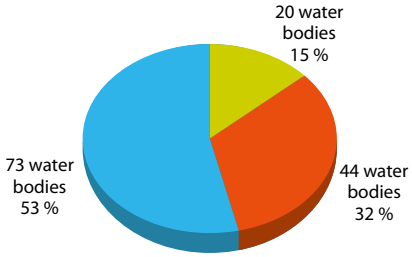
Overall status of surface water bodies



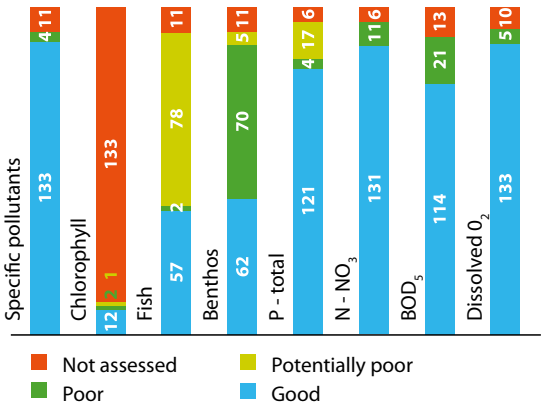
Standing surface water bodies



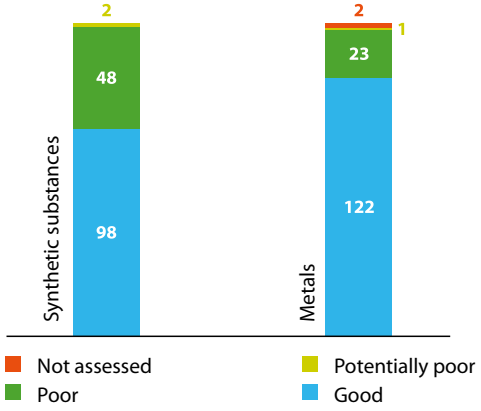
Running surface water bodies



Ecological status of surface water bodies

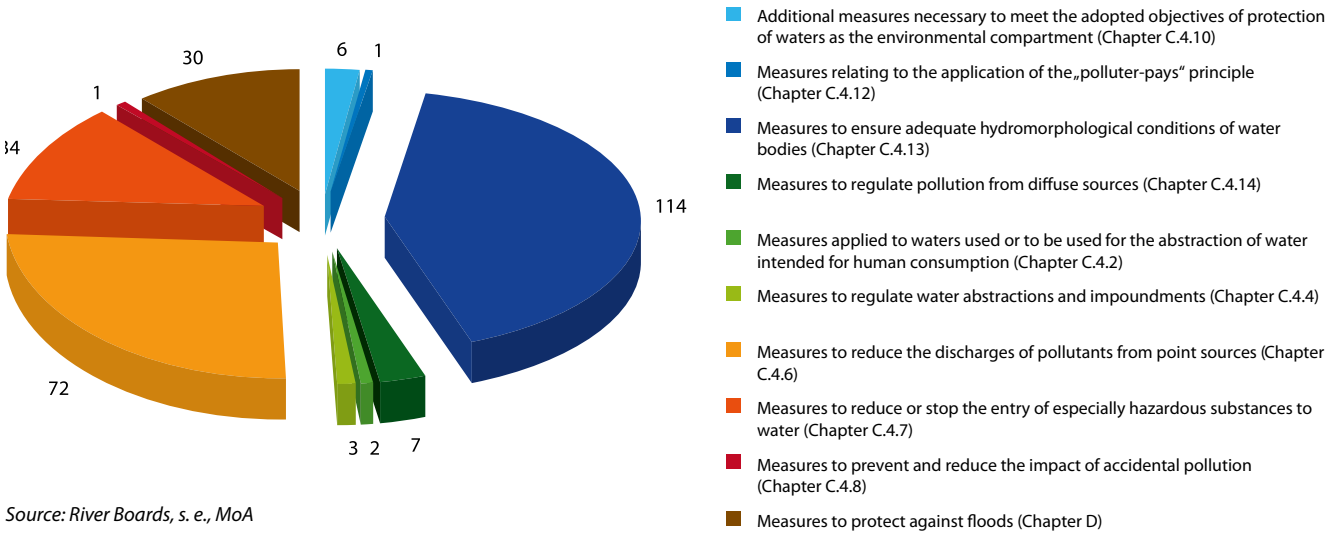


Chemical status of surface water bodies



Source: River Boards, s. e., MoA

14.4.1.2.4 Number of measures proposed in the River Basin District Management Plan by the measure types



Source: River Boards, s. e., MoA

The proposed measures

In the Ohře River and the Lower Elbe River Basin District Management Plan, a total of 270 measures were proposed, of that 242 were A type measures, 21 were B type measures and 7 were C type measures.

Status of implementation of measures

In the Ohře River and the Lower Elbe River Basin District Management Plan, a total of 242 specific A type measures are proposed, of which 212 are measures to achieve the objectives of protection of waters as the environmental compartment (hereinafter „environmental measures“) and 30 are flood control measures. Of the total number of proposed measures, 176 were included in the Programme of Measures, of that 156 environmental measures and 20 flood control measures as binding measures, issued by the Order of the relevant region.

By the end of 2012, a total of 49 environmental measures and 9 flood control measures were completed. 124 environmental measures and 8 flood control measures are in progress in the form of project preparation or ongoing construction work.

In implementing measures, investors face many problems and already today it can be stated that not all measures under the Ohře River and the Lower Elbe River Basin District Management Plan will be realized. The main causes include, in particular, complicated property relations or lack of sufficient funding.

In the Ohře River and the Lower Elbe River Basin District Management Plan, also 21 general measures of B type are included. B type measure was proposed in the cases, where the water body in which the problem occurs was known, but the specific site for the implementation of the measure was not known. Implementation plan and funding strategy were not known as well. The list of B type measures proposes appropriate practices which are applied in the decision-making and land-use planning activities of the authorities and in administrative and opinion-expressing activities of the river basin administrators.

C type measures are applied to the entire river basin district area and include approved practices to protect water bodies. In the Ohře River and the Lower Elbe River Basin District Management Plan, a total of 7 measures of C type are proposed.

14.4.1.2.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	1	5
C.4.12	0	0	0	0	0	0	0	1
C.4.13	110[1)]	12	35.7	82	1,135.8	16	4	0
C.4.14	0	0	0	0	0	0	7	0
C.4.2	0	0	0	0	0	0	2	0
C.4.4	0	0	0	0	0	0	3	0
C.4.6	70[2)]	30	1,621.8	23	1,206.4	5	2	0
C.4.7	32[3)]	7	459.0	19	28,556.7	5	2	0
C.4.8	0	0	0	0	0	0	0	1
D	30	9	259.5	8	2,920.6	9		0
Measures in total	**242**	**58**	**2,376.0**	**132**	**33,819.5**	**35**	**21**	**7**

Source: River Boards, s. e., MoA

Note: [1)] Costs of implementing the measure could not be quantified for 4 measures.

[2)] Costs of implementing the measure could not be quantified for 14 measures, the status and implementation could not be given for 12 measures.

[3)] Costs of implementing the measure could not be quantified for 4 measures, the status and implementation could not be given for 1 measure.

14.4.1.3 The Berounka River Basin District Management Plan

Characterization of the River Basin District

14.4.1.3.1 An overview map of the Berounka River Basin District

Source: MoA

The Berounka River Basin District is situated in the western part of Bohemia. The major part (approx. 95%) falls into the main Elbe River Basin. A smaller part (approx. 5%) along the state border with the Federal Republic of Germany falls into the main Danube River Basin.

The Berounka River Basin District covers an area of 9,270.621 km^2. The backbone watercourses in the upper part of the Berounka River Basin District are the Mže River, the Radbuza River, the Úhlava River and the Úslava River, the backbone watercourse in the lower part of the river basin is the Berounka River, whose major tributaries are the Střela River, the Klabava River and the Litavka River.

The predominant part of the Berounka River Basin District is situated in the Plzeňský region, the eastern part lies in the Středočeský region and reaches the territory of the City of Prague, the northern margin extends to the Karlovarský region. The Berounka River Basin District only insignificantly touches the Ústecký region.

14.4.1.3.1 Number of water bodies designated in the Berounka River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	93
Number of heavily modified water bodies	6	0
Number of artificial water bodies	0	0
The total number of water bodies	**6**	**93**

Source: River Boards, s. e.

The Berounka River Basin District has a population of approx. 766 thousand and population density is 80 inhabitants per km^2. The centre of economic activity is in the Plzeňský region, also significant is the Středočeský region. Economy of the area is dependent on water conditions and resources, economy itself then constitutes a threat to the aquatic environment. In this area, strongly represented are engineering industry, electrical industry, food processing industry, ceramic industry, wood processing industry, industry of building materials and metallurgy. Kaolin, limestone, brick clays, ceramic clays and stone are extracted in this area. In agriculture, cereals and forage crops growing is predominant, forestry is also developed. The western part of the area is characterized by cattle breeding.

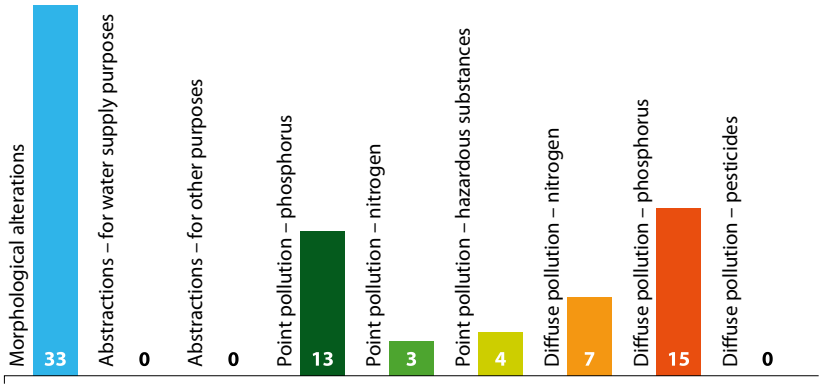
In the Berounka River Basin District, Šumava National Park and 5 Protected Landscape Areas, namely Český kras (Bohemian Karst), Český les (Bohemian Forest), Křivoklátsko, the Slavkovský les Mountains and the Šumava Mountains) are located. System Natura 2000 includes 3 bird conservation areas – the Doupovské hory Mountains, Křivoklátsko and the Šumava Mountains) and 85 sites listed in the national list of sites of Community importance.

Significant pressures on the status of waters in the river basin district

Significant pressures in the river basin were divided into three basic categories, which were reflected in the main categories of significant water management issues identified in the river basin. They included, in particular, water pollution by harmful substances from point and diffuse sources, morphological alterations of watercourses and problems of water scarcity associated with ensuring water abstractions.

Identification of significant pressures was performed before the establishment of monitoring programmes on the basis of available data, both directly and indirectly. For point pollution, for example, the discharges of waste water and mine water included in the water balance were used. For diffuse sources of pollution, data for nitrogen, phosphorus and pesticides were used and for atmospheric deposition – nitrogen from research programmes was used. For surface water abstractions and impacts on the hydrological regime, also data from the water balance were used. For morphological alterations of watercourses, selected data from the technical records (stream covering and piping, cross barriers) were used.

14.4.1.3.2 Number of surface water bodies with significant pressure

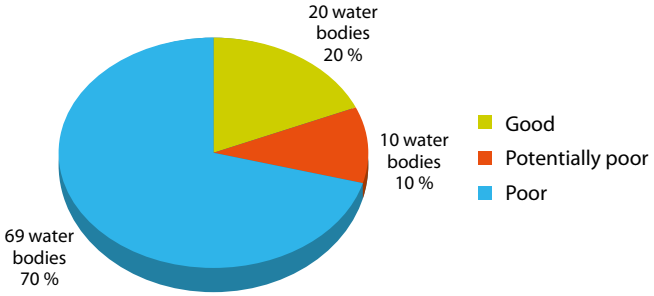


Source: River Boards, s. e., MoA

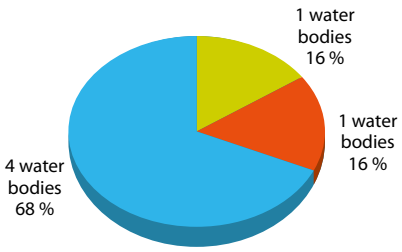
Based on the overall assessment of the River Basin District Management Plans approved in 2009 it can be stated that in regard to the assessment of the status of water bodies in this River Basin District there was confirmed the identification of significant pressures associated with morphological alterations of watercourses, insignificance of the pressures associated with water abstractions and significance of pollution caused by harmful substances from point sources. In contrast, the significance of diffuse phosphorus pollution was clearly largely overestimated and, on the other hand, the significance of diffuse pesticide pollution was underestimated.

14.4.1.3.3 Surface water bodies

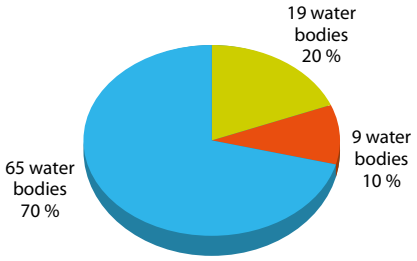
Overall status of surface water bodies



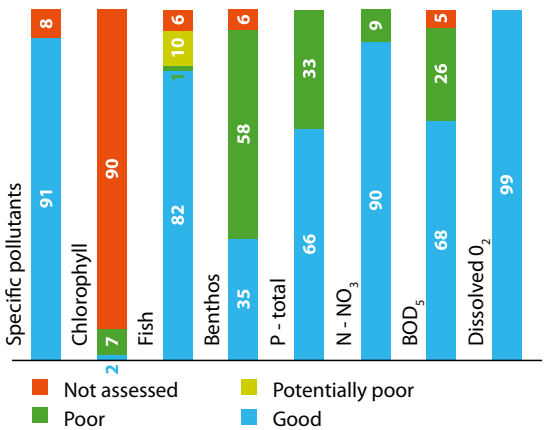
Standing surface water bodies



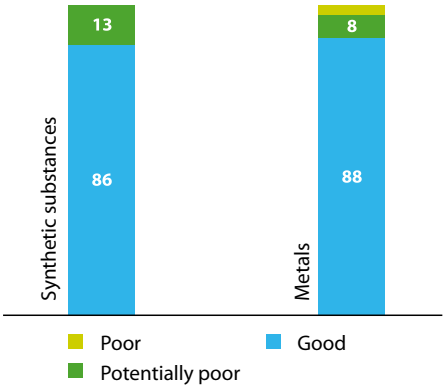
Running surface water bodies



Ecological status of surface water bodies



Chemical status of surface water bodies



Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

Status of surface water bodies was assessed on the basis of 134 indicators divided into two basic components – the chemical status and the ecological status. For water reservoirs, instead of ecological status their ecological potential was assessed. The assessment was very strict – if the measured values for a single indicator failed to comply with the values for good status, the overall status of the water body in question was assessed to be poor.

In terms of chemical status, the most polluted watercourse in the Berounka River Basin District is the Litávka River (two water bodies), where above-limit levels of lead and cadmium were identified – these are evidences of mining operations in the Příbram area. Sporadically, above-limit levels of cadmium were also identified in the Zubřina River and the Mže River upstream of the Hracholusky water reservoir. Above-limit levels of polyaromatic hydrocarbons were identified at less then half of the measured representative profiles – their source is, however, diffuse deposition from combustion processes and washings from paved asphalt areas. Above-limit levels of specific pollutants were identified only for dichloroethene in the Drnový stream.

The assessment of ecological status was based mainly on the assessment of biological elements and supporting general physico-chemical indicators. In terms of biological elements, most data were available for the assessment of macrozoobenthos, which was also the most critical indicator of ecological status assessment – poor status was identified for slightly more than half of surface water bodies. The cause was usually high load from municipal sources of pollution. This load was best characterized by indicators of total phosphorus and BOD_5. Poor status for these indicators was generally identified downstream of large agglomerations on minor watercourses such as the Zubřina River (Domažlice), the Radbuza River (a number of medium-sized settlements), the Litávka River and the Červený stream (Příbram and Hořovice) or the Loděnice stream (high density of settlements). Nitrate nitrogen load sometimes accompanied the above-mentioned municipal sources, but occurred also in some cases where the proportion of arable land reached or exceeded 50% of the catchment area of the water body in question.

The proposed measures

Measures aiming to improve the status of water bodies and to achieve their good status were, according to feasibility, state of preparation and funding possibilities, included in the programme of measures to be implemented or to be started to be implemented by the end of 2012. Measures which for various reasons could not be included in the programme of measures (insufficient progress of preparation, lack of funding) were included in the group of other measures, whose implementation is considered not sooner than after 2015.

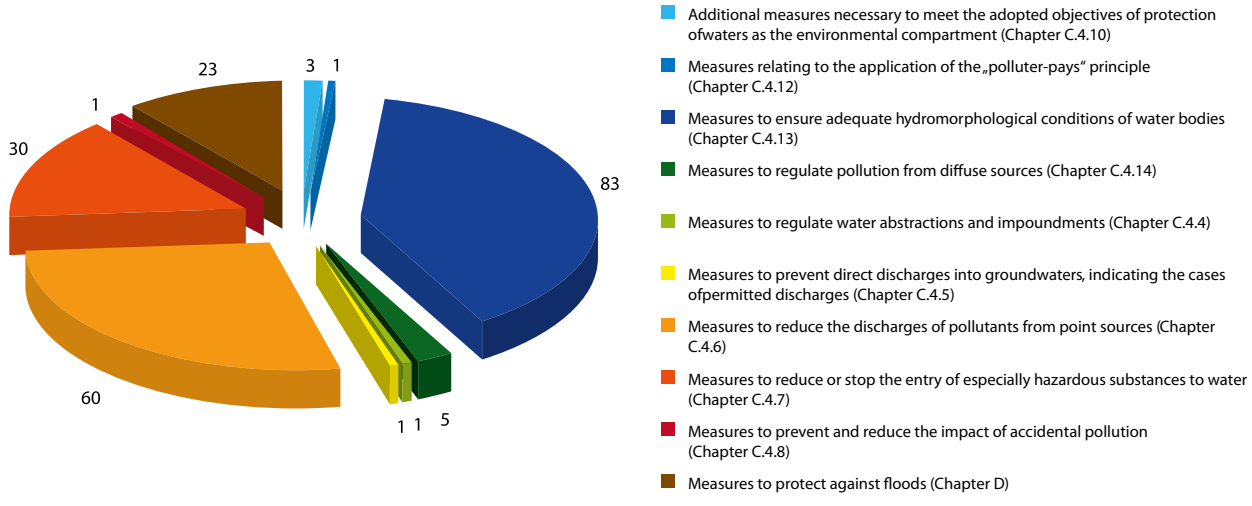
In preparing the programme of measures, the lists of measures were divided into three types – A, B and C. A type was for measures of a particular character (the measure has its holder and addresses the specific site in the specific manner with well-defined parameters). In the Berounka River Basin District Management Plan, under this A type there were proposed in total 176 measures relating primarily to waste water treatment plants (33 measures), sewerage systems (56 measures), revitalization of watercourses (59 measures) or old contaminated sites (28 measures). Some measures (lists of measures) address a combination of categories (for example, water treatment + sewerage).

Furthermore, in the Berounka River Basin District there were proposed 13 measures of B type – from measures to reduce the entry of especially hazardous substances, reduce the negative effects of pesticides, eliminate nitrogen as a diffuse source of pollution to surveillance monitoring.

C type measure is a general measure responding to the generally understood problem, which is addressed at the level of the legislation. 7 such measures apply to the Berounka River Basin District. They include, for example, prevention of accidental pollution, application of the „polluter-pays" principle and other similar measures.

Separately proposed were measures to mitigate the adverse effects of floods. In the Berounka River Basin District, 23 such measures were proposed. Of that, 14 measures for flood protection of specific locations, 3 measures to increase the watercourse channel capacity and 6 measures to protect existing hydraulic structures against floods.

14.4.1.3.4 Number of measures proposed in the River Basin District Management Plan by the measure types



Source: River Boards, s. e., MoA

Status of implementation of measures

The programme of measures included effective measures, whose assumed successful implementation was based on the state of preparation of projects. The funding of the programme of measures was ensured from the European funds, grant programmes of the state budget or own funds of those bearing the responsibility (region, municipality, watercourse administrator, etc.). During the preparation, for some of the measures it was not possible to settle property relations to the lands and some measures failed to be realized due to excessive administrative burden or lack of own funds.

Another factor, which was markedly reflected in the balance of the realized measures, was the fact that minor watercourses (on which in this River Basin District the predominant part of measures included C. 4.13 category measures – measures to ensure adequate hydromorphological conditions) were transferred from the responsibility of the abolished Agricultural Water Management Administration mostly to the Vltava River Board, state enterprise, which due to low degree of completion and preparedness of individual projects could not ensure their implementation in such extent and time.

In the Berounka River Basin District, in total 34 measures of A type (specific measure at the specific site) were realized, which is less than half of the proposed measures. The realization started for another 55 measures.

Table 14.4.1.3.2 provides an overview of the proposed and realized measures by type and objectives.

Measures that have not been realized, except for those that have proved to be ineffective or unfeasible in terms of accessibility of necessary land, will be reviewed again in the second river basin management planning cycle during the preparation of sub-basin management plans and potentially proposed for implementation in the years 2015–2018.

14.4.1.3.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	0	3
C.4.12	0	0	0	0	0	0	0	1
C.4.13	83	6	20.5	21	228.9	56	1	0
C.4.14	0	0	0	0	0	0	5	0
C.4.2	0	0	0	0	0	0	1	0
C.4.4	0	0	0	0	0	0	0	1
C.4.6	59*)	21	1,091.8	21	2,159.3	17	1	0
C.4.7	28	0	0	8	7,298.7	20	2	0
C.4.8	0	0	0	0	0	0	0	1
D	23	7	72.8	5	333.0	11	0	0
Measures in total	**193**	**34**	**1,185.1**	**55**	**10,019.9**	**104**	**10**	**6**

Source: River Boards, s. e., MoA
*Note: *) Costs of implementation could not be quantified for some measures, whose implementation is currently in progress.*

Chouzovy polder

14.4.1.4 The Upper Vltava River Basin District Management Plan

Characterization of the River Basin District

14.4.1.4.1 An overview map of the Upper Vltava River Basin District

Source: MoA

The Upper Vltava River Basin District is situated in the south of Bohemia. The major part (approx. 99%) falls into the main Elbe River Basin. A smaller part (approx. 1%) along the state border with the Federal Republic of Germany and Austria falls into the Danube River Basin.

The Upper Vltava River Basin District covers an area of 11,058.615 km^2. The backbone watercourse is the Vltava River, its most significant tributaries are the Malše River, the Lužnice River, the Otava River and the Lomnice River.

The major part of the Upper Vltava River Basin District is located in the Jihočeský region, the eastern part lies in the Vysočina region, the western part in the Plzeňský region and the northern part in the Středočeský region.

The Upper Vltava River Basin District has a population of approx. 673 thousand and population density is 60 inhabitants per km^2. The centre of economic activity is in the Jihočeský region. The Upper Vltava River Basin District has a rural character with developed fishpond management and forestry. Developed as well is manufacturing industry. Important natural resources include extensive coniferous forests, namely spruce and pine forests. The biggest mineral resources include deposits of sand and gravel sand, brick clay, stone and glass sands. In agriculture, dominant is cereals, oil bearing crops, forage crops and potato growing, followed by cattle and pig breeding. The total area of ponds used for fish farming is approx. 25,000 hectares. Also important is water poultry breeding.

In the Upper Vltava River Basin District, the Šumava National Park and 3 Protected Landscape Areas, namely Třeboňsko, Blanský les and the Šumava Mountains are located. System Natura 2000 includes 9 bird conservation areas (Třeboňsko, Údolí Otavy a Vltavy, Řežabinec, Hlubocké obory, Českobudějovické rybníky, Dehtář, Novohradské hory, Boletice and Šumava) and 92 sites listed in the national list of sites of Community importance.

14.4.1.4.1 Number of water bodies designated in the Upper Vltava River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	131
Number of heavily modified water bodies	15	7
Number of artificial water bodies	0	2
The total number of water bodies	**15**	**140**

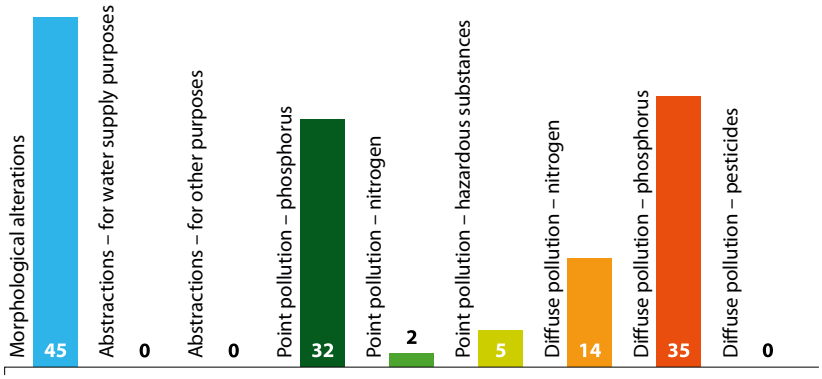
Source: River Boards, s. e.

Significant pressures on the status of waters in the river basin district

Significant pressures in the river basin were divided into three basic categories, which were reflected in the main categories of significant water management issues identified in the river basin. They included, in particular, water pollution caused by harmful substances from point and diffuse sources, morphological alterations of watercourses and problems of water scarcity associated with ensuring water abstractions.

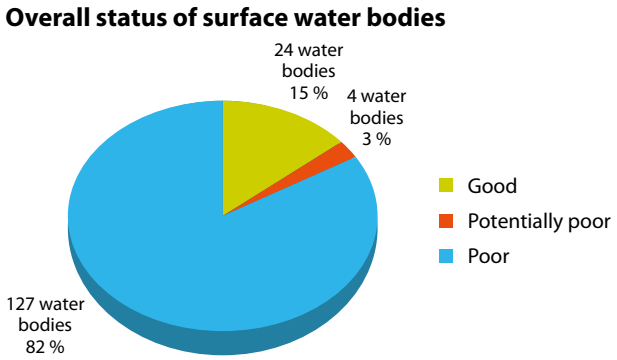
Based on the overall assessment of the River Basin District Management Plans approved in 2009 it can be stated that in regard to the assessment of the status of water bodies in this River Basin District there was confirmed the identification of significant pressures associated with morphological alterations of watercourses, insignificance of the pressures associated with water abstractions and significance of pollution caused by harmful substances from point sources and diffuse sources of nitrogen. In contrast, the significance of diffuse phosphorus pollution was clearly largely overestimated.

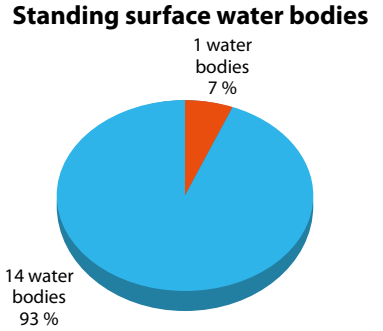
14.4.1.4.2 Number of surface water bodies with significant pressure

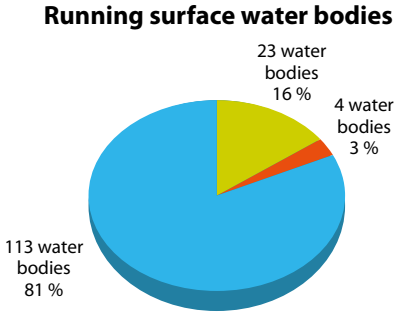


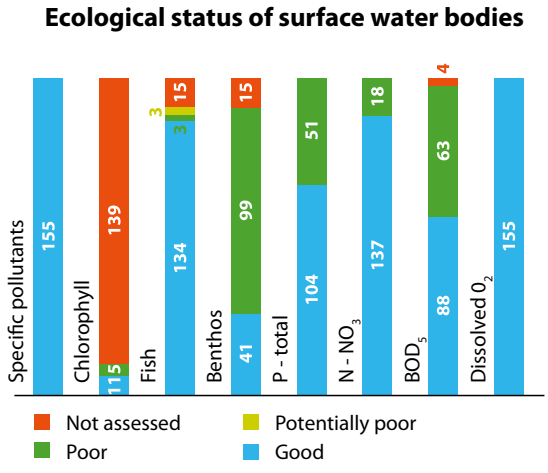
Source: River Boards, s. e., MoA

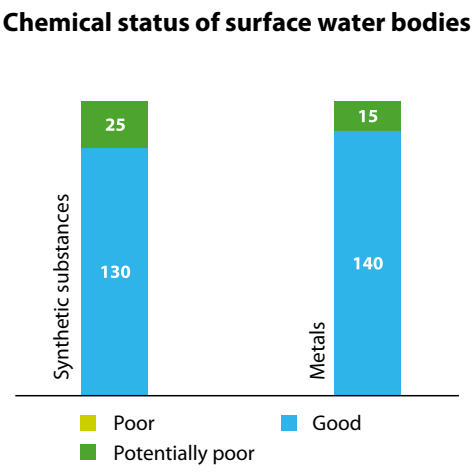
14.4.1.4.3 Surface water bodies











Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

Status of surface water bodies was assessed on the basis of 134 indicators divided into two basic components – the chemical status and the ecological status. For water reservoirs, instead of ecological status their ecological potential was assessed. The assessment was very strict – if the measured values for a single indicator failed to comply with the values for good status, the overall status of the water body in question was assessed to be poor.

In terms of chemical status, mercury contamination was only sporadically identified for 4 minor watercourses on the basis of data from monitoring, which was conducted by the Agricultural Water Management Administration. Laboratories of the Vltava River Board, state enterprise, however, later did not confirm the presence of mercury – probably incorrectly used method of determination. Above-limit levels of polyaromatic hydrocarbons were identified at more than two thirds of the measured representative profiles – their source is, however, diffuse deposition from combustion processes and washings from paved asphalt areas. Above-limit levels of specific pollutants were not identified.

The assessment of ecological status was based mainly on the assessment of biological elements and supporting general physico-chemical indicators. In terms of biological elements, most data were available for the assessment of macrozoobenthos, which was also the most critical indicator of ecological status assessment – poor status was identified for approximately two thirds of surface water bodies, including mainly the lower stretches of all main watercourses in the river basin, namely the Vltava River, the Lužnice River, the Otava River, the Blanice River, the Lomnice River and the Skalice River, including tributaries. The cause was usually high load from municipal sources of pollution and fishpond systems. This load was best characterized by indicators of total phosphorus and BOD_5. Poor status for these indicators was generally identified on minor watercourses and tributaries of major watercourses and indicates that on less watery streams waste waters are not treated in adequate manner. Nitrate nitrogen load in some cases accompanied the above-mentioned municipal sources but in this river basin district does not pose a major problem.

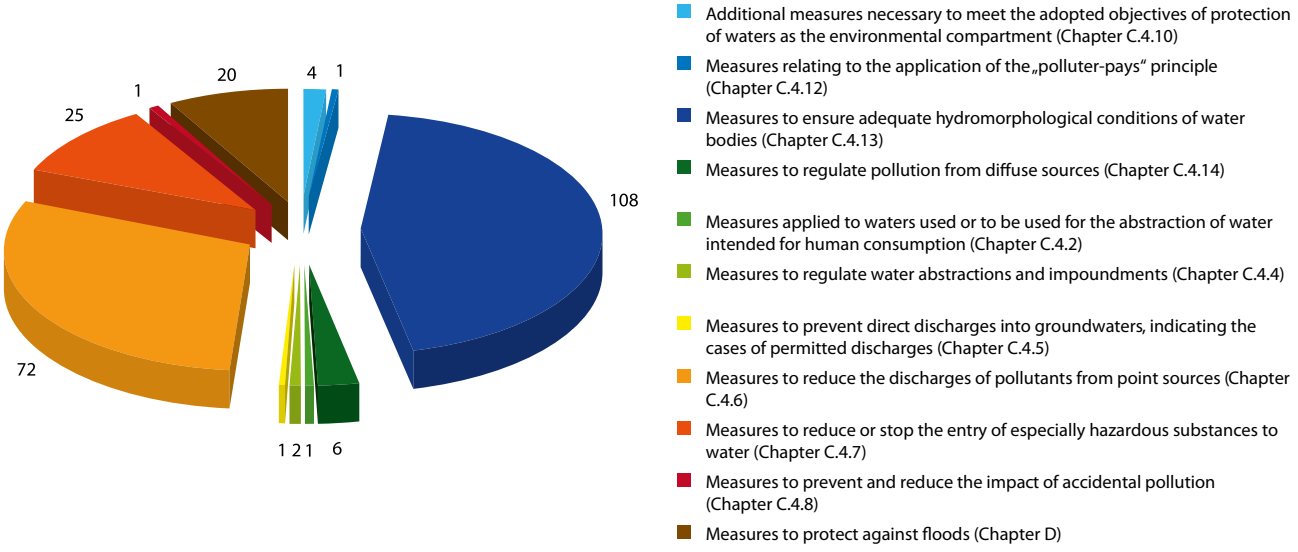
The proposed measures

Measures aiming to improve the status of water bodies and to achieve their good status were, according to feasibility, state of preparation and funding possibilities, included in the programme of measures to be implemented or to be started to be implemented by the end of 2012. Measures which for various reasons could not be included in the programme of measures (insufficient progress of preparation, lack of funding) were included in the group of other measures, whose implementation is considered not sooner than after 2015.

In preparing the programme of measures, the lists of measures were divided into three types – A, B and C. A type was for measures of a particular character (the measure has its holder and addresses the specific site in the specific manner with well-defined parameters). In the Upper Vltava River Basin District Management Plan, under this A type there were proposed in total 220 measures relating primarily to waste water treatment plants (42 measures), sewerage systems (56 measures), the revitalization of watercourses (98 measures) or old contaminated sites (23 measures). Some lists of measures address a combination of categories (for example, waste water treatment plants + sewerage). B type is a general measure addressing the site in question, but the manner of implementing is of only a framework character. In the Upper Vltava River Basin District there were proposed 15 measures of B type – from measures to reduce the entry of especially hazardous substances, reduce the negative effects of pesticides, eliminate nitrogen as a diffuse source of pollution to surveillance monitoring. C type measure is a general measure responding to the generally understood problem, which is addressed at the level of the legislation. 7 such measures apply to the Upper Vltava River Basin District. They include, for example, prevention of accidental pollution, application of the „polluter-pays" principle and other similar measures.

Separately proposed were measures to mitigate the adverse effects of floods. In the Upper Vltava River Sub-basin, 20 such measures were proposed. Of that, 9 measures for flood protection of specific locations, 7 measures to increase the watercourse channel capacity and 3 measures to protect existing hydraulic structures against floods or increase their retention capacity or new hydraulic structures. One of the measures was the design of nature-friendly flood control measures in the catchment area of the Nežárka River.

14.4.1.4.4 Number of measures proposed in the River Basin District Management Plan by the measure types



Source: River Boards, s. e., MoA

Status of implementation of measures

The programme of measures included effective measures, whose assumed successful implementation was based on the state of preparation of projects. The funding of the programme of measures was ensured from the European funds, grant programmes of the state budget or own funds of those bearing the responsibility (region, municipality, watercourse administrator, etc.). During the preparation, for some of the measures it was not possible to settle property relations to the lands and some measures failed to be realized due to excessive administrative burden or lack of own funds.

Another factor, which was markedly reflected in the balance of the realized measures, was the fact that minor watercourses (on which in this River Basin District the predominant part of measures included C. 4.13 category measures – measures to ensure adequate hydromorphological conditions) were transferred from the responsibility of the abolished Agricultural Water Management Administration mostly to the Vltava River Board, state enterprise, which due to low degree of completion and preparedness of individual projects could not ensure their implementation in such extent and time.

In the Upper Vltava River Basin District, in total 42 measures of A type (specific measure at the specific site) were realized, which is less than half of the proposed measures. The realization started for another 41 measures.

Table 14.4.1.4.2 provides an overview of the proposed and realized measures by type and objectives.

Measures that have not been realized, except for those that have proved to be ineffective or unfeasible in terms of accessibility of necessary land, will be reviewed again in the second river basin management planning cycle during the preparation of sub-basin management plans and potentially proposed for implementation in the years 2015–2018.

14.4.1.4.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	1	3
C.4.12	0	0	0	0	0	0	0	1
C.4.13	107	3	3.7	19	140.4	85	1	0
C.4.14	0	0	0	0	0	0	6	0
C.4.2	0	0	0	0	0	0	0	1
C.4.4	0	0	0	0	0	0	2	0
C.4.5	0	0	0	0	0	0	0	1
C.4.6	70	27	2,424.1	19	850.8	24	2	0
C.4.7	23	5	144.0	3	1,454.8	15	2	0
C.4.8	0	0	0	0	0	0	0	1
D	20	7	305.7	8	501.1	5	0	0
Measures in total	**220**	**42**	**2,877.5**	**49**	**2,947.1**	**129**	**14**	**7**

Source: River Boards, s. e., MoA

The Malše River – reconstruction of Jílek weir

14.4.1.5 The Lower Vltava River Basin District Management Plan

Characterization of the River Basin District

14.4.1.5.1 An overview map of the Lower Vltava River Basin District

Source: MoA

The Lower Vltava River Basin District is situated mostly in the hilly country of central Bohemia and its lower part changes to a flat territory between the Vltava River and the Elbe. The Lower Vltava River Basin District belongs to the main Elbe River Basin.

The Lower Vltava River Basin District covers an area of 7,249.12 km^2. The backbone watercourse is the Vltava River, its major tributaries are the Sázava River, the Mastník stream, the Kocába River, the Rokytka stream and the Bakovský stream. Major tributaries of the Sázava River are the Želivka River and the Blanice River. The lower part of the River Basin District is significantly influenced by the Berounka River, the backbone watercourse in the Berounka River Basin District, which empties into the Vltava River upstream of Prague.

The predominant part of the Lower Vltava River Basin District lies in the Středočeský region and a significant part lies in the Vysočina region. The River Basin District also reaches the territory of the City of Prague and the Ústecký region.

The Lower Vltava River Basin District has a population of 1,778 thousand and population density is 245 inhabitants per km^2. In terms of economic activity, entirely dominant is the City of Prague. Significant is especially the sector of services (public administration, commerce, health care, education, etc.). The upper part of the Sázava River Basin is an important potato growing area, the lower part is dominated by wheat, barley and rape growing. The surroundings of Prague are dominated by suburban agriculture – floriculture, vegetables and fruit growing. To the north of Prague, also wheat, barley and sugar-beet are grown.

In the Lower Vltava River Basin District, two Protected Landscape Areas (Blaník and Žďárské vrchy) are situated. System Natura 2000 includes 1 bird conservation area (Údolí Otavy a Vltavy) and 58 sites listed in the national list of sites of Community importance.

14.4.1.5.1 Number of water bodies designated in the Lower Vltava River Basin District Management Plan

	Surface water bodies	
	standing	**running**
Number of natural water bodies	0	73
Number of heavily modified water bodies	4	6
Number of artificial water bodies	0	0
The total number of water bodies	**4**	**79**

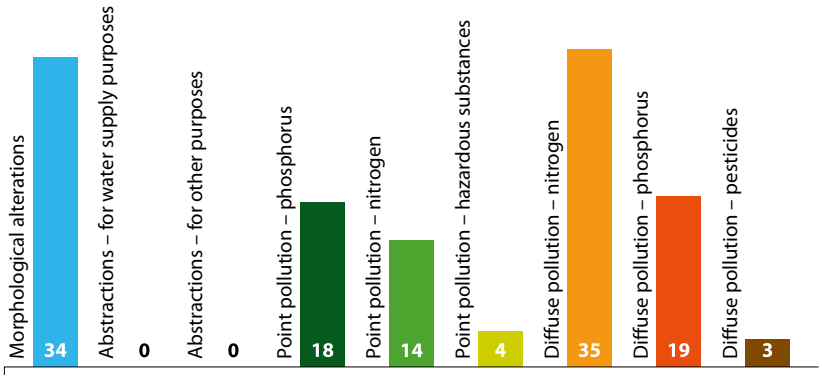
Source: River Boards, s. e.

Significant pressures on the status of waters in the river basin district

Significant pressures in the river basin were divided into three basic categories, which were reflected in the main categories of significant water management issues identified in the river basin. They included, in particular, water pollution caused by harmful substances from point and diffuse sources, morphological alterations of watercourses and problems of water scarcity associated with ensuring water abstractions.

Identification of significant pressures was performed before the establishment of monitoring programmes on the basis of available data, both directly and indirectly. For point pollution, for example, the discharges of waste water and mine water included in the water balance were used. For diffuse sources of pollution, data for nitrogen, phosphorus and pesticides were used and for atmospheric deposition – nitrogen from research programmes was used. For surface water abstractions and impacts on the hydrological regime, also data from the water balance were used. For morphological alterations of watercourses, selected data from the technical records (stream covering and piping, cross barriers) were used).

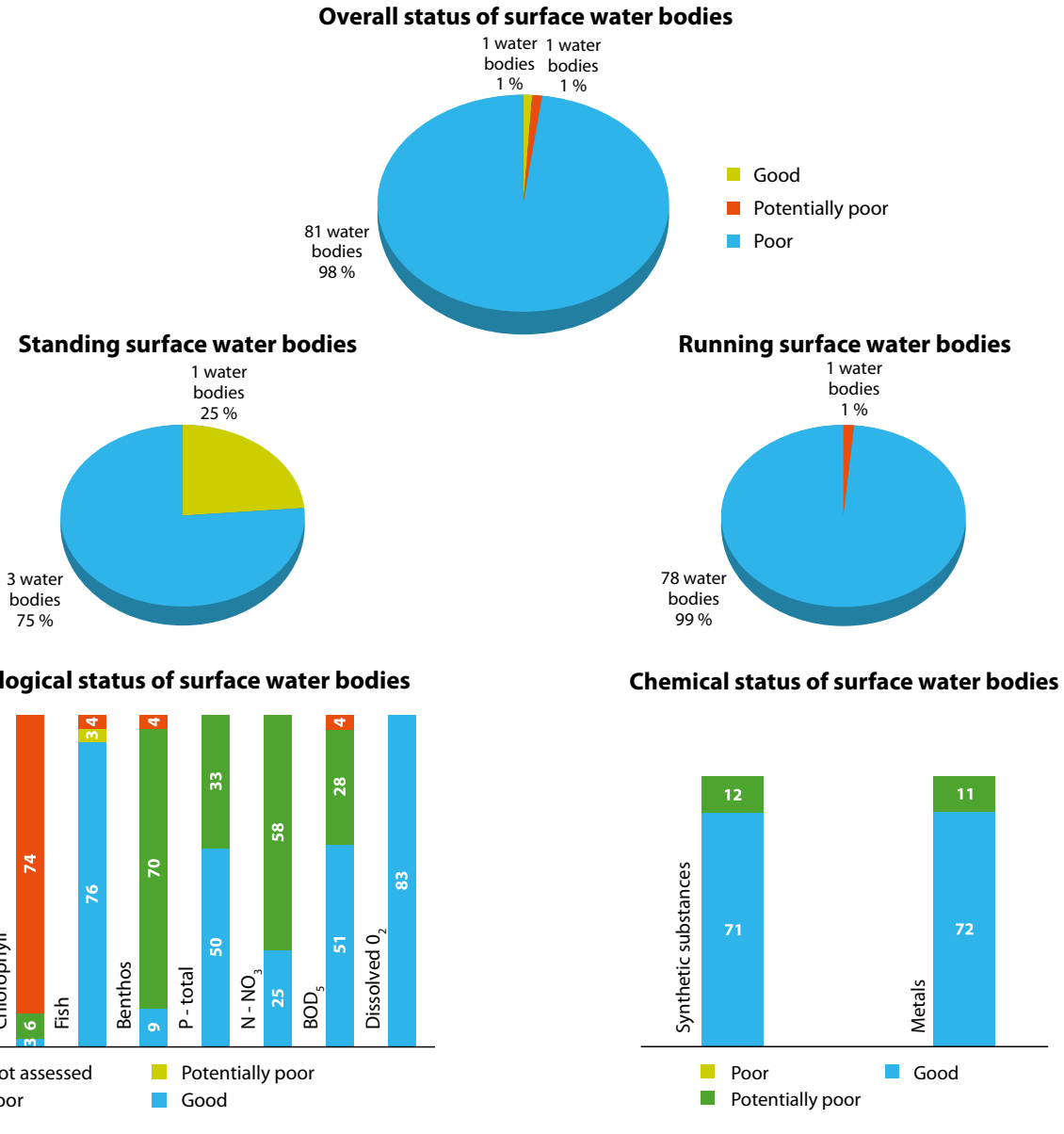
14.4.1.5.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

Based on the overall assessment of the River Basin District Management Plans approved in 2009 it can be stated that in regard to the assessment of the status of water bodies in this River Basin District there was confirmed the identification of significant pressures associated with morphological alterations of watercourses, insignificance of the pressures associated with water abstractions and significance of pollution caused by harmful substances from point sources and nitrogen pollution from diffuse sources. In contrast, the significance of diffuse phosphorus pollution was clearly largely overestimated and, on the other hand, the significance of diffuse pesticide pollution was underestimated.

14.4.1.5.3 Surface water bodies



Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

Status of surface water bodies was assessed on the basis of 134 indicators divided into two basic components – the chemical status and the ecological status. For water reservoirs, instead of ecological status their ecological potential was assessed. The assessment was very strict – if the measured values for a single indicator failed to comply with the values for good status, the overall status of the water body in question was assessed to be poor.

In terms of chemical status, above-limit levels of polyaromatic hydrocarbons only were identified at approximately half of the measured representative profiles – their source is, however, diffuse deposition from combustion processes and washings from paved asphalt areas. Above-limit levels of specific pollutants were identified for alachlor on the Upper Sázava River, for EDTA on the Benešovský stream and the Zákolanský stream and in a small segment of the Vltava River, for dichloroethene on the Bělá River and for prometrine on the Slupský stream and the Bakovský stream.

The assessment of ecological status was based mainly on the assessment of biological elements and supporting general physico-chemical indicators. In terms of biological elements, most data were available for the assessment of macrozoobenthos, which was also the most critical indicator of ecological status assessment – poor status was identified for the majority of surface water bodies. The cause was usually a combination of improper morphology of watercourses and high load from municipal sources of pollution. This load was best characterized by indicators of total phosphorus and BOD_5. Poor status for these indicators was identified at approximately one third of water bodies, mostly on minor watercourses and tributaries of major watercourses and indicates that on less watery streams waste waters are not treated in adequate manner. Nitrate nitrogen load in some cases accompanied the above-mentioned municipal sources, but its higher concentrations probably come from diffuse sources of agricultural origin. Its above-limit values were identified for a much larger number of water bodies, compared to other river basin districts, especially in the Upper Sázava River and the Želivka River catchment areas.

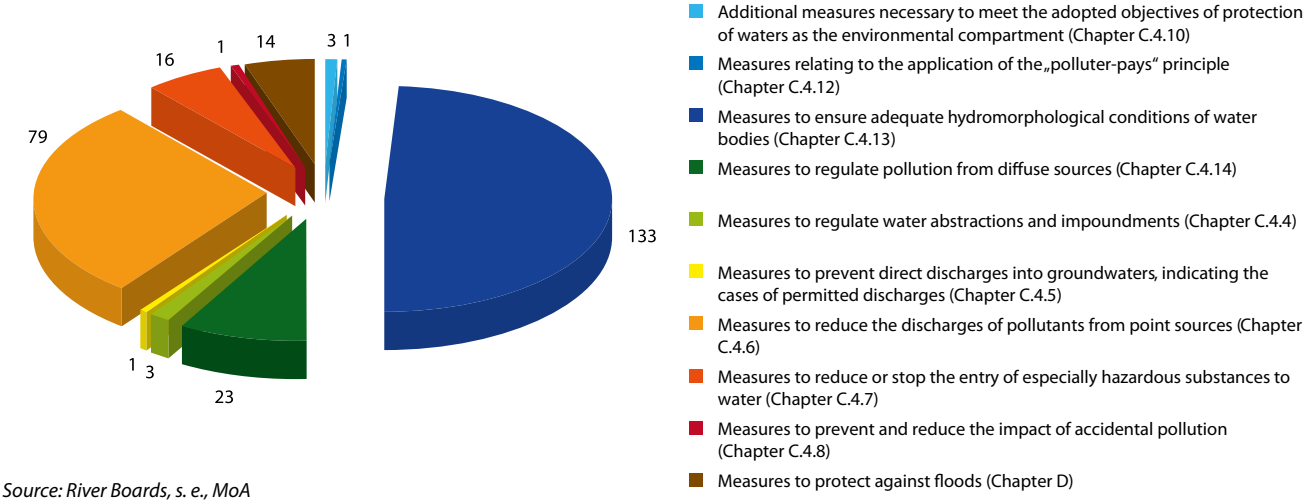
The proposed measures

Measures aiming to improve the status of water bodies and to achieve their good status were, according to feasibility, state of preparation and funding possibilities, included in the programme of measures to be implemented or to be started to be implemented by the end of 2012. Measures which for various reasons could not be included in the programme of measures (insufficient progress of preparation, lack of funding) were included in the group of other measures, whose implementation is considered not sooner than after 2015.

In preparing the programme of measures, the lists of measures were divided into three types – A, B and C. A type was for measures of a particular character (the measure has its holder and addresses the specific site in the specific manner with well-defined parameters). In the Lower Vltava River Basin District Management Plan, under this A type there were proposed in total 230 measures relating primarily to waste water treatment plants (39 measures), sewerage systems (65 measures), revitalization of watercourses (87 measures) or old contaminated sites (14 measures). Some lists of measures address a combination of categories (for example, waste water treatment plants + sewerage). B type is a general measure addressing the site in question, but the manner of implementing is of only a framework character. In the Lower Vltava River Basin District there were proposed 35 measures of B type, primarily relating to the sub-basin of the Švihov water supply reservoir on the Želivka River, for which (in respect of the importance of this water source) the status was assessed and measures proposed in more detail, compared to the remaining parts of the river basin district. C type measure is a general measure responding to the generally understood problem, which is addressed at the level of the legislation. 9 such measures apply to the Lower Vltava River Basin District. They include, for example, prevention of accidental pollution, application of the „polluter-pays" principle and other similar measures.

Separately proposed were measures to mitigate the adverse effects of floods. In the Lower Vltava River Sub-basin, 14 such measures were proposed. Of that, 9 measures for flood protection of specific locations, 1 measure to increase the watercourse channel capacity and 4 measures to protect existing hydraulic structures against floods.

14.4.1.5.4 Number of measures proposed in the River Basin District Management Plan by the measure types



Source: River Boards, s. e., MoA

Status of implementation of measures

The programme of measures included effective measures, whose assumed successful implementation was based on the state of preparation of projects. The funding of the programme of measures was ensured from the European funds, grant programmes of the state budget or own funds of those bearing the responsibility (region, municipality, watercourse administrator, etc.). During the preparation, for some of the measures it was not possible to settle property relations to the lands and some measures failed to be realized due to excessive administrative burden or lack of own funds.

Another factor, which was markedly reflected in the balance of the realized measures, was the fact that minor watercourses (on which in this River Basin District the predominant part of measures included C. 4.13 category measures – measures to ensure adequate hydromorphological conditions) were transferred from the responsibility of the abolished Agricultural Water Management Administration mostly to the Vltava River Board, state enterprise, which due to low degree of completion and preparedness of individual projects could not ensure their implementation in such extent and time.

In the Lower Vltava River Basin District, in total 37 measures of A type (specific measure at the specific site) were realized, which is less than half of the proposed measures. The realization started for another 41 measures.

The largest project which failed to be realized, was the project DV100045 – Prague – Intensification of Central Waste Water Treatment Plant, Reconstruction and Construction of Sewerage System, whose pressure would be significant not only to the part of the Lower Vltava River Basin District downstream of the river flow, but also at least to the Ohře River and the Lower Elbe River Basin District. Table 14.4.1.5.2 provides an overview of the proposed and realized measures by type and objectives.

Measures that have not been realized, except for those that have proved to be ineffective or unfeasible in terms of accessibility of necessary land, will be reviewed again in the second river basin management planning cycle during the preparation of sub-basin management plans and potentially proposed for implementation in the years 2015–2018.

14.4.1.5.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	0	3
C.4.12	0	0	0	0	0	0	0	1
C.4.13	133	5	77.8	35	224.6	93	0	0
C.4.14	0	0	0	0	0	0	23	0
C.4.2	0	0	0	0	0	0	0	0
C.4.4	0	0	0	0	0	0	0	3
C.4.5	0	0	0	0	0	0	0	1
C.4.6	69	22	489	9	1,417.7	38	10	0
C.4.7	14	6	290	3	612.6	5	2	0
C.4.8	0	0	0	0	0	0	0	1
D	14	4	424	1	106.0	9	0	0
Measures in total	**230**	**37**	**1,280.8**	**48**	**2,360.9**	**145**	**35**	**9**

Source: River Boards, s. e., MoA

The confluence of the Vltava River and the Berounka River

14.4.1.6 The Dyje River Basin District Management Plan

Characterization of the River Basin District

14.4.1.6.1 An overview map of the Dyje River Basin District

Source: MoA

The Dyje River Basin District is the second largest of the eight river basin districts in the Czech Republic. It is fan-shaped and shows no big differences in altitudes. Its highest altitudes are situated in the Českomoravská vrchovina upland, the highest peak is situated at the western boundary of the river basin district at the main watershed divide between the Danube River and the Elbe (the Javořice peak at an altitude of 837 m a. s. l.). At the point of the Dyje River emptying into the Morava Rivery, the terrain reaches an altitude of approximately 150 m a. s. l., the biggest vertical difference so reaches about 700 m.

The main watercourse in the Dyje River Basin District is the Dyje River. In terms of hydrology, the Dyje River Basin District belongs to the Black Sea drainage area, water is drained via the Dyje River into the Morava River and farther to the Danube River. The main headwater area is the eastern and southern part of the Českomoravská vrchovina upland and the western part of the Drahanská vrchovina upland. Other major rivers in the Dyje River Basin District include, for example, the Svratka River, the Jihlava River, the Svitava River, the Oslava River, the Moravská Dyje River, the Litava River, the Rokytná River, the Želetavka River and the Jevišovka River.

The Dyje River Basin District reaches in the Czech Republic a total of six regions, namely the Jihomoravský, Jihočeský, Pardubický, Zlínský, Olomoucký and Vysočina regions.

The Dyje River Basin District has a population of 1,395,539 and population density is 125 inhabitants per km^2.

The Dyje River Basin District includes all types of protected nature and landscape areas from System Natura 2000 to Specially Protected Areas and other protected areas listed in the Register of Protected Areas.

14.4.1.6.1 Number of water bodies designated in the Dyje River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	64
Number of heavily modified water bodies	13	53
Number of artificial water bodies	0	0
The total number of water bodies	**13**	**117**

Source: River Boards, s. e.

Significant pressures on the status of waters in the river basin district

A very significant pressure, identified in 129 of the total of 130 water bodies in the Dyje River Basin District are morphological alterations of watercourses. In terms of this pressure, in headwater areas it is mainly the presence of weirs and other gradient structures and farther downstream of the rivers more frequent are ongoing stream channel regulations. The assessment of morphological pressures in the Dyje River Basin District was carried out in watercourse segments in a length of 4,160 km of the total length of 12,517 km of the river network.

Another significant pressure is represented by nutrient pollution (phosphorus, nitrogen) from diffuse and point sources and also pesticide pollution from intensively farmed agricultural land.

In addition, a significant pressure are also the discharges of waste waters from point sources, with the largest source in this area being the discharges of waste waters from municipal sources of pollution

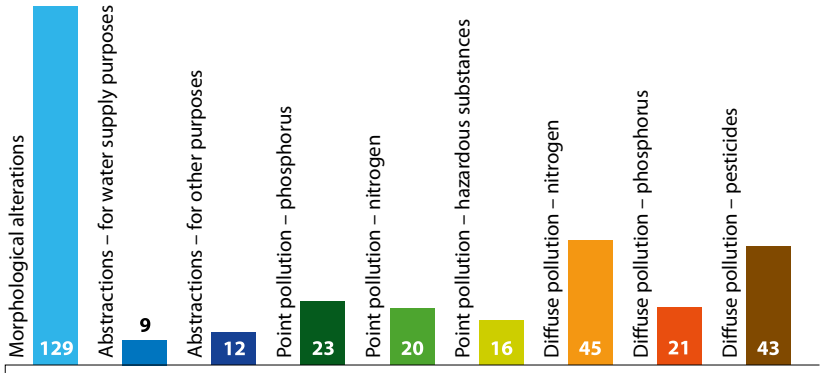
(53.6% of the total amount. The largest polluters from the sector of municipal waters in the river basin district in 2006 were BVK Brno – waste water treatment plant Modřice, VAS Znojmo – waste water treatment plant and VAS Jihlava – waste water treatment plant. A significant source of pollution in this river basin district is also the energy sector (nuclear power plant in Dukovany, power plant in Hodonín), accounting for 40% of the total amount of the discharged waste waters. In 2006, in the Dyje River Basin District a total of 513 sources of the discharges of waste waters into surface waters were monitored (187 million $m^3.year^{-1}$). Of that, significant sources included 51 municipal sources, 42 industrial sources, 8 sources from food processing industry and 17 sources with thermal pollution.

In terms of significant pressures on the status of surface waters, water abstractions in the majority of water bodies do not represent a pressure of major significance. As regards surface water abstractions, in the river basin district there are registered in total 95 significant water abstractions (102 million $m^3.year^{-1}$), 28 significant accumulations of water (reservoirs with the total accumulated volume of more than 1 million m^3), 11 transfers of surface water, morphological alterations, mainly cross barriers are present in all water bodies. „Other" water uses include the use of water power, recreational use of surface waters and fish farming.

Groundwater abstractions, with the predominant abstractions for the purpose of drinking water supply for the population, in 2006 reached the amount of 65 million $m^3.year^{-1}$.

Velký Bílovec hydraulic structure

14.4.1.6.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

Status of water bodies before the implementation of measures

Chapter C deals with the conditions required to achieve the objectives of protection of water as the environmental compartment, programmes of identification and assessment of quantity and status of waters (monitoring programmes), environmental objectives of water protection for the period of the plan and proposals for measures to achieve or approximate the set objectives. Conditions to achieve the objectives of water protection and the criteria for their assessment are set for surface waters, groundwaters and the so-called protected areas.

Before the assessment itself of the ecological status of water bodies, the so-called heavily modified water bodies (HMWB) were designated. Heavily modified water bodies are bodies of water which as a result of physical alterations by human activity are substantially changed in character and cannot meet the parameters of good ecological status, therefore, for such water bodies the so-called ecological potential is assessed.

For running surface waters, their ecological status and chemical status were assessed. In assessing the ecological status, the assessment was carried out for the basic biological water-related elements, such as fish, macrozoobenthos and phytoplankton. In addition, the assessment was carried out for general physico-chemical elements that support the development of these above-mentioned biological elements and are limiting for them. Chemical status of surface waters was based on the list of indicators of the chemical status of surface water bodies and their limits.

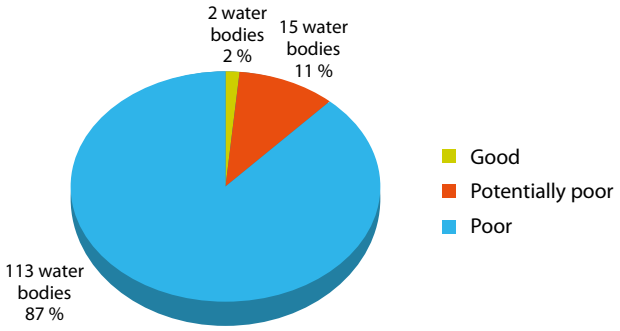
For standing surface water bodies which are only designated water reservoirs and are heavily modified water bodies, only the ecological potential was assessed. Ecological potential is also the sum of assessment of partial biological and physico-chemical elements.

Also the assessment of groundwater status is carried out for two aspects – their quantitative status and chemical status are assessed. Quantitative status is an expression of the degree to which a body of groundwater is affected by direct and indirect water abstractions, chemical status is expressed by failing to achieve or exceeding the set limit values of selected chemical substances and compounds.

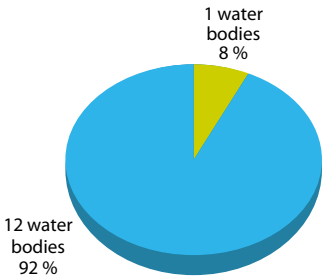
A specific category is the assessment of protected areas.

14.4.1.6.3 Surface water bodies

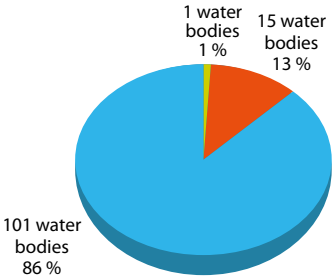
Overall status of surface water bodies



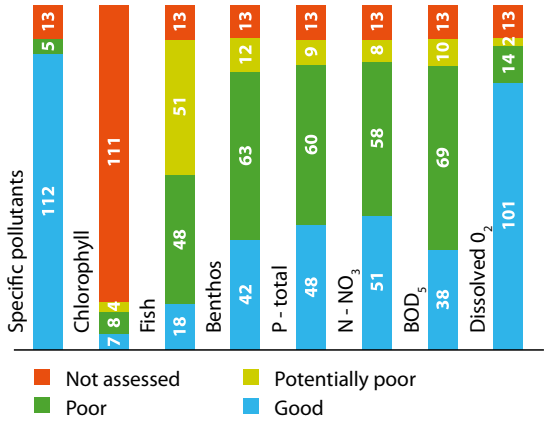
Standing surface water bodies



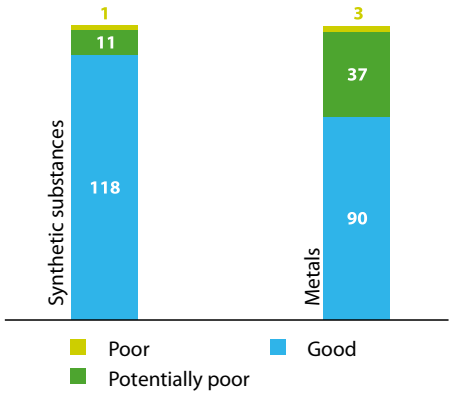
Running surface water bodies



Ecological status of surface water bodies



Chemical status of surface water bodies



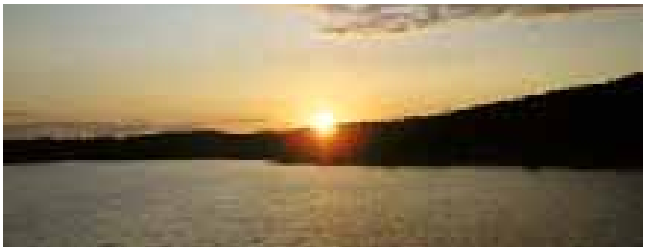
Source: River Boards, s. e., MoA

The proposed measures

In the Dyje River Basin District Management Plan, a total of 395 measures were proposed, of that 364 were A type measures, 20 were B type measures and 11 were C type measures.

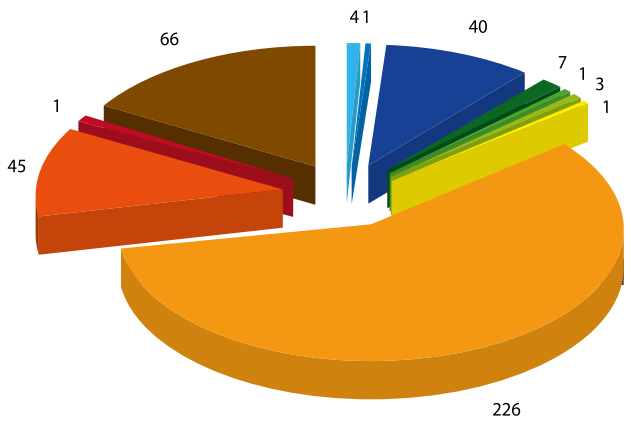
For Chapter C the plan includes a total of 306 specific measures (of A type) in the area of waste water treatment plants, sewerage systems, remediation of old contaminated sites and revitalization of watercourses. Of this number, 225 measures in the area of construction and reconstruction of waste water treatment plants and sewerage systems, 42 measures in the area of the remediation of old contaminated sites and 39 measures in the area of the revitalization of watercourses have been proposed.

For the implementation of measures included in Chapter D a total of 124 measures were proposed, of which 58 measures come from the so-called „applicants", i.e. watercourse administrators, and 66 measures come from the so-called „proposers", i.e. towns and municipalities (measures coming from the „proposers", however, are included in one list of measures!). Of the major towns that need to strengthen flood protection, based on the available data and the number of threatened residents, these include, in particular: Brno on the Svratka River and the Svitava River with by far the highest number of threatened residents – 30,000. Significantly lower numbers of inadequately protected residents are in the following towns: Kyjov on the Kyjovka River, Třebíč on the Jihlava River and the Stařečský stream, Blansko on the Svitava River, Velké Meziříčí on the Oslava River, Bučovice on the Litava River, Tišnov and Veverská Bítýška on the Svratka River, Ivančice on the Jihlava River, Břeclav on the Dyje River.



Vranov nad Dyjí hydraulic structure

14.4.1.6.4 Number of measures proposed in the River Basin District Management Plan by the measure types



- Additional measures necessary to meet the adopted objectives of protection of waters as the environmental compartment (Chapter C.4.10)
- Measures relating to the application of the „polluter-pays" principle (Chapter C.4.12)
- Measures to ensure adequate hydromorphological conditions of water bodies (Chapter C.4.13)
- Measures to regulate pollution from diffuse sources (Chapter C.4.14)
- Measures applied to waters used or to be used for the abstraction of water intended for human consumption (Chapter C.4.2)
- Measures to regulate water abstractions and impoundments (Chapter C.4.4)
- Measures to prevent direct discharges into groundwaters, indicating the cases of permitted discharges (Chapter C.4.5)
- Measures to reduce the discharges of pollutants from point sources (Chapter C.4.6)
- Measures to reduce or stop the entry of especially hazardous substances to water (Chapter C.4.7)
- Measures to prevent and reduce the impact of accidental pollution (Chapter C.4.8)
- Measures to protect against floods (Chapter D)

Source: River Boards, s. e., MoA

Status of implementation of measures

Implementation of the planned measures depends on investment demandingness of the project in question and settlement of property relations. Investments are mainly covered by grants provided from the EU funds, from national sources and regional subsidies and grants. For Chapter C, the responsibility for the measures is borne by water supply companies, towns and municipalities and watercourse administrators. By the end of 2012, under Chapter C.4.6, 21% of measures were completed and 33% of measures are in progress or their preparation is under way. Under Chapter C.4.7, 28.5% of measures were completed and also 28.5% of measures are in progress or their preparation is under way. Under Chapter C.4.13, 23% of measures were completed and 31% of the planned measures are in progress or their preparation is under way. For Chapter D, the responsibility for the measures is borne by the so-called „applicants", i.e. watercourse administrators, and in the initial preparation also the so-called „proposers", i.e. towns and municipalities. The „applicants" completed almost 40% of measures and 17% of measures are in progress or their preparation is under way.

Settlement of property relations is a problem mainly in preparing and implementing the revitalization of watercourses, sheet measures in the landscape that prevent erosion washing, and also in building flood control measures. Simple and complex land consolidation helps to address this problem.

As regards measures included in the „programme of measures", efforts are made to implement them within the period of the Dyje River Basin District Management Plan 2010–2015. The „other" measures are expected to be implemented by the end of the management planning period in 2027.

14.4.1.6.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	0	4
C.4.12	0	0	0	0	0	0	0	1
C.4.13	39	9	65.0	12	51.8	18	1	0
C.4.14	0	0	0	0	0	0	7	0
C.4.2	0	0	0	0	0	0	1	0
C.4.4	0	0	0	0	0	0	3	0
C.4.5	0	0	0	0	0	0	0	1
C.4.6 [1)]	225	48	3,201.7	75	2,902.5	52	1	0
C.4.7 [2)]	42	12	833.7	12	1,003.0	0	2	1
C.4.8	0	0	0	0	0	0	0	1
D [3)]	58	23	339,8	10	29,0	25	5	3
Total	**364**	**92**	**4,440.2**	**109**	**3,986.3**	**95**	**20**	**11**

Source: River Boards, s. e., MoA

Note: [1)] The status and costs of implementing the measure could not be quantified for 50 measures (of that 32 proposed under the Programme of Measures, 18 as Other Measures). As regards the completed projects, costs could not be quantified for 2 measures.

[2)] The status and costs of implementing the measure could not be quantified for 18 measures (of that 15 proposed under the Programme of Measures, 3 as Other Measures).

[3)] 66 measures of the „proposers", including costs, are separately included in one list of measures of C type. Of them, 5 measures were „Realized" at costs of CZK 163.4 million, 9 measures are „In progress" at planned costs of CZK 33.3 million. 52 such measures are „Not realized".

14.4.1.7 The Morava River Basin District Management Plan

Characterization of the River Basin District

14.4.1.7.1 An overview map of the Morava River Basin District

Source: MoA

The Morava River Basin District is, as to size, the fourth largest of the eight river basin districts in the Czech Republic. It is elongated in a north – south direction with a marked projection towards the east, which is formed by the Bečva River Basin. The Morava River Basin District shows relatively big differences in altitudes. This is due to the upper course of the Morava River being located below the southern slopes of the Hrubý Jeseník Mountains and the headwater area of the Bečva River in the Beskydy Mountains. In the area of the northeastern watershed contour, which is also the main European watershed divide between the Danube River and the Oder River, the peaks in the area of the Hrubý Jeseník Mountains reach altitudes of about 1,490 m a. s. l. (Praděd 1,492 m a. s. l.) and in the area of the Beskydy Mountains about 1,250 m a. s. l. (Kněhyně 1,257 m a. s. l. – the peak belongs to the Oder River Basin District). In the Morava River profile near Lanžhot the terrain reaches an altitude of only about 150 m a. s. l. The biggest vertical difference so exceeds 1,300 m.

In terms of hydrology, the Morava River Basin Distict belongs to the Black Sea drainage area, water is drained via the Morava River to the Danube River. The main headwater area are mountains in the northeastern part of the river basin – the Jeseníky Mountains, the Beskydy Mountains and the Bílé Karpaty Mountains (the White Carpathians). The main watercourse in the Morava River Basin District is the Morava River. Other major watercourses in the Morava River Basin District include the Olšava River, the Haná River, the Bečva River, the Romže and the Valová River, the Bystřice River, the Oskava River, the Moravská Sázava River and the Desná River.

The Morava River Basin District reaches in the Czech Republic five regions – the Olomoucký, Zlínský, Jihomoravský, Pardubický and Moravskoslezský regions.

The Morava River Basin District on the territory of the Czech Republic has a population of 1,363,597 and population density is 138 inhabitants per km^2.

The Morava River Basin District includes all types of protected nature and landscape areas from System Natura 2000 to Specially Protected Areas and other protected areas listed in the Register of Protected Areas.

14.4.1.7.1 Number of water bodies designated in the Morava River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	134
Number of heavily modified water bodies	3	47
Number of artificial water bodies	0	0
The total number of water bodies	**3**	**181**

Source: River Boards, s. e.

Significant pressures on the status of waters in the river basin district

A very significant pressure, identified in all of the total of 184 water bodies in the Morava River Basin District are morphological alterations of watercourses. Most frequently occurring barriers on watercourses are weirs and other gradient structures, which at a higher frequency are present in headwater areas of the river basin. Most of cross barriers, assessed in the Morava River Basin District as posing a significant pressure, are not fitted with fish passes. Farther downstream of the rivers more frequent are ongoing stream channel regulations.

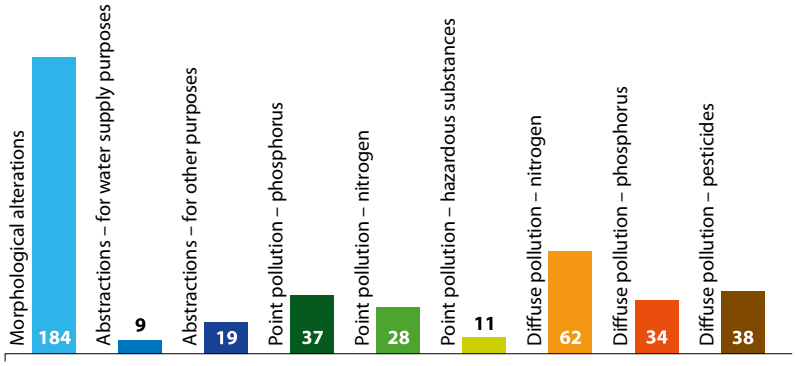
The assessment of morphological pressures in the Morava River Basin District was carried out in watercourse segments in a length of 4,216 km of the total length of 14,711 km of the river network.

Another significant pressure is represented by nutrient pollution (phosphorus, nitrogen) from diffuse and point sources and also pesticide pollution from intensively farmed agricultural land. In the Morava River Basin District, in terms of diffuse nitrogen pollution, there are 14 risk posing water bodies and 91 potentially risk posing water bodies. In terms of diffuse phosphorus pollution, the Morava River Basin District includes 34 risk posing water bodies and 76 potentially risk posing water bodies, and in terms of pesticide pollution it includes 55 potentially risk posing water bodies.

A significant pressure is also represented by the discharges of waste waters from point sources of pollution. Of the total number of 184 water bodies in the Morava River Basin District, based on indirect assessment, in terms of ecological status of surface water bodies and point pollution, 33 were assessed as risk posing water bodies, 6 as potentially risk posing water bodies and 145 as non-risk posing water bodies. The risk posing character is mainly caused by phosphorus (31 water bodies), followed by nitrogen (15 water bodies). The largest source in this area are the discharges of waste waters from municipal sources of water pollution (87.7% of the total amount). The largest polluters from the sector of municipal waters in the river basin district in 2006 included Středomoravská Vas Olomouc – waste water treatment plant Olomouc, VaK Zlín – waste water treatment plant Zlín, SVK Uh. Hradiště – waste water treatment plant Uherský Brod, VaK Prostějov – waste water treatment plant Prostějov and VaK Přerov – waste water treatment plant Přerov.

The Orava River

14.4.1.7.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

A significant source of pollution in this river basin district is also the sector of industry, accounting for 11.8% of the total amount of the discharged waste waters.

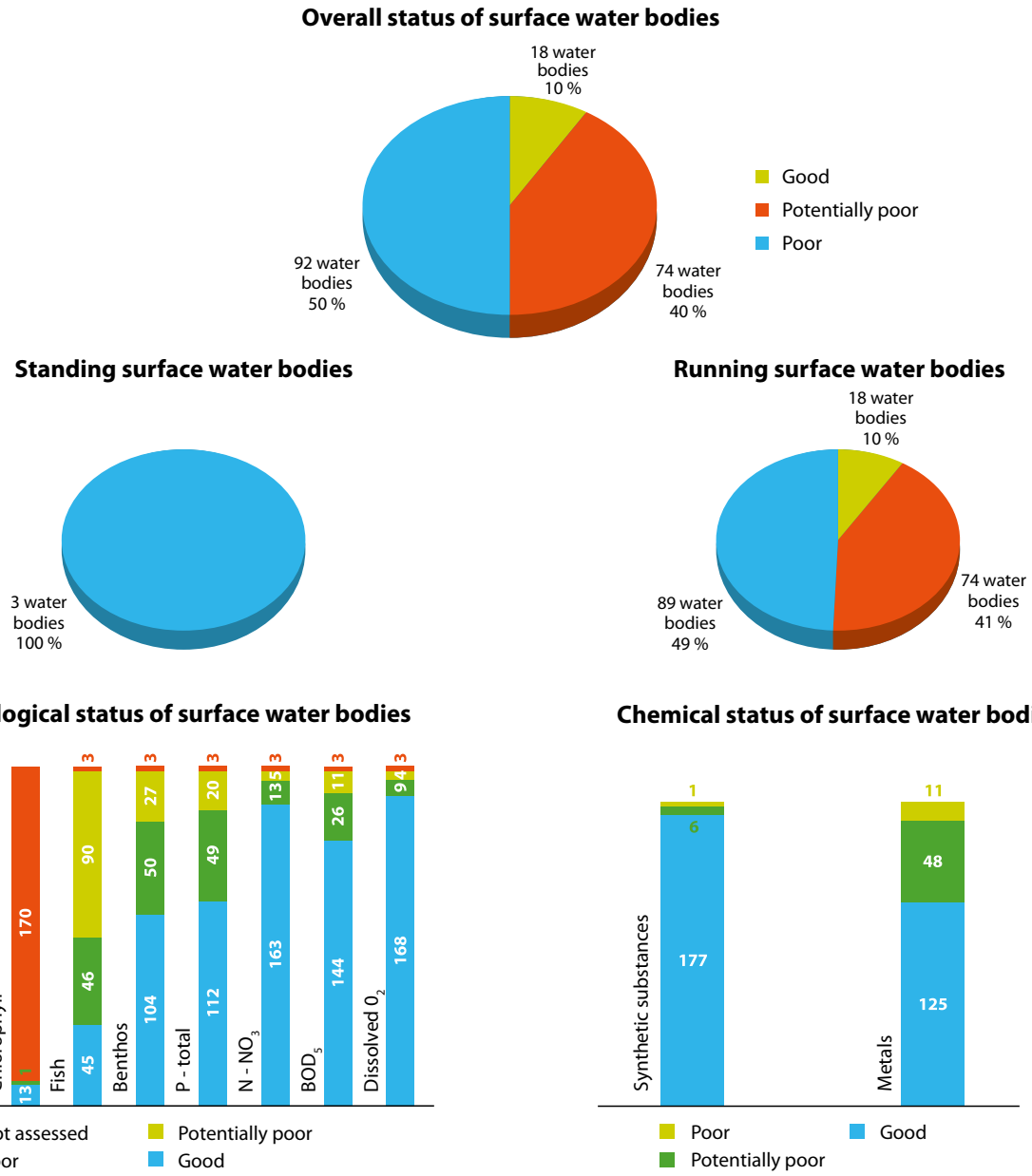
The assessment in the Morava River Basin District has resulted in the identification of 56 significant waste water discharges from municipal sources, 6 significant sources of pollution from food processing industry, 63 significant waste water discharges from industrial sources of pollution and 21 significant sources of discharges of waste waters with thermal pollution.

As regards surface water abstractions, in the river basin district there are registered in total 99 significant water abstractions (100.4 million $m^3.year^{-1}$), 10 significant accumulations of water (reservoirs of local significance with the relatively small accumulated volume of 42.16 million m^3), 14 transfers of surface water, morphological alterations, mainly cross barriers are present in all water bodies. „Other" water uses include the use of mineral waters, the use of water power, fish farming, recreational use of surface waters and recreational boating. Total groundwater abstractions, with the predominant abstractions for the purpose of drinking water supply for the population, in 2006 reached the amount of 66.9 million $m^3.year^{-1}$.

Status of water bodies before the implementation of measures

Chapter C deals with the conditions required to achieve the objectives of protection of water as the environmental compartment, programmes of identification and assessment of quantity and status of waters (monitoring programmes), environmental objectives of water protection for the period of the plan and proposals for measures to achieve or approximate the set objectives. Conditions to achieve the objectives of water protection and the criteria for their assessment are set for surface waters, groundwaters and the so-called protected areas.

14.4.1.7.3 Surface water bodies



Source: River Boards, s. e., MoA

Before the assessment itself of the ecological status of water bodies, the so-called heavily modified water bodies (HMWB) were designated. Heavily modified water bodies are bodies of water which as a result of physical alterations by human activity are substantially changed in character and cannot meet the parameters of good ecological status, therefore, for such water bodies the so-called ecological potential is assessed.

For running surface waters, their ecological status and chemical status were assessed. In assessing the ecological status, the assessment was carried out for the basic biological water-related elements, such as fish, macrozoobenthos and phytoplankton. In addition, the assessment was carried out for general physico-chemical elements that support the development of these above-mentioned biological elements and are limiting for them. Chemical status of surface waters was based on the list of indicators of the chemical status of surface water bodies and their limits.

For standing surface water bodies which are only designated water reservoirs and are heavily modified water bodies, only the ecological potential was assessed. Ecological potential is also the sum of assessment of partial biological and physico-chemical elements.

Also the assessment of groundwater status is carried out for two aspects – their quantitative status and chemical status are assessed. Quantitative status is an expression of the degree to which a body of groundwater is affected by direct and indirect water abstractions, chemical status is expressed by failing to achieve or exceeding the set limit values of selected chemical substances and compounds.

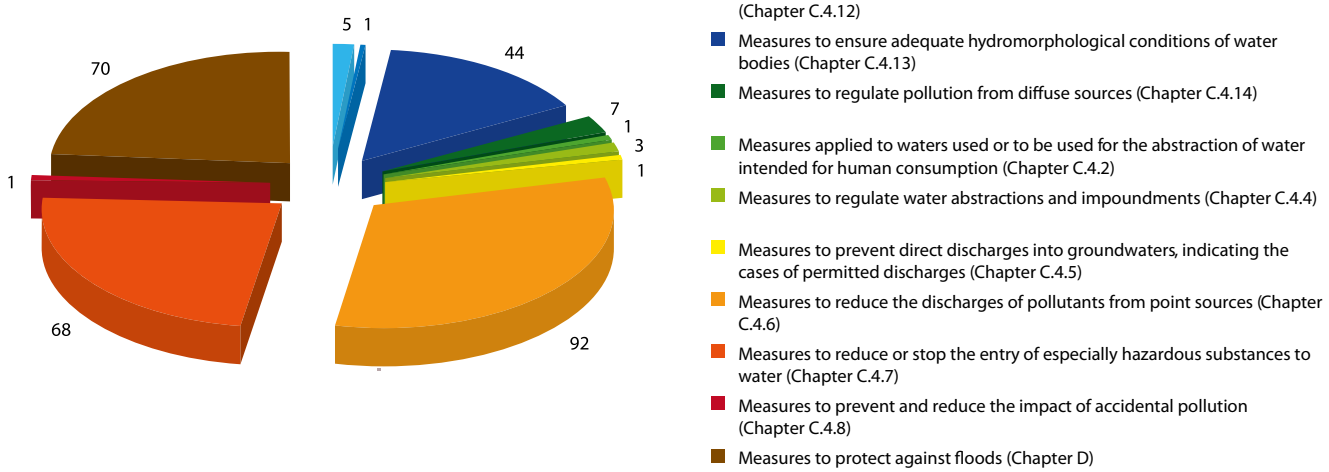
A specific category is the assessment of protected areas.

The proposed measures

In the Morava River Basin District Management Plan, a total of 293 measures were proposed, of that 258 were A type measures, 23 were B type measures and 12 were C type measures. In Chapter C, a total of 223 measures were proposed, of that 199 were A type measures, 15 were B type measures and 9 were C type measures. In Chapter D, a total of 70 measures were proposed, of that 59 were A type measures, 8 were B type measures and 3 were C type measures.

For Chapter C the plan includes a total of 199 specific measures in the area of waste water treatment plants, sewerage systems,

14.4.1.7.4 Number of measures proposed in the River Basin District Management Plan by the measure types



Source: River Boards, s. e., MoA

remediation of old contaminated sites and revitalization of watercourses. Of this number, 91 measures in the area of construction and reconstruction of waste water treatment plants and sewerage systems, 65 measures in the area of the remediation of old contaminated sites and 43 measures in the area of the revitalization of watercourses have been proposed.

For the implementation of measures included in Chapter D a total of 78 measures (of A type) were specifically proposed, of which 59 measures come from the so-called „applicants“, i.e. watercourse administrators, and 19 measures come from the so-called „proposers“, i.e. towns and municipalities (measures coming from the „proposers“, however, are included in one list of measures!). Of the major towns that need to strengthen flood protection, based on the available data and the number of threatened residents, these include, in particular: Olomouc, Kroměříž, Litovel, Chropyně, Uherský Ostroh, Hodonín and Napajedla on the Morava River, Zlín on the Dřevnice River, Přerov, Valašské Meziříčí, Troubky and Hranice on the Bečva River, Uherský Brod on the Olšava River, Hlubočky on the Bystřička River, Vsetín on the Vsetínská Bečva River and Rapotín on the Desná River.

Status of implementation of measures

Implementation of the planned measures depends on investment demandingness of the project in question and settlement of property relations. Investments are mainly covered by grants provided from the EU funds, from national sources and regional subsidies and grants. For Chapter C, the responsibility for the measures is borne by water supply companies, towns and municipalities and watercourse administrators. By the end of 2012, under Chapter C.4.6, 32% of measures were completed and 20% of measures are in progress or their preparation is under way. Under Chapter C.4.7, 8% of measures were completed and 17% of measures are in progress or their preparation is under way. Under Chapter C.4.13, almost 5% of measures were completed and 63% of the planned measures are in progress or their preparation is under way. For Chapter D, the responsibility for the measures is borne by the so-called „applicants“, i.e. watercourse administrators, and in the initial preparation also the so-called „proposers“, i.e. towns and municipalities. The „applicants“ completed almost 34% of measures and 30.5% of measures are in progress or their preparation is under way.

Settlement of property relations is a problem mainly in preparing and implementing the revitalization of watercourses, sheet measures in the landscape that prevent erosion washing, and also in building flood control measures. Simple and complex land consolidation helps to address this problem.

As regards measures included in the „programme of measures“, efforts are made to implement them within the period of the Morava River Basin District Management Plan 2010–2015. The „other“ measures are expected to be implemented by the end of the management planning period in 2027.

Vír hydraulic structure

14.4.1.7.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	0	5
C.4.12	0	0	0	0	0	0	0	1
C.4.13	43	2	32.3	27	32.0	14	1	0
C.4.14	0	0	0	0	0	0	7	0
C.4.2	0	0	0	0	0	0	1	0
C.4.4	0	0	0	0	0	0	3	0
C.4.5	0	0	0	0	0	0	0	1
C.4.6 [1)]	91	29	2,973.7	18	1,007.7	4	1	0
C.4.7 [2)]	65	5	265.0	11	1,392.0	1	2	1
C.4.8	0	0	0	0	0	0	0	1
D [3)]	59	20	318.3	18	157.3	21	8	3
Total	**258**	**56**	**3,589.3**	**74**	**2,589.0**	**40**	**23**	**12**

Source: River Boards, s. e., MoA

Note: [1)] The status and costs of implementing the measure could not be quantified for 40 measures (of that 28 proposed under the Programme of Measures, 12 as Other Measures).

[2)] The status and costs of implementing the measure could not be quantified for 48 measures (of that 26 proposed under the Programme of Measures, 22 as Other Measures).

[3)] 19 measures of the „proposers", including costs, are separately included in one list of measures of C type. Of them, 1 measure was „Realized" at costs of CZK 24.1 million, 3 measures are „In progress" at planned costs of CZK 2.3 million. 9 measures are „Not realized" and the status and costs of implementing the measure could not be quantified for 6 planned measures.

14.4.1.8 The Oder River Basin District Management Plan

Characterization of the River Basin District

14.4.1.8.1 An overview map of the Oder River Basin District

Source: MoA

The basic structure of the Oder River Basin District is formed by a fan of the major watercourses, namely, the Oder River, the Opava River, the Ostravice River and the Olše River, which flow together to the centre of the Ostrava Basin. The so-called peripheral tributaries of the Oder River are those emptying into it on the territory of the Polish Republic mainly via the Kladská Nisa River. The Oder River Basin District covering an area of 6,252 km^2 belongs to those more exposed within the Czech Republic, which is due to natural conditions as well as its civilization load. Geographically, the Oder River Basin District is built up by mountain ranges of the Hrubý Jeseník Mountains and the Beskydy Mountains and by opening up to the north to the Silesian Lowland. The Oder River springs in the Oderské vrchy hills (634 m a. s. l.) and leaves the territory of the Czech Republic in the area of Bohumín (190 m a. s. l.). On the southwestern watershed contour, the Oder River Basin District is adjacent to the Danube River Basin.

Upstream of the confluence of the Oder River with the Olše River, i.e. close to a place from where the waters from the river basin district leave the territory of the Czech Republic, the Oder River shows the long-term average flow of 49 m^3.s^{-1}, the average flow downstream of the Olše River reaches 63 m^3.s^{-1}. The entire river basin district annually receives over 5.1 billion m^3 of precipitation, the annual precipitation amount, relative to the average surface area, reaches about 820 mm, of which approximately 300 mm run off. The highest annual precipitation amounts are recorded in the area of the Beskydy Mountains (Lysá hora – 1,390 mm/year).
Forests cover 38.5% of the area of the Oder River Basin District, which is above the national average and among the highest in the Czech Republic. The Oder River Basin District has a population of almost 1.3 million, the average population density is 212 inhabitants per km^2, which is also more than the national average (130 inhabitants/km^2).

14.4.1.8.1 Number of water bodies designated in the Oder River Basin District Management Plan

	Surface water bodies	
	standing	running
Number of natural water bodies	0	88
Number of heavily modified water bodies	8	24
Number of artificial water bodies	0	0
The total number of water bodies	**8**	**112**

Source: River Boards, s. e.

Significant pressures on the status of waters in the river basin district

Pressures that are reflected in the status of the Oder River Basin District and are registered by the river basin management planning process as significant, can be characterized as follows:

Significant morphological alterations of watercourse channels (in 30% of the total number of water bodies) are present mainly due to considerable instability of watercourse channels in the river basin district, which has to be tackled to secure the surrounding built-up area. The instability is a problem mainly in the southeastern part of the river basin district, affected by significant longitudinal flow gradients and the geological setting of the Beskydy flysch zone.

Point sources of pollution are concentrated in the areas of human settlements. In terms of pollution of receiving streams, of higher significance appears to be phosphorus pollution of water bodies, affecting a triple number of water bodies compared to those affected by nitrogen pollution. Pollution caused by hazardous substances is registered only for 10% of water bodies.

Significant water abstractions in the Oder River Basin District are concentrated in a smaller number of abstraction points and of the total amount of 140 million m^3/year about half and half are accounted for by abstractions for water supply purposes and industry.

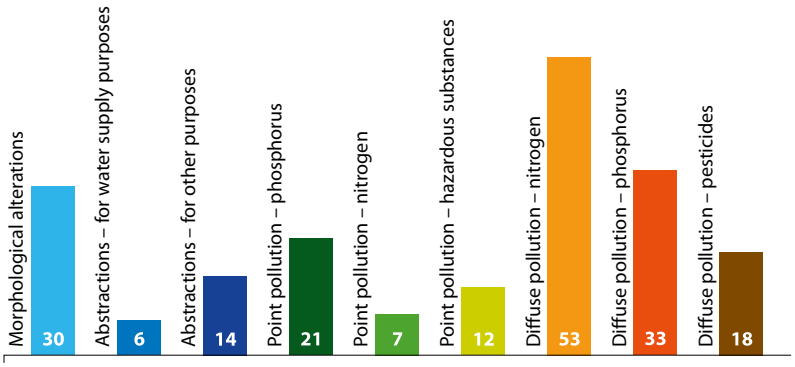
Diffuse pollution affects much higher number of water bodies, compared to point sources of pollution. Nitrogen pollution affects almost half of water bodies, phosphorus pollution affects more than one third of water bodies and pesticide pollution affects about one sixth of water bodies.

Status of water bodies before the implementation of measures

Of 120 surface water bodies in the Oder River Basin District, 52 water bodies were assessed to show overall good status, 18 water bodies were assessed to show potentially poor status and 50 water bodies were assessed to show poor status. Of that, good ecological status was shown by 59 water bodies, potentially poor ecological status was shown by 12 water bodies and poor ecological status was shown by 49 water bodies. According to the criteria listed in the chart, of relatively marginal effect on the entire river basin district is pollution by specific substances, although it should be borne in mind that the assessment in the first river basin management planning cycle was mostly carried out indirectly. An important aspect reflected here was the macrozoobenthos criterion, according to which two thirds of water bodies failed to achieve good ecological status. Similar results are shown by the assessment of physico-chemical parameters, especially the criterion of total phosphorus (P_{total}).

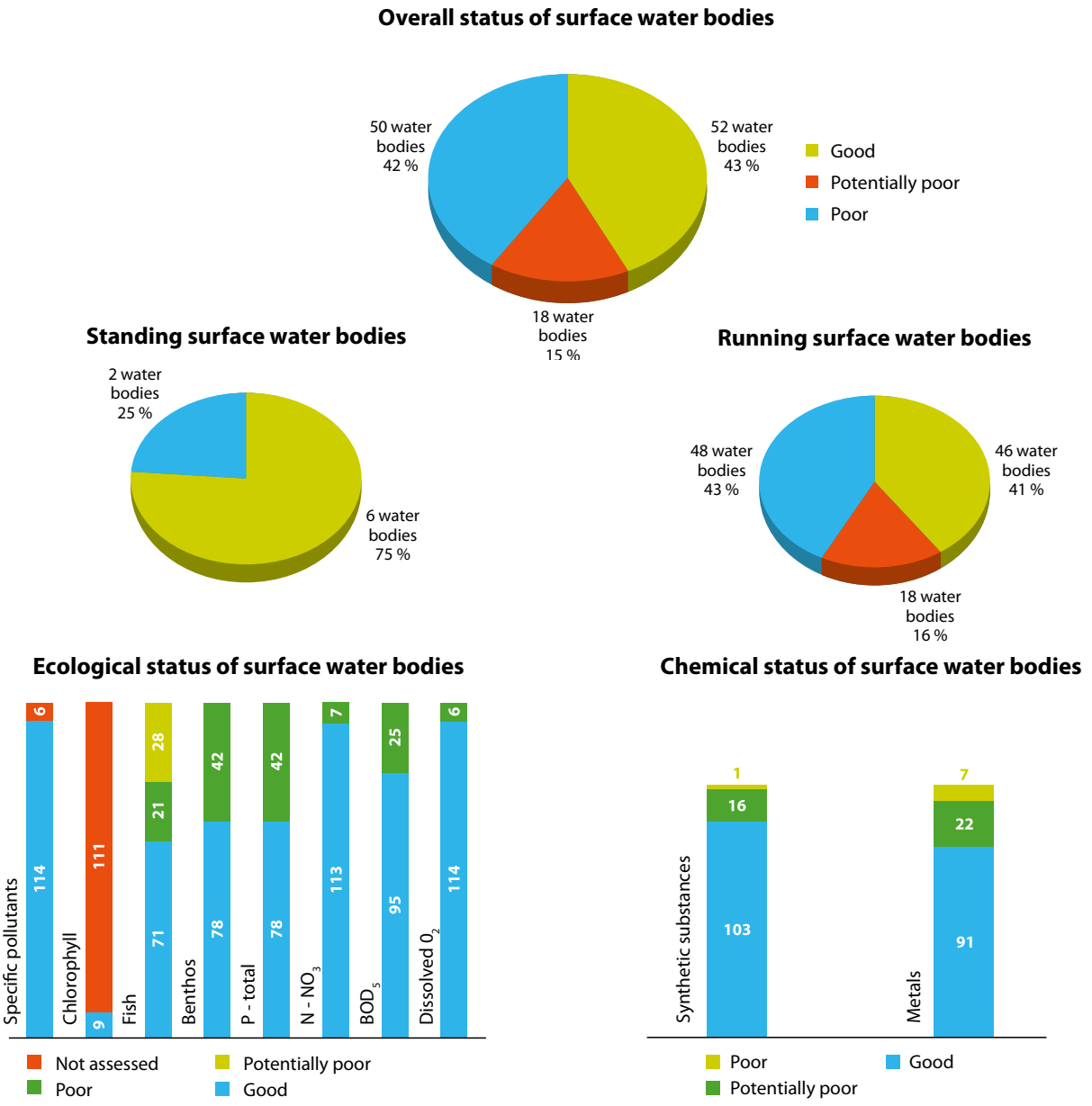
88 water bodies were assessed to show good chemical status, 24 bodies were assessed to show potentially poor chemical status and only 8 water bodies were assessed to show poor chemical status. The assessment of the chemical status is strictly bound to the listed priority substances, of which the vast majority show good status. If in this respect there occur problems, they are most often caused by concentrations of some heavy metals (Cd and Hg) and the presence of some congeners, belonging to the group of polyaromatic hydrocarbons.

14.4.1.8.2 Number of surface water bodies with significant pressure



Source: River Boards, s. e., MoA

14.4.1.8.3 Surface water bodies



Source: River Boards, s. e., MoA

The proposed measures

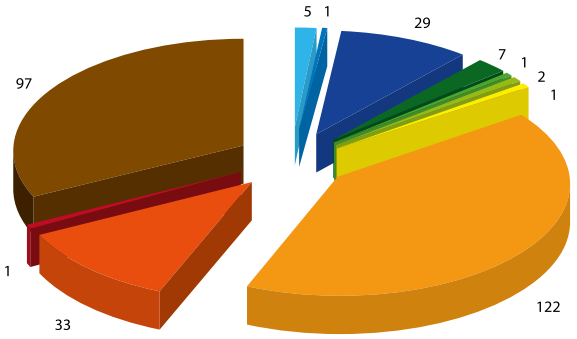
The proposed measures for the Oder River Basin District are divided into measures of the general character and measures applying proper practices (B and C type measures), and basic measures that are then specified in detail (A type measures). In the Oder River Basin, a total of 299 measures were proposed, of that 277 were A type measures, 14 were B type measures and 8 were C type measures.

In terms of A type measures, they mostly include measures to reduce the discharges of pollutants from point sources (subchapter C.4.6). They focus on construction, reconstruction, intensification or extension of waste water treatment plants, construction and reconstruction of sewerage systems, complementation or elimination of unsatisfactory outlets, etc. The draft of the measures as a whole for the river basin district is based on the principle that the priority is the construction of sewerage systems in agglomerations where waste water treatment plants have already been completed, the construction of new waste water treatment plants is largely focused on agglomerations with the population of more than 2,000 and only in some cases, for example, in catchment areas used for water supply purposes, new water treatment plants are constructed for municipalities with the population of less than 2,000. The overall framework also covers measures to achieve the required limits set by water use permits for 4 industrial plants.

Another area of A type measures are measures to reduce or stop the entry of especially hazardous substances into water (Chapter C.4.7). In the Oder River Basin District they include measures to remediate old contaminated sites and measures to prevent possible negative effects on eight of the total of fourteen groundwater bodies, which are identified in the river basin district. In almost half of these measures (13), their draft was covered by the so-called ecological agreement, having primarily regarded the remediation of land under the responsibility of earlier enterprises, their former landfills, storage areas or handling areas.

A separate area includes measures to ensure adequate hydromorphological conditions of water bodies (Chapter C.4.13), measures focusing on the revitalization of some segments of watercourse channels. They also include measures to eliminate migration barriers on watercourses for water-related organisms. They account for about 20% of the proposed projects.

14.4.1.8.4 Number of measures proposed in the River Basin District Management Plan by the measure types



- Additional measures necessary to meet the adopted objectives of protection of waters as the environmental compartment (Chapter C.4.10)
- Measures relating to the application of the„polluter-pays" principle (Chapter C.4.12)
- Measures to ensure adequate hydromorphological conditions of water bodies (Chapter C.4.13)
- Measures to regulate pollution from diffuse sources (Chapter C.4.14)
- Measures applied to waters used or to be used for the abstraction of water intended for human consumption (Chapter C.4.2)
- Measures to regulate water abstractions and impoundments (Chapter C.4.4)
- Measures to prevent direct discharges into groundwaters, indicating the cases of permitted discharges (Chapter C.4.5)
- Measures to reduce the discharges of pollutants from point sources (Chapter C.4.6)
- Measures to reduce or stop the entry of especially hazardous substances to water (Chapter C.4.7)
- Measures to prevent and reduce the impact of accidental pollution (Chapter C.4.8)
- Measures to protect against floods (Chapter D)

Source: River Boards, s. e., MoA

Status of implementation of measures

In the area of measures to reduce the discharges of pollutants from point sources and measures to reduce the entry of especially hazardous substance into water, as of 31 December 2012, of the total of 122 proposed measures only less than 3% of projects failed to be launched, almost half of the measures (54) have already been completed, and the remaining measures are in some form in progress – one third of them are under construction and for the remaining ones the project preparation is under way. The preparation, for the time being, has been suspended for less than 10% of the projects.

Measures in the field of groundwaters to remediate old contaminated sites are in progress for almost 75% of the proposed projects in accordance with the ecological agreements and pursuant to decisions of the relevant authorities.

Measures focusing on the revitalization of selected segments of watercourses and the elimination of migration barriers for water-related organisms have been launched in all cases. Approximately 10% of the projects are under construction or have already been completed, for the remaining part the project preparation is under way. Only in four cases the preparation had to be suspended, mainly due to problems of property relations.

Measures to ensure flood protection and landscape water regime (Chapter D) are implemented as follows:

- Preventive measures to redress mining damage – in two cases of three the projects are under construction, in one case the project has been suspended due to problems of property relations,
- Redress of mining damage under the „revitalization of the Moravskoslezský region" – five of six projects are in preparation, implementation of one project is under way,
- Measures to support the safety of hydraulic structures – one project has already been completed, implementation of two projects is under way and two projects are in preparation,
- Of the nine planned dry polders – as areas designated for flooding – eight are in project preparation, implementation of one project is under way,
- Measures aiming to increase the capacity of watercourse channels. Of the total number of 76 projects, more than half of the projects have already been completed or are under construction (46), 30% of the projects (23) are in preparation, only 7 projects failed to be launched, again due to problems of property relations.

14.4.1.8.2 Status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	0	5
C.4.12	0	0	0	0	0	0	0	1
C.4.13	29	2	10.3	27	494.7	0	0	0
C.4.14	0	0	0	0	0	0	7	0
C.4.2	0	0	0	0	0	0	1	0
C.4.4	0	0	0	0	0	0	2	0
C.4.5	0	0	0	0	0	0	0	1
C.4.6	119	55	6,800.9	61	9,187.8	3	2	1
C.4.7	32*)	6	153.1	23	3,316.6	3	1	0
C.4.8	0	0	0	0	0	0	1	0
D	97	40	780.4	50	9,315.4	7	0	0
Total	**277**	**103**	**7,614.7**	**161**	**22,444.5**	**13**	**14**	**8**

Source: River Boards, s. e., MoA

*Note: *) The costs of implementing the measure could not be quantified for 13 measures*

14.4.2 A summary of key information for the whole territory of the Czech Republic

For a comprehensive overview of the progress made in implementing the programme of measures, presented below is overall summary of key information for the whole territory of the Czech Republic for the purposes of this report. It was prepared as a synthesis of information derived from key information for each River Basin District Management Plan presented in the previous chapter.

Within the whole of the Czech Republic, the largest number of measures (845) were proposed in the category C.4.6 – measures to reduce the discharges of pollutants from point sources. These measures mainly include the construction, intensification or modernization of waste water treatment plants and the construction or reconstruction of sewerage systems.

The second most numerous type of measures were measures to ensure adequate hydromorphological conditions of water bodies (C.4.13). In total, 636 such measures were proposed. These measures are aiming to remedy the impacts of technical measures carried out on watercourses. The most frequent measures in this category include fish passes, the elimination of coverage of a watercourse, restoration of the natural contours of the watercourse within the channel, activation, restoration and establishment of lateral branches, pools and wetlands.

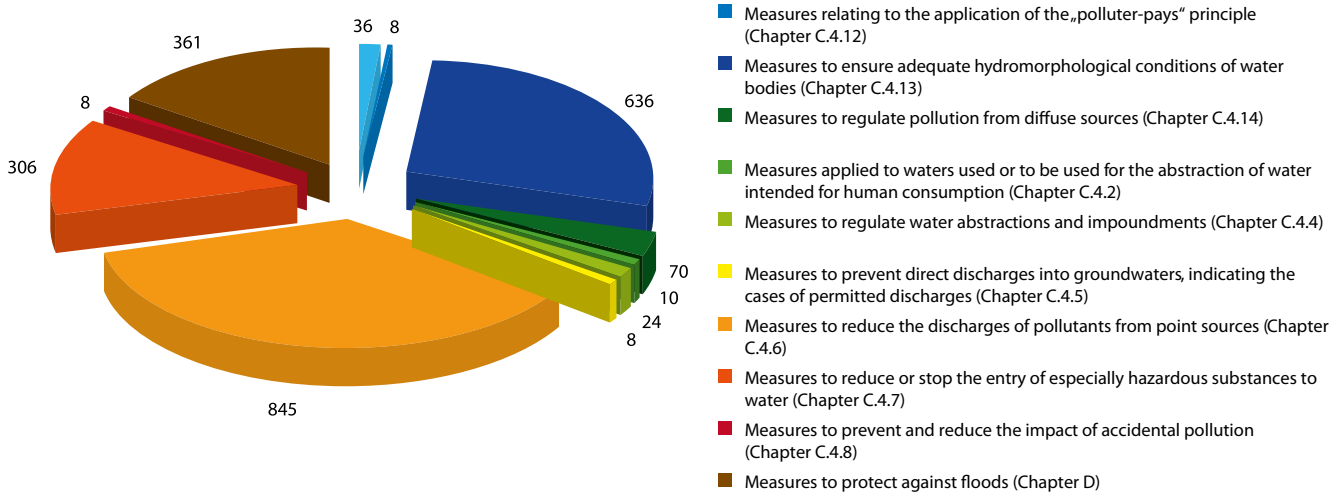
The third most frequent type of the proposed measures were measures to protect against floods and extreme hydrological events (Chapter D of the River Basin District Management Plans). These measures were included in the River Basin District Managemet Plans beyond the framework of obligations arising from meeting the requirements of Directive 2000/60/EC and include the construction of dry reservoirs and polders, river channel adaptations, construction of flood protection dikes, increasing the retention of the landscape and other flood control measures.

A very numerous group is also represented by measures aiming to reduce or stop the entry of especially hazardous substances to water (C.4.7), which in relation to surface waters are focused on the elimination of pollution from industrial sources and in relation to groundwaters primarily on the remediation of old contaminated sites.

The Krounka stream, Předhradí

As regards the status of implementation of A type measures as of 31 December 2012, it can be stated that 503 (i.e. 24% of the total number) proposed measures were completed at total investment costs exceeding the amount of CZK 23.2 billion. Other 788 (i.e. 38%) measures were launched and are in different stages of implementation. The total planned costs of implementation of these measures reach the amount of almost CZK 96 billion. As of the above mentioned date, a total of 589 measures failed to be launched, most often due to complicated property relations or insufficient funding of the measure. Another factor, which was markedly reflected in the balance of the realized measures, was the fact that minor watercourses (on which in this River Basin District the predominant part of measures included C. 4.13 category measures – measures to ensure adequate hydromorphological conditions) were transferred from the responsibility of the abolished Agricultural Water Management Administration mostly to the River Boards, state enterprises, which due to low degree of completion and preparedness of individual projects could not ensure their implementation in such extent and time. Measures that have not been realized, except for those that have proved to be ineffective or unfeasible in terms of accessibility of necessary land, will be reviewed again in the second river basin management planning cycle during the preparation of sub-basin management plans and potentially proposed for implementation in the years 2015–2018.

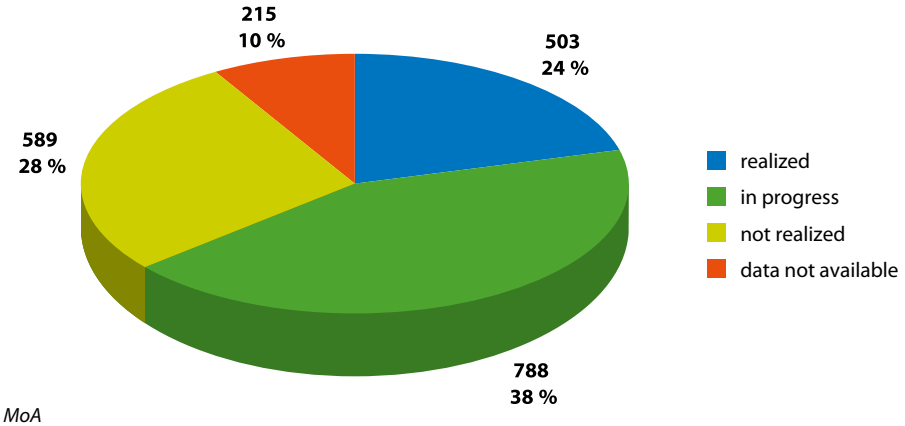
14.4.2.1 The aggregate number of measures proposed in all River Basin District Management Plans by the measure types



Source: River Boards, s. e., MoA

*Note: *) The number of B type and C type measures is quantified as the sum of unique ID measures proposed in the River Basin District Management Plans. These measures, which are general in nature, however, may have in individual River Basin District Management Plans the same wording and factual contents.*

14.4.2.2 Overall status of implementation of A type measures A (2,071 measures proposed in eight River Basin District Management Plans)



Source: River Boards, s. e., MoA

14.4.2.1 Overall status of implementation of measures

RBDMP chapter	A type measures						B type measures	C type measures
	number in RBDMP	of that realized	costs (millions of CZK)	of that in progress	planned costs (millions of CZK)	of that not realized	number in RBDMP	number in RBDMP
C.4.10	0	0	0	0	0	0	3	33
C.4.12	0	0	0	0	0	0	0	8
C.4.13	615	53	402.5	280	3,093.6	282	20	1
C.4.14	0	0	0	0	0	0	70	0
C.4.2	2	0	0	2	45.0	0	7	1
C.4.4	0	0	0	0	0	0	21	3
C.4.5	0	0	0	0	0	0	0	8
C.4.6	823	262	16,853.0	299	26,966.9	155	21	1
C.4.7	289	56	2,614.6	102	52,394.7	51	15	2
C.4.8	0	0	0	0	0	0	1	7
D	342	132	3,333.7	105	13,471.2	101	13	6
Measures in total	**2,071**	**503**	**23,203.8**	**788**	**95,971.4**	**589**	**171**	**70**

Source: River Boards, s. e., MoA
*Note: *) The number of B type and C type measures is quantified as the sum of unique ID measures proposed in the River Basin District Management Plans.*

Horní Dunajovice hydraulic structure

List of acronyms in text

BOD_5	biochemical five-day oxygen demand
CEB	Council of Europe Development Bank
CF	Cohesion Fund
CHP	chemical removal of phosphorus
COD_{cr}	chemical oxygen demand
CSN	Czech State Standard
DDT	1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane
DIS	dissolved inorganic salts
DN	denitrification
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EEC	European Economic Community
EIA	environmental impact assessment
EIB	European Investment Bank
EQS	Environmental Quality Standards
ERDF	European Regional Development Fund
EU	European Union
FAD	flood activity degree
HCH	hexachlorocyklohexan

ISPA	Instrument for Structural Policies for Pre-Accession
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
N	nitrification
$N_{-inorganic}$	inorganic nitrogen
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (sectoral classification of economic activities according to Eurostat)
OECD	Organization for Economic Co-operation and Development
OPE	Operational Programme Environment
PCB	polychlorinated biphenyls
PE	population equivalent
Q_a	long-term annual average flow
Q_m	long-term monthly average flow
R&D	research and development
R&D&I	research, development and innovation
RBDMP	River Basin District Management Plans
s. e.	state enterprise
VAT	value added

The Brumovka stream, Brumov-Bylnice

Important contacts in water management

Ministry of Agriculture
Těšnov 65/17, Praha 1, 117 05, 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, 701 26, www.pod.cz
Morava River Board, state enterprise
Dřevařská 932/11, Brno, 602 00, www.pmo.cz
Forests of the Czech Republic, state enterprise
Přemyslova 1106/19, Hradec Králové, 501 68, www.lesycr.cz
Agricultural Water Management Administration
Hlinky 60, Brno, 603 00, www.zvhs.cz
Czech Hydrometeorological Institute
Na Šabatce 2050/17, Praha 412-Komořany, 143 06, www.chmi.cz
T. G. Masaryk Water Management Research Institute, public research institution
Podbabská 2582/30, Praha 6, 160 00, www.vuv.cz

The Ohře River, Želina

The Ohře River, Doksany

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