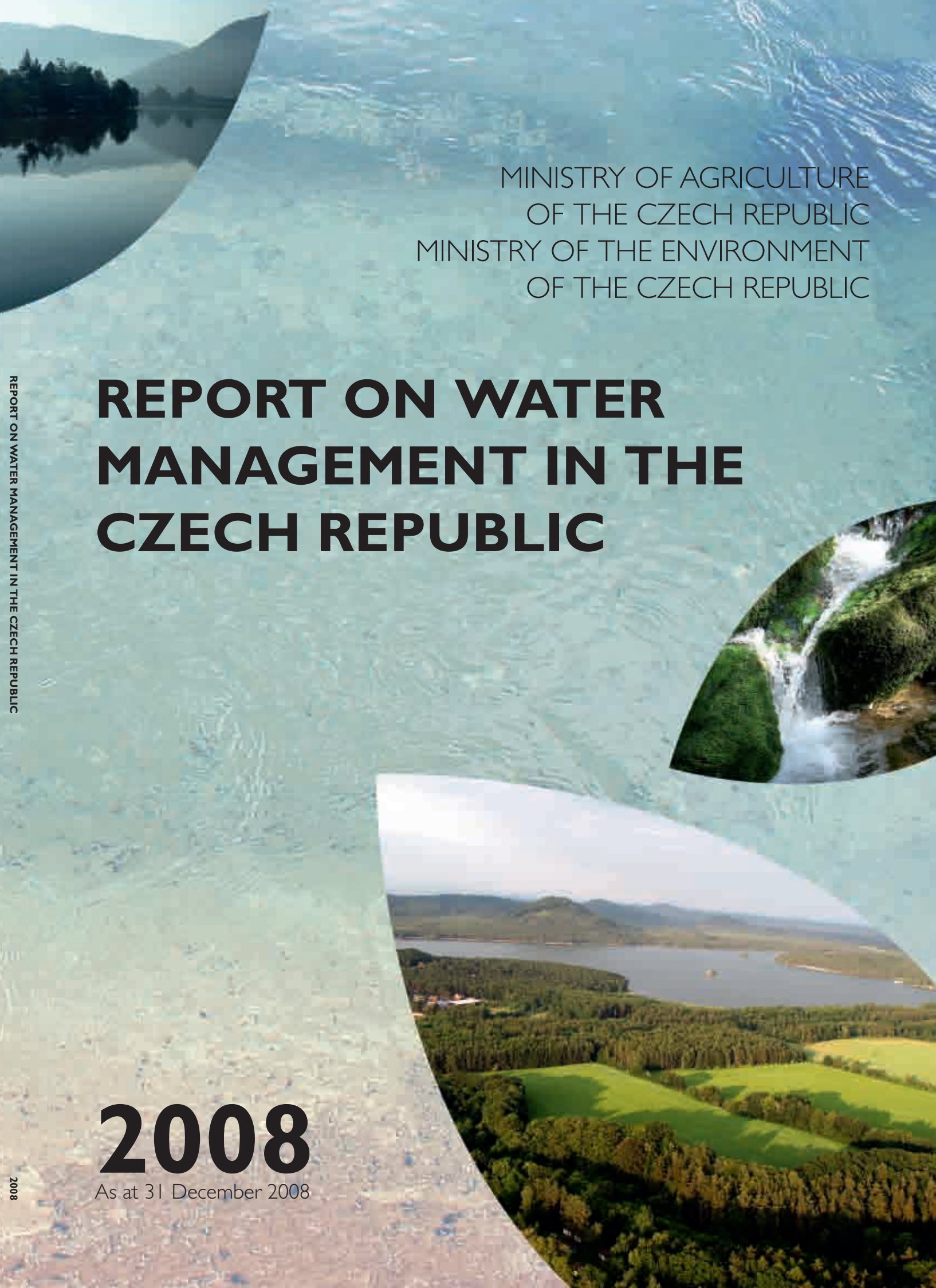

MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC
MINISTRY OF THE ENVIRONMENT
OF THE CZECH REPUBLIC

REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC

2008

As at 31 December 2008

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MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

Report on Water Management in the Czech Republic in 2008

As at 31 December 2008

Text
Department of State Administration, Education and Information Systems in Water Management
Ministry of Agriculture of the Czech Republic

Water Protection Department
Ministry of the Environment of the Czech Republic

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and World Water Day 2009 celebrations.

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As at 31 December 2008

REPORT ON WATER MANAGEMENT IN THE CZECH REPUBLIC

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

Dear Readers,

The Report on Water Management of the Czech Republic in 2008, generally called the Blue Report, is the 12th edition of this summary form.

It provides a complete overview of the water management system and the management of the quality of waters in the competence of the Ministry of Agriculture of the Czech Republic and the Ministry of the Environment of the Czech Republic and both sectors participated in its production. It contains information about the status of water in the Czech Republic, water services and processes which were taking place in water management in the last year, including the development trends.

The Ministry of Agriculture of the Czech Republic as the central water authority executed, also this year, like in the previous years its authority in water management through five watercourse administrators, the five River Boards, state enterprises, the Forests of the Czech Republic and the Agricultural Water Management Administration. The year 2008 confirmed the stabilised drinking water supply to the population and waste water treatment. More than 92% of the inhabitants of the Czech Republic were in this year supplied from water supply systems and more than 95% of waste waters were treated. The high percentage of population connected to the sewerage systems and waste water treatment plants supports the improvement of the quality of water in watercourses, as follows from comparison with the early nineties of the last century. In spite of this the quality of surface waters and groundwaters is the Czech Republic is still adversely affected by non-point source pollution, in particular caused by farming in combination with atmospheric trends and erosive runoff in the landscape. The measures to reduce these influences are specified for individual areas and their implementation is a challenge for future years.

The floods in the Czech Republic are due to their frequency and intensity in the last ten years an extremely alarming phenomenon. Although there was only one flood situation in the year 2008, the responsible authorities and institutions nevertheless continued to implement programmes for remedying the consequences of floods in the year 2006 and at the same time – in the spirit of the Government declaration of the period – to carry out the programmes for building and improving flood protection measures. They also included the support for renewal, dredging and rehabilitation of fishponds and construction of water reservoirs, which was aimed at the improvement of their water management and non-production functions and in particular the improvement of retention capacity of the landscape.

I would also like to draw your attention to WATER INFORMATION SYSTEM of the Czech Republic which is a source of data both for professional and general public, relating to water stages, precipitation and quality of waters, available in the internet website at www.voda.gov.cz, and can be used not only in flood situations but also for tourist information etc. In addition, since the year 2007 the public had a unique possibility to use the connection through WAP function in mobile phones (www.voda.gov.cz/wap).

I trust that the Blue Report for 2008 will provide all interested with a high quality source of information, facilitate their orientation in development trends relating to water and water use and allow them to understand how much needs to be done at various levels to make water available and ensure its good quality. Water, this source of and prerequisite to life, clearly deserves our attention.

Jakub Šebesta
Minister of Agriculture of the Czech Republic

Dear Readers,

We present a publication called the Report on Water Management of the Czech Republic in 2008 known rather to the general public as the Blue Report. This report provides a complete overview of the status of water protection and water management in the Czech Republic.

Water as a fundamental component of the environment and at the same time the basic need of human society is in terms of competence split between the Ministry of the Environment of the Czech Republic and the Ministry of Agriculture of the Czech Republic. The basis of being successful in this field is a close and constructive cooperation of the two sectors which is also proved by this joint report. Without the good cooperation of our sectors it would not be possible to carry out planning in the field of waters, ensure high quality monitoring of waters, effective flood protection and national agricultural policy with minimum adverse impact on the individual components of the environment or implement joint geo-environmental measures.

The year 2008 was important in particular in terms of planning in the field of waters which is one of the basic requirements of the European Water Framework Directive 2000/60/EC. In the year 2008 the work was focused on completing draft river basin district plans. The key parts and the basic tools for meeting the objectives of water protection are the programmes of measures. These programmes inter alia define the time schedule of the implementation of individual measures including the strategy of their funding in the first planning period, in 2009–2015.

One of the most important financial tools for protection and improvement of the environment is the Operational Programme Environment which offers in the years 2007–2013 more than EUR 5 billion from European funds. This programme which was prepared by the Ministry of the Environment of the Czech Republic in cooperation with the European Commission brings to the Czech Republic means for the support of individual projects in a number of areas among which the most important one and also the largest one in terms of the amount of financial means is the Priority Axis 1 – Improvement of Water Management Infrastructure and Reduction of Flood Risk, supporting projects aimed at improving the status of surface waters and groundwaters, the quality and supply of drinking water and the reduction of flood risk.

Despite of the fact that only one flood situation was recorded in the year 2008, the issue of floods is still very relevant and in the recent years the attention of the public focused in particular on flood protection and the potential remedy of flood damages. The Blue Report provides detailed information about projects and financial resources in this field. And flood protection measures are exactly those that are supported under Priority Axis 1 of the Operational Programme Environment where the sum of approximately EUR 100.165 million has been allocated for flood risk reduction in the years 2007–2013. The ever more discussed category of flood protection measures includes the so-called nature-friendly flood protection measures which can be funded also by financial support from Priority Axis 6 of the Operational Programme Environment, called Improving the State of Nature and Landscape and Optimisation of Landscape Water Regime. This field of support has been allocated approximately EUR 224 million for the period 2007–2013.

I trust that the Blue Report for the year 2008 will not only provide you with valuable information about water in the Czech Republic but also contribute to raising the awareness that water belongs to the riches of nature which must be valued and that its protection and daily use cannot be taken for granted and comprises a number of activities requiring considerable financial costs.

Ladislav Miko
Minister of the Environment of the Czech Republic

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Water policy in relation to the policy statement of the Czech Government led by Mirek Topolánek (2007–2009)

Ministry of Agriculture of the Czech Republic

"The Government shall radically accelerate the process of land consolidation and provide for the implementation of flood protection programmes. It will promote increased erosion control and flood protection stability of the landscape as well as its retention capacity primarily through preventive measures and constructions projects in the public interest and ensure an efficient approach to state-owned land management."

Flood protection is implemented within two main programmes: Programme 129 120 "Support for Flood Prevention II" and Programme 129 130 "Support for Renewal, Dredging and Reconstruction of Fishponds and Reservoirs".

The objective of Programme 129 120 is to further reduce the level of threat and flood risks in flood plains areas of watercourses, improve the storage capacity in flood plains and increase the capacity of watercourse channels in urban areas. Preventive investment measures are primarily aimed at structures having concrete and economically verifiable effects in hydrological catchment areas. The Ministry of Agriculture of the Czech Republic supported this programme by state financial resources amounting to approximately CZK 789 million.

The objective of Programme 129 130 is to improve the technical condition of fishpond resources and water reservoirs as well as to restore water management functions of fishponds and water reservoirs with regard to their importance in reducing extreme hydrological situations, i.e. floods and droughts. The Ministry of Agriculture of the Czech Republic supported this programme by state financial resources amounting to approximately CZK 419 million.

Flood prevention also includes land consolidation. The funds to this end will be used wherever suitable to settle the ownership relations in the area in question.

"The Government shall continue to embed the system of water conservation in the context of EU policy. The main objectives of the Government will be to meet the obligations of the Czech Republic to the EU and also to provide financial resources to improve flood protection measures which will reduce the number of inhabitants at risk of flood hazard and minimize the scope of flood damages."

High-quality assessment of the individual measures in terms of effective reduction of flood risk is guaranteed by the activity of an independent expert appointed for Programme 129 120 "Support for Flood Prevention II" and Programme 129 130 "Support for Renewal, Dredging and Reconstruction of Fishponds and Reservoirs". Before each project is included in any of these programmes it is discussed within the interdepartmental working group set up by the Minister of Agriculture of the Czech Republic (with participation of the representatives of the Ministry of Finance of the Czech Republic and the Ministry of the Environment of the Czech Republic) based on government resolution on financing flood protection measures implemented by the Ministry of Agriculture of the Czech Republic (of 10 May 2006 No. 496).

"The Government shall work towards creating transparent conditions and rules for providing subsidies to compensate damages caused by natural disasters or other extraordinary events."

Act No. 181/2008 introduced into Act No. 254/2001 on Water (the Water Act) inter alia the institute of areas designated for controlled flooding, with the government guarantee of compensation for damages caused by controlled flooding.

Source: the Office of the Government

Ministry of the Environment of the Czech Republic

"The Government of the Czech Republic shall ensure in-time and high-quality completion of operational programmes facilitating the use of EU funds in the 2007–2013 period with the system being based on continuous financing as well as on reducing administrative and red tape burden adopting the principle of transparency and rules clearly stipulated in advance. The Government shall prepare proposals to make the system of European funds distribution simpler and more transparent, as well as implementation documents for the individual operational programmes, based on the above principles. The Government shall establish a well arranged and consistent system for informing the public and the public administration representatives about the possibilities to make use of EU funds."

The second largest Czech operational programme is the Operational Programme Environment (hereinafter referred to as OPE) offering in the 2007–2013 period more than 5 billion Euro from European funds (in particular the Cohesion Fund and the European Fund for Regional Development). The objective of OPE is to protect and to improve the quality of the environment as the basic principle of sustainable development. OPE which was prepared by the State Fund of the Environment and the Ministry of the Environment of the Czech Republic in cooperation with the European Commission, provides the Czech Republic with means to support concrete projects in seven areas, with Priority Axis 1 – Improvement of Water Management Infrastructure and Reduction of Flood Risks – supporting projects aimed at improving the status of surface water and groundwater, improving the quality and supply of drinking water and reducing flood risks. To this end OPE offers funds amounting to almost EUR 2 billion. A special internet website www.opzp.cz and telephone info-line called the Green Line were set up to inform the public.

"Accession to the European Union gave the Czech Republic opportunity to become an active co-creator of the European political agenda. Czech Presidency in the EU Council in 2009 will be an important tool to make use of this opportunity."

In May 2008 the presidency troika France – the Czech Republic – Sweden produced a roadmap for the field of water policy defining the following issues as joint priorities of these three countries: The implementation of Water Framework Directive, the so called Marine Directive, the Directive on Assessment and Management of Flood Risks as well as adaptation to climate change in the field of water policy, approval of the Directive on Environment Quality Standards, water issues in connection with agriculture and the new structure and mandate of the Joint Implementation Strategy for the Water Framework Directive in the years 2010–2012.

By the end of the year 2008 the Official Journal of the European Community published the new directive of the European Parliament and the Council 2008/105/EC of December 16 2008 on Environment Quality Standards in the field of water policy, the amendment and subsequent abrogation of the Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC and 86/280/EEC and on the amendment of the Directive of the European Parliament and the Council 2000/60/EC. This directive stipulates environment quality standards (hereinafter referred to as EQS) at the Community level for priority substances defined in line with Article 16, Section 2 of Directive 2006/60/EC, and some other dangerous substances. The Czech Republic intensely participated in preparing this directive.

"The Government shall continue in the effort to clarify land ownership relations by completing restitution process and establishing a situation when farmers will run farms on their own land or contractually leased land. The Government shall accelerate digitalization of real estate registry. The Government shall radically accelerate the process of land consolidation and safeguard the implementation of flood protection programmes. It shall work towards increasing erosion control and flood protection stability of the landscape and its retention capacity, primarily through preventive measures and construction projects in the public interest, and ensure an efficient approach to state-owned land management."

The Ministry of the Environment of the Czech Republic produced proposals for structural solution of erosion control and flood protection measures in seven selected priority catchment areas (the rivers Bečva, Dědina, Dyje, Upper Opava, Nežárka, Ploučnice and Svratka). In 2008 the proposed nature-friendly measures were incorporated into the draft river basin district plans in cooperation with the River Boards, state enterprises.

"The Government shall accommodate the intentions to improve navigation parameters on the Elbe waterway to the development of navigation parameters of the adjacent waterway in Germany and shall respect requirements for nature conservation, which the Czech Republic is obliged to meet with regard to the European legislation."

Within the International Commission for the Protection of the Elbe the Czech Republic participated in drawing up the draft International Plan for the Elbe River Basin which also deals with shipping traffic on the Elbe and inter alia states that: "The representatives of states situated on the Elbe have agreed in respect of coordinated implementation of the Water Framework Directive that they will jointly strive for making the shipping traffic as sustainable as possible". The draft plan was published on 22 December 2008 on the web site to open the space for comments made by the public.

"The Government shall continue to embed the system of water conservation in the context of European Union policy. The main objectives of the Government will be to meet the obligations of the Czech Republic to the EU as well as to provide financial resources to improve flood protection measures which will reduce the number of inhabitants at risk of flood hazard and minimize the scope of flood damages. The Government shall work towards creating transparent conditions and rules for providing subsidies to compensate damages caused by natural disasters or other extraordinary events."

This objective is continuously accomplished by transposition of the Water Framework Directive and its daughter directives into the Czech legislation and by their implementation at the national level. At present this regards, except for the Water Framework Directive, also the Groundwater Protection Directive (118/2006/EC), the Directive on the Assessment and Management of Flood Risks (2007/60/EC) and the Directive on Environment Quality Standards in the field of waters (2008/105/EC).

Flood protection measures can be supported from OPE, Priority Axis 1 Improvement of Water Management Infrastructure and Reduction of Flood Risks and from Support Area 1.3 Flood Risk Reduction. The flood protection issues are then divided into the system of nature-friendly flood protection measures and the system of flood control service and preventive flood protection. For the period 2007–2013 about EUR 100.165 million were allocated for Support Area 1.3. With regard to the implementation of the Water Framework Directive and the Directive on the Assessment and Management of Flood Risks these funds will be mainly used when implementing the programmes of measures in the individual river basin plans.

As stated above, the issues of flood protection measures may be dealt with through a system of nature-friendly flood protection measures. These measures can be funded by financial support under Priority Axis 6 – Improvement of the Status of Nature and Landscape or, as the case may be, under Support Area 6.4 – Optimization of Landscape Water Regime. This involves the support of increasing the retention capacity of the landscape and reducing the incidence and impacts of flood situations and drought by means of measures beneficial in terms of nature and landscape conservation, renewal of the natural hydrological regime of the landscape and protection against water erosion. About EUR 224.784 million were allocated for Support Area 6.4 for the period 2007–2013.

 ELIŠKA JIRÁNKOVÁ, 9 years, Malé Svatoňovice basic school, Královehradecký kraj region

Hydrological balance

1.1 Temperature and precipitation

The year 2008 was in general the 8th warmest year over the whole observation period since 1961. In the Czech Republic the temperature reached 8.9 °C, which is 1.4 °C less than the long-term average over the period between 1961 and 1990. The mean temperature in Bohemia at the same time exceeded the long-term average by 1.3 °C, while in Moravia and Silesia the mean temperature 9.1 °C exceeded the average by 1.5 °C.

In terms of temperature, the beginning of the year was significantly above the average. The average temperature in January was +1.3 °C, which is 4.1 °C more than the long-term average. With regard to the fact that in 2007 the temperature in January reached the value of +6.0 °C above the long-term average, 2008 was the second year with a positive temperature variation. February, with a mean temperature of 2.3 °C, was also significantly above the average (the variation from the average being +3.4 °C). This month was followed by March and April with a temperature variation of +0.5 °C, and the months May to August, which were 1.9 °C warmer than the respective long-term average. July was the warmest month of the year 2008 due to a mean temperature of 17.9 °C, followed by August, with 17.5 °C, and June, with a temperature of 17.4 °C. Looking at the individual months, the only negative variation (–0.8 °C) from the long-term average was recorded in September. October was, in terms of temperature, a normal month (+0.3 °C above long-term average). The last two months were again significantly warmer than the long-term average (up by +1.7 to +1.9 °C). Despite this, December, with a mean temperature of 0.9 °C, was the coldest month of the year 2008. In 2008 none of the months thus showed a mean temperature below 0 °C.

The River Bobrůvka, Bobrová

In terms of precipitation the year 2008 was slightly below the average, with a total precipitation amount of 619 mm, corresponding to 92% of the long-term average. In Bohemia the total precipitation amount represented 93% of the average; in Moravia and Silesia 90% of the long-term average.

In terms of precipitation, the first two months of the year were subnormal (January 91% and February 73% of the average), and the lowest absolute monthly precipitation amount of 28 mm was recorded in February, followed by March, with a total precipitation amount of 61 mm. This represented the third highest monthly amount of the year 2008 and corresponded to 153% of the average. April was slightly above the average, with precipitation at 112% of the long-term average. May and June were, in terms of rainfall, subnormal, with 76% of the average and 70% of the average respectively. The largest amount of precipitation in the year 2008 was recorded in July, with 84 mm, corresponding to 107% of the long-term average. The second largest precipitation amount, 69 mm, was recorded in August, which was, nonetheless, at 88% of the long-term average, below the mean values. With regard to precipitation, the remaining months were average or below the average, with recorded amounts ranging from 74 to 104% of the long-term average.

More significant variations in precipitation amounts between the regions of Bohemia on the one hand and Moravia and Silesia on the other occurred in February, when precipitation in the eastern part of the country amounted only to 59% of the long-term average, while in Bohemia the precipitation amount corresponded to 82% of the long-term average. Another variation was recorded in April (Bohemia 125% of the long-term average, Moravia and Silesia 86% of the long-term average), September (Bohemia 77% of the long-term average, Moravia and Silesia 120% of the long-term average and October (Bohemia 124% of the long-term average, Moravia and Silesia 69% of the long-term average).

At the beginning of 2008 frontal systems were frequently passing over the country, bringing relatively intense precipitation, largely as rain. The most significant rainfall was observed in mountain areas at the beginning of March, when the daily precipitation amount in Prášily on 2 February 2008 reached 81.9 mm.

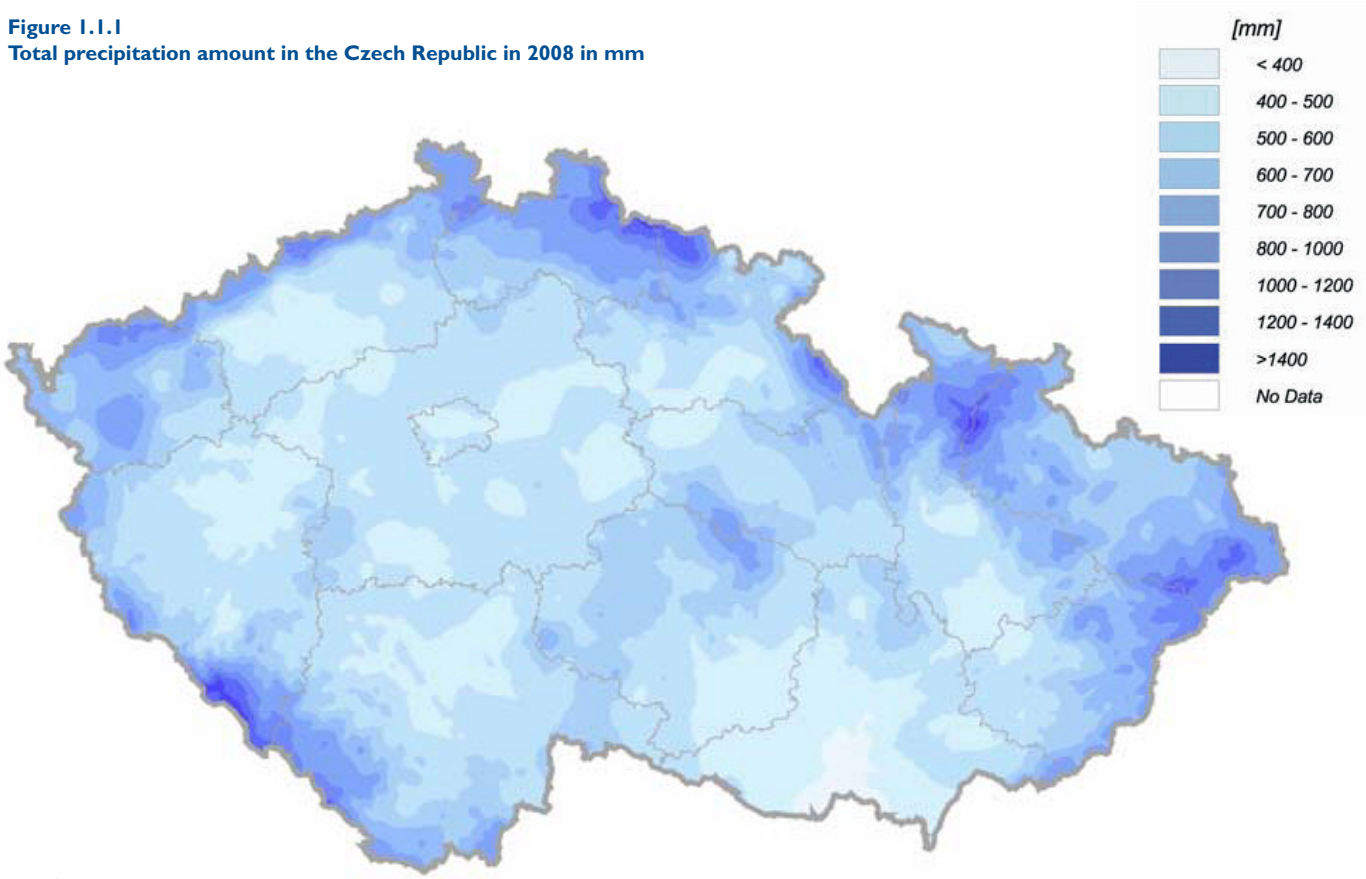
In the summer period there were frequent incidences of convective precipitation, mostly connected with cold fronts. A high incidence of storms was observed especially in the first half of June, when the highest daily precipitation amount in the year 2008, namely 102.6 mm, was observed in Čistá in the Semily district on 3 June 2008. Frequent convective precipitation occurred until mid-August. By contrast, at the end of the year, from October to December; precipitation amounts exceeding 20 mm a day were recorded only exceptionally.

Table 1.1.1
Renewable water sources in the years 1999 to 2008 in millions of m³

Item	Annual values									
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Precipitation	49,291	54,733	63,960	71,298	40,695	53,629	57,730	55,837	59,544	48,818
Evapotranspiration	35,381	40,353	48,537	48,533	29,319	41,473	42,872	37,617	46,194	37,394
Annual inflow [1]	550	573	761	1,341	524	640	781	1,070	637	462
Annual runoff [2]	14,460	14,953	16,184	24,106	11,900	12,796	15,639	19,290	13,987	11,886
Surface water sources [3]	4,875	4,789	6,600	6,506	3,758	4,270	5,489	5,317	4,673	4,503
Usable groundwater sources	1,390	1,204	1,440	1,625	1,195	1,224	1,305	1,345	1,244	1,209

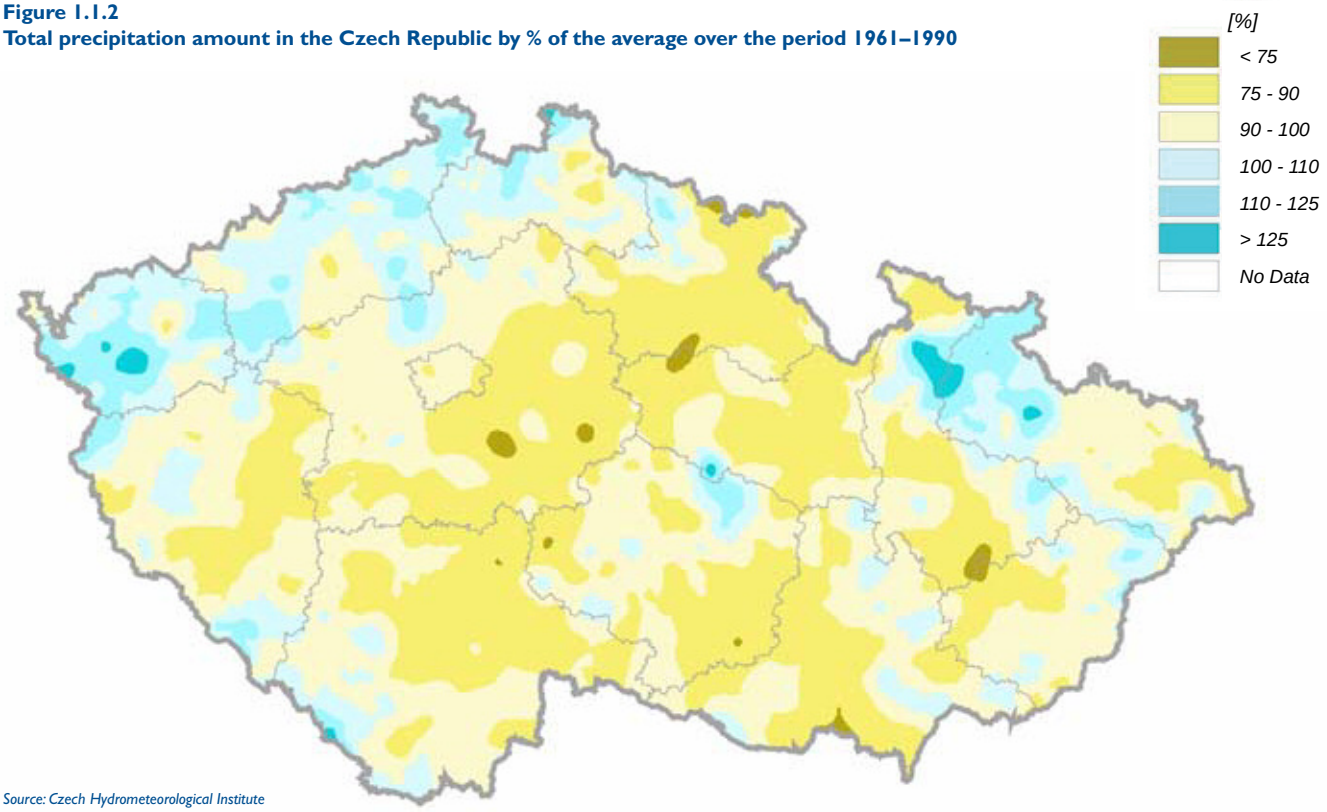
Souce: Czech Hydrometeorological Institute
Note: [1] Annual inflow to the Czech Republic from neighbouring states.
[2] Annual runoff from the Czech Republic.
[3] Determined as the flow in the main catchment areas with 95% probability.

Figure 1.1.1
Total precipitation amount in the Czech Republic in 2008 in mm



Souce: 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 flow the year 2008 was in most parts of the Czech Republic below the average, and low in flood situations. Average annual flows mainly ranged from 65 to 90% of long-term annual averages.

The Q_A level was exceeded only on the River Opava (up to 123% Q_A). Relatively higher average annual flows (99 and 94% Q_A) were also observed on the lower stretches of the River Olše and the River Otava. By contrast, the lowest flows among the analysed watercourses that were monitored were observed on the River Sázava at Nespeky (51% Q_A) and the River Jihlava in Invančice (59% Q_A). The first quarter of the year 2008 was with regard to flow above the average. The most significant flood event occurred during this period, at the beginning of March, when the water level rose primarily on watercourses in the Šumava Mountains areas (upper River Otava and upper River Vltava), where peak flows reached the level of 20-year return period, but also in the Giant Mountains and

the Jizerské Mountains, where the flows corresponded to a 2-year return period. In terms of long-term monthly mean values, at the beginning of January the flows were below the average, ranging from 40 to 90% Q_M, rising to values ranging mostly from 90 to 200% Q_M.

Water tables often varied during the second quarter of the year, especially in May in the River Odra catchment area. From April to June mean monthly flows of most of the monitored watercourses were below the average, mostly ranging from 50 to 90% Q_M. Larger flows were recorded by the end of April particularly in the upper part of the River Ohře catchment area (170% Q_M) and on some watercourses in the River Berounka catchment area (the Mže River up to 195% Q_M). In May the higher flow rates were recorded in the River Odra catchment area (mostly between 125 and 200% Q_M).

With regard to runoff, the third quarter of the year was below the average in most of the monitored catchment areas, with flows ranging most often from 30 to 80% Q_M. In general, higher rates of streamflow were observed on watercourses in the River Odra and the River Morava catchment areas, where especially in September the mean flows in the River Opava catchment area reached 200 to 500% Q_M. In July water levels in watercourses fluctuated due to the incidence of convective precipitation, while in August and September the water stage was steady or slightly decreasing except for increased water levels at the end of September in the northeast of the Czech Republic.

The last quarter of the year 2008 showed the lowest flow rates over the whole year. Except for the end of October, when water levels rose on minor watercourses in North Bohemia, the water stages remained stable. Mean monthly flows mostly ranged from 40 to 80% Q_M. Higher flows were observed only in the River Odra catchment area and on mountain watercourses of the Giant Mountains and the Jizerské Mountains, where these flows in November and December sporadically reached values of around 150% Q_M.

1.3 Groundwater regime

The groundwater situation in the year 2008 negatively reflects the snowfall and rainfall deficit in the winter period, which by and large normal precipitation amounts in the summer months then could not compensate. Despite the adverse development, the situation slightly improved in North Moravia and South Bohemia compared to the year 2007. By contrast, groundwater subsidence observed in previous years continued in the catchment area of the whole stretch of the River Elbe and especially in the River Berounka catchment area. In general, a slow but steady decrease in groundwater levels is characteristic for the year 2008.

At the beginning of 2008 groundwater levels in wells in most parts of the Czech Republic were more or less above or comparable to long-term monthly mean values. The range of classification of the individual catchment areas varied from 33% in the long-term monthly cumulative frequency curve; in the River Dyje catchment area up to 67% in the long-term monthly cumulative frequency curve in the Berounka River catchment area. On the contrary, the prevailing groundwater yields were slightly below the average of the long-term monthly cumulative frequency curve classification, ranging

The River Bečva, Osek

from 42% (the River Odra catchment area and the upper River Morava catchment area) up to 72% (catchment area of the lower Elbe right-bank tributaries). Long-term frosty weather with a several week-long absence of precipitation resulted in an overall lowering of groundwater levels in wells as well as in spring yields, especially in the northeast of the country and in South Bohemia. In other catchment areas this frosty weather caused that the levels remained at the same level.

Conditions for groundwater recharge were not suitable until the onset of higher temperatures in the last two weeks of January. Water levels and yields then more or less began to rise untill March (on the lower River Elbe even until April), when annual maximum values were reached at most of the monitored structures. These maximum values were, however, mostly insignificant and comparable to long-term monthly mean values: only half of all the monitored structures of the reporting network reached or exceeded this level. Groundwater reached the highest level in the south of the country, where the above-average water level stage was documented by most wells. The lowest water levels were in the northwest Bohemia with a mere 14% of above-average wells. The springs reached the spring maximum values as late as April and the highest water yields were observed in the northeastern parts of the country (39% of the long-term monthly cumulative frequency curve), while the lowest yields were seen in the south (57% of the long-term monthly cumulative frequency curve) and in the west (65% of the long-term monthly cumulative frequency curve) of the country. From April, or in some cases May, rising temperature and increasing evotranspiration resulted in a period of slow and steady groundwater level and yield lowering at most of the monitored structures. In the following months the monitored values were falling or, as the case may be, were at standstill during the summer until September or October, when the annual minimum values were reached. Local and episodic rainfall events during this period showed only locally in the short-term, but did not contribute to an overall improvement of groundwater recharge. Water levels and yields in many of the monitored structures dropped to values characteristic for a dry period (30% of wells, 50% of springs). The values measured in most of the catchment areas that were analysed were below the average within the long-term monthly cumulative frequency curve ranged from 60% (Moravia) up to 80% (the River Berounka and the lower Elbe). The lowest groundwater levels were observed in three quarters of structures in Central and Western Bohemia, primarily in the River Berounka catchment area, where none of the monitored wells and springs reached the long-term mean values.

A more favourable situation in the groundwater regime occurred only in North Moravia during the July-October period as a result of higher precipitation amounts. In the River Odra catchment area groundwater levels rose significantly (the yields rose as late as in August) above the long-term monthly mean values (in total 35% in the long-term monthly cumulative frequency curve) and remained at this level until November. However, groundwater levels and yields reached in most of the structures in this catchment area at the beginning of the year were not exceeded.

The coming winter period, with heavy precipitation events, resulted by the end of the year in a slight improvement of groundwater regime, especially in West Bohemia. In the whole stretch of the lower River Elbe area groundwater levels in wells came significantly close to mean values: 52 up to 57% in the long-term monthly cumulative frequency curve. Groundwater levels slightly rose also in the River Vltava and the River Berounka catchment areas even though they still remained at a very low level: 68 up to 79% in the long-term monthly cumulative frequency curve. With regard to springs, this positive development showed only sporadically. In West Bohemia the yields admittedly slightly rose but compared to the long-term values for individual months most of the yields remained by the end of the year close to values characteristic for a dry period. In the east of the country the situation was mainly steady except for moderate lowering of groundwater levels and yields down to the long-term monthly cumulative frequency curve values 58% (the River Dyje), 60% (the River Odra), 66% (the upper River Elbe) and 67% (the River Morava).

By the end of the year the whole country thus showed, in terms of groundwater quantity, values below the average, with a significant deficit in Central and West Bohemia.

 JIŘÍ HROCH, 8 years, Drahanovice basic school, Olomoucký kraj region

Flood situations

2

2.1 Flood courses

There was only one flood situation in the year 2008.

At the beginning of March the low pressure system Emma was passing over Europe together with accompanying frontal systems that brought intense rainfall, especially to mountain areas of the Šumava Mountains, the Giant Mountains, the Jizerské Mountains and the Orlické Mountains. This resulted in a water level rise in the affected areas in several waves, with the highest peak discharge values reached on 1 March 2008, especially in the upper River Otava and River Vltava catchment areas above Lipno reservoir. That said, the River Vydra in Modrava, the River Křemelná in Stodůlky and the River Otava in Rejštejn and Sušice reached Flood Activity Degree III (hereinafter referred to as "FAD"). The most extreme peak flow, with a return period of 20 to 50 years occurred on the River Otava in Rejštejn, while the flow on the River Otava in Sušice corresponded to 10-year or 20-year flood. Intensity further decreased downstream. In Černý Kříž at the Studená Vltava River this flood corresponded to 20-year return time at FAD II.

In North Bohemia this event mainly occurred in the uppermost stretch of the Elbe, where FAD III was reached as far as Vestřev, with the flow at the level of 1-year or 2-year flood. In the short-term, FAD III was also reached on the Mandava River in Varnsdorf (1-year flow).

The River Mumlava, Harrachov

2.2 Remedying flood damages

Sub-programme 229 114 – "Remedying of the impacts of floods in the year 2006", part of programme 229 110 – "Remedying flood damage on state-owned water management property" was implemented also in the year 2008.

The objective of sub-programme 229 114 is to renew watercourse channels and hydraulic structures damaged by extreme stress during floods in the year 2006, build suitable stabilising structures, implement changes in respective structures ensuring the permanent functionality of watercourse channels in places where the observed failures occurred, and drain water from the adjacent area without causing damage. Implementation of the respective measures is ensured by watercourse administrators, i.e. by the River Boards, state enterprises, the Forests of the Czech Republic, state enterprise, and the Agricultural Water Management Authority. The financial performance of sub-programme 229 114 and programme 229 110 is included in Chapter 9 of this Report.

The River Branná, Hanušovice

 VOJTĚCH MOŽNÝ, 10 years, Kanice basic school, Jihomoravský kraj region

Quality of surface waters and groundwaters

3

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 2007–2008 period, under CSN 75 72221 standard – 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 3.1.1 shows that despite significant improvement of water quality, some river stretches in the Czech Republic are still classified in water quality Class V.

Evaluation of surface water quality in the year 2008

In the year 2008 water quality was measured at 306 hydrometric profiles of the former national network for monitoring the water quality of watercourses. Chemical indicators were evaluated in accordance with Government Order No. 61/2003 on the indicators and values of permissible pollution of surface water and wastewater, mandatory aspects of permits for discharge of wastewater into surface water and into sewerage systems, and on sensitive areas, as amended by Government Order No. 229/2007, and under CSN 75 7221 Water Quality standard – Classification of Surface Water Quality.

The respective monitored hydrometric profiles are classified in the following water contamination classes under the CSN 75 7221 standard:

Class I: unpolluted water – surface water status that was not significantly affected by human activity, with water quality indicators that do not exceed values corresponding to the natural standard background in the respective watercourse,

Class II: slightly polluted water – surface water status that was affected by human activity to an extent that water quality indicators attain values allowing the existence of 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 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 only a heavily unbalanced ecosystem.

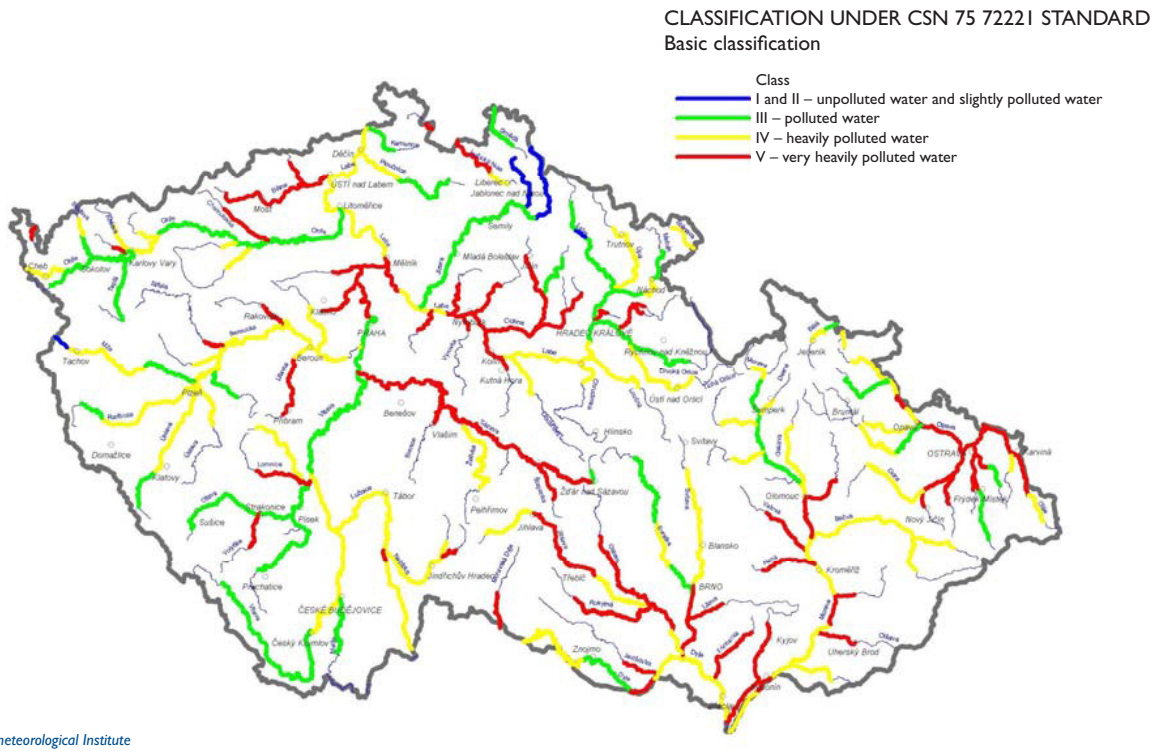
Among the basic chemical indicators, that were most frequently exceeded was the pollution standard defined by Government Order No. 61/2003 on the indicators and values of permissible pollution of surface water and waste water, mandatory features of the permits for discharge of wastewater into surface water and into sewerage systems, and on sensitive areas, as amended, as regards conductivity in minor watercourses (Zákolanský, Chodovský and Bakovský streams and the Rivers Trkmanka, Vlkava, Kyjovka and Litava), while among larger watercourses the lower course of the River Bílina was particularly affected. This corresponds to the content of dissolved solids that were present in the same watercourses in increased concentrations. By the same token, increased concentrations of suspended solids were found in minor watercourses in South Moravia: in the Rivers Trkmanka, Litavka and Kyjovka; and in the River Elbe catchment area: in the Rivers Javorka and Vlkava. Among the larger watercourses, those affected were the River Morava in Landžhot, the River Odra in Bohumín, the River Jihlava and the River Cidlina. Maximum values were reached in the River Blšanka, in Trnovany (the Ohře River basin) on 2 June 2008: 2,370 and 2,090 mg/l respectively. A similar situation was observed as regards the oxygen regime. The least amount of dissolved oxygen was again detected in minor watercourses: the Rivers Kyjovka, Trkmanka, Mrlina, Jevišovka, and Bílina, and in the River Vltava downstream of the Orlík reservoir. High values of COD_{Cr} and BOD_5 were measured in the Rivers Trkmanka, Litava, Vlkava and Lomnice, the River Lužnice in Veselí nad Lužnicí and in the River Cidlina at Sány. Increased BOD_5 concentrations were also detected in the Zákolanský stream and the Teplický stream, in the Výmola stream and the River Mže at Stříbro. TOC above the limits was detected in 293 hydrometric profiles, mostly in Class I to Class III, and more than 90% of the pollution standard of 13 mg/l under the Government Order was met. The maximum concentrations were measured in the River Bílina at Chánov and the River Mže at Stříbro; the highest C_{90} was in the River Vltava at Hronětice. Total nitrogen and nitrate nitrogen in most hydrometric profiles met or slightly exceeded the pollution standards of 8 and 7 mg/l respectively, with more significantly exceeded values detected in the Zákolanský stream and the Rivers Vlkava, Želetavka and Rokytná. The pollution standard for ammonia nitrogen was exceeded 5 to 9 times in 9 hydrometric profiles, on the Rivers Trkmanka and Bílina, and the Zákolanský stream, and the Rivers Litava and Mandava and the Teplický stream. Total phosphorus was classified in almost 90% of hydrometric profiles in Classes I to III, with the limit set by the Government Order No. 61/2003 not being met in about 40% of them; the Government Order limit (0.2 mg/l) was exceeded 4 to 5 times in the River Dřevnice, the Rakovnický stream, the River Trkmanka and the Rivers Litava and Bobrava, and 6 times in the Piletický stream. The value most exceeding the limit (almost 8 times) was recorded in the River Trkmanka at Podivín. The maximum value 2.97 mg/l was measured in the River Litavka at Židlochovice on 16 September 2008.

As regards chemical elements, higher concentrations of arsenic were detected mainly in watercourses in North Bohemia (combustion processes and fly ash dumping sites): the Rivers Bílina and Teplá; the Chodovský stream; the Teplický stream; the River Bystřice (Ostrov nad Ohří) and in the River Litavka. In these cases the long-term presence of these elements along with cadmium, lead and zinc is caused by a combination of increased background concentrations, old loads and atmospheric depositions. High flows in the River Elbe at the beginning of March resulted in high concentrations of suspended solids as well as higher metal content, in particular regarding aluminium and lead. The River Lužická Nisa in particular showed copper, nickel and zinc loads due to industrial production. Higher concentrations of mercury were detected in the Rivers Morava and Bečva. Significantly higher concentrations of mercury in the River Odra at Bohumín in January and February resulted in the pollution standard of 0.1 µg/l stipulated by the Government Order being exceeded. Similarly, the values in the River Cidlina in March caused the pollution standard for mercury to be exceeded 2.5 times in the Luková profile. Due to the industrial load from Záluží and Ústí nad Labem, the pollution standard for vanadium was considerably exceeded in the River Bílina at the Záluží hydrometric profile, up to 9 times, with a maximum concentration of 332 µg/l. These results were, however, obtained by only two measurements.

With regard to organic substances, as every year, the most frequently exceeded pollution standards of the Government Order concerned AOX, mostly in the middle and lower courses of the River Bílina and in the River Chomutovka. The maximum value of 180 µg/l was measured in the River Bílina – Chánov hydrometric profile. The second organic substance that is considerably widespread in watercourses and exceeded pollution standards was EDTA. In particular, in the lower course of the River Elbe, in the River Bílina, the River Lužická Nisa at Hrádek nad Nisou and in the River Stěnava at Otovice the concentrations were 1.5 up to 2 times higher than the respective limit stipulated by the Government Order; in the Zákolanský stream and in the River Chrudimka at Nemošice the oncentrations were 3 times higher, and the highest maximum and mean values were detected in the Teplický stream. The limit set by the Government Order (10 µg/l) was exceeded 6.5 times.

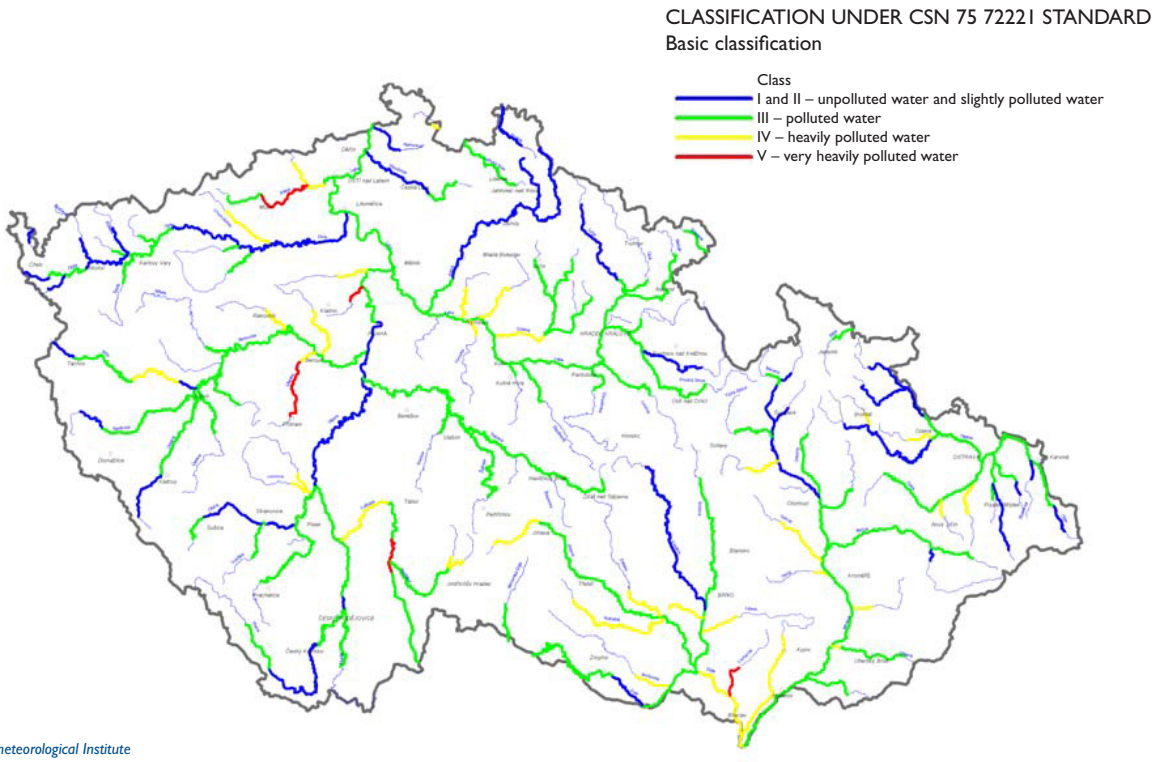
Chlorinated aliphatic compounds originating entirely from anthropogenic activity were to a larger extent present in the watercourses of North Bohemia, in the River Bílina, the River Mandava and the Teplický stream. The highest concentrations measured concerned dichloroethene, trichloroethene and tetrachloroethene. PAH constituted a large group of organic substances that were mostly present above the detection limit but seldom exceeded pollution standards. The highest concentrations of the respective substances were measured in the River Olše at Ropice, the River Odra at Bohumín, River Opava at Malé Hoštice, the River Metuje, the River Úpa at Jaroměř and in the River Úhlava at Bystřice. The pollution standard was, however, exceeded only by 10–15% with regard to fluoranthene and benzo[g,h,i]perylene

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 of the Czech Republic in 2007–2008



Source: Czech Hydrometeorological Institute

(the River Olše at Ropice) and ideno[1,2,3-c,d] pyrene in the River Olše at Ropice and the River Úpa at Jaroměř. Benzene was detected in the highest concentrations in the River Odra-Bohumín hydrometric profile, where C_{90} had a 10 times higher concentration than in the other profiles; nonetheless this quantity represented only 5% of the limit value under the Government Order. The same holds true as regards toluene, with the highest concentrations amounting approximately to 10% of the pollution standard set by the Government Order, mainly in the watercourses in the River Odra catchment area and in the Rakovnický stream. Xylenes present in a measurable quantity were detected only sporadically. Values above detection limit more often related to phenol, with the highest concentrations in the lower course of the River Svratka, and to cresols in the River Bílina, the River Mandava and the River Bystřice. Nitrotoluenes and dinitrotoluenes were present primarily in the middle and lower course of the Elbe and in the Rivers Kyjovka and Vlára. 4-chloro-2-nitrotoluene was determined only in the Rivers Kyjovka and Vlára. Nonylphenol and octylphenol values reached approximately the measurability limit. 2-, 3- and 4- monochlorophenols were detected especially in the River Morava catchment area and the highest concentrations with C_{90} around 0.3 µg/l were determined in the Rivers Dyje, Bečva and Blata. Dichlorophenols, trichlorophenols and pentachlorophenols were found in increased concentrations in the Rivers Morava, Valová, Haná and Blata; as regards watercourses in Bohemia, the highest load of

2,4,6-trichlorophenol was found in the Zákolanský stream and the River Bílina. Pollution caused by aniline, chloroanilines and N-ethylaniline was detected in the River Elbe between the Valy and Obříství hydrometric profiles, with a high prevalence in Valy. However, neither aniline nor 3,4-dichloroaniline exceeded the pollution standard in any profile. A small quantity of Nitrobenzene was detected in the middle course of the River Elbe and in the River Odra at Bohumín, where the maximum value of 2.2 µg/l was reached, but this concentration was also below the limit of the pollution standard under the Government Order. Dinitrobenzenes and chloronitrobenzenes posed a problem only in the Rivers Kyjovka and Vlára. These rivers were the only watercourses where all measurable values were recorded. Sulfonates were determined particularly in the middle course and to a smaller extent in the lower course of the River Elbe and in the lower course of the River Bílina. Maximum concentrations were found in the River Elbe-Valy hydrometric profile, with values up to 48 µg/l (naphthalene-1,6-disulphonane on 5 November 2008).

Among moschus substances contained in washing and cleaning detergents, the substances monitored were xylene, musk ketone, galaxolide and tonalide. Galaxolide and tonalide values were more often above the detection limit than musk xylene and musk ketone values. Galaxolide reached the maximum values of 200–300 ng/l in the Rivers Odra and Nisa and the Zákolanský stream, and tonalide showed values of 30–65 ng/l in the Rivers Odra and Nisa, as well as in the lower course of the River Jizera and in the River Doubrava at Záboří nad Labem. Chlorobenzenes, in particular chlorobenzene, dichlorobenzenes and trichlorobenzenes, were to a larger extent found in the River Bílina at Ústí nad Labem, possibly also in Záluží and in the River Elbe downstream of Valy. As well as in the River Elbe and the River Bílina, the frequent presence of hexachlorobenzene was also detected in the River Valová (catchment area of the River Morava). The presence of the individual PCB congeners was differentiated. Congeners 28 and 101 were recorded in concentrations of 10–15 ng/l in the River Bílina, congener 52 in the River Mandava, congener 153 in the boundary River Černá at Potůčky and congener 180 in the River Vltava at Štěchovice. In all cases these concentrations were isolated, with values above the detection limit in the only one of all the samples in the respective hydrometric profile. The profiles with PCB concentrations measured above the detection limit in more cases were the River Kyjovka at Mistřín for congener 28 + 31 and the Zákolanský stream at Kralupy nad Vltavou for congeners 28, 31 and 101. DEHP was detected above the detection limit only exceptionally and nowhere exceeded the pollution standard C90 pursuant to the respective Government Order, which is 6 µg/l. The maximum value was found in the hydrometric profile in the River Úhlava in Doudlevce – 5.18 µg/l.

As regards the wide range of pesticides monitored in the year 2008, subject to monitoring in the respective hydrometric profiles were triazine pesticides: atrazine, desethylatrazine, simazine, cyanazine, terbuthylazine and hexazinone; and methylthiotriazine pesticides: terbutryne. The most frequently detected pesticides were terbuthylazine, atrazine and desethylatrazine, with concentrations above detection limit in almost half of the profiles. The values for atrazine ranged from several tens to several hundreds with the maximum value of 250 ng/l found in the River Bílina on 7 July 2008. The presence of atrazine above the detection limit in all of the catchment areas was detected throughout the year but the pollution standard of 500 ng/l under the respective Government Order was not exceeded

The River Chrudimka, Klokočov

in any of the profiles. The maximum desethylatrazine values were also detected in the River Bílina but in Záluží the pollution standard for this pesticide under the Government Order was exceeded more than 5 times. The C_{90} value was 2.58 ng/l (pollution standard under the Government Order is 0.5 ng/l), and the maximum concentration measured amounted to 3,800 ng/l. Terbuthylazine was analysed in 1,255 samples and in 682 of them was above the detection limit. It was most frequently found in the River Elbe, the watercourses of the Elbe catchment area (the Rivers Doubrava, Cidlina, Orlice and Mrlina) and in the Rivers Morava and Dřevnice. The maximum concentration of 2.3 µg/l was detected in the River Blanice atRadonice (River Sázava tributary). Terbuthylazine is not mentioned in the Government Order. Hexazinone and simazine ranked among the most monitored pesticides; of 1,573 samples 85% of the results of hexazinone analyses were below the detection limit, but despite this fact, it ranked among the 10 pesticides which were most frequently found in water. Like atrazine and desethylatrazine, hexazinone was also detected in the highest concentrations in the River Bílina-Záluží hydrometric profile, where its concentrations repeatedly reached values around 2,000 ng/l. Other very closely monitored substances were alpha, beta, gamma and delta hexachlorocyclohexane (1,200–1,300 samples), together with DDT from the OCP group. Lindane exceeded the detection limit in about 12% of samples. Again, it was most frequently found in the River Bílina–Záluží hydrometric profile, but the highest concentrations were reached in the Rivers Vlára, Kyjovka and Litava, as well as in the River Ploučnice. However, the pollution standard of 20 ng/l set by the Government Order was met in all hydrometric profiles. DDT and its respective congeners in most measurements did not exceed the detection limit, and the values above the detection limit were present only sporadically, with the maximum of 13 ng/l, most often in the River Kyjovka. As regards the group of pesticides in the cyclodiene class (aldrine, dieldrine, endrine, isodrine and endosulfan), more than 99% of all samples were below the detection limit, while other values ranged at the detection limit level. A more frequent presence in concentrations higher than the detection limit were found for aldrine in the River Elbe-Štětí hydrometric profile, where even the limit of the pollution standard set by the Government Order was exceeded.

Among the "acidic" pesticides, those most frequently found in watercourses were MCPA pesticides (approximately 25% of samples), MCPP pesticides (approximately 12% of samples) and 2,4-D (11% of samples), which were above the detection limit in the Rivers Vlára, Morava, Dyje, Cidlina, Doubrava and Mrlina.

The account of pesticides with the most frequent presence should also include acetochlorine, metazachlorine and metolachlorine, which fall into the chloroacetanilide herbicides group. The measurement was carried out only in the watercourses in the catchment areas of the Rivers Vltava, Elbe and Ohře; these pesticides were not monitored in the catchment areas of the Rivers Morava and Odra. They were most often detected in the Elbe tributaries – in the Rivers Orlice, Cidlina, Mrlina and Bystřice, as regards other river basins also in the River Berounka and the River Radbuza catchment areas. The Government Order does not stipulate any pollution standard for these pesticides either, although their presence is quite frequent and their maximum concentrations reach values of several hundred; for metolachlorine even thousands of ng/l (the River Cidlina at Sány on May 27 2008–4,850 ng/l).

More than 5% of the positive samples for the individual pesticides were found to 25 pesticides from the 85 measured ones. For the 30 pesticides measured, 99.9–100% of samples were below the detection limit.

In conclusion we can say that regarding organic compounds and elements specified in the Government Order, the limit most frequently not complied with was the AOX (84 hydrometric profiles), with a maximum value of 180 µg/l measured in the River Bílina-Chánov profile on 30 July 2008, and the EDTA limit, which was not met in 15 hydrometric profiles (in the Teplický stream the pollution standard under the Government Order was exceeded 6 times). Hydrocarbons C_{10}-C_{40} were another indicator more frequently exceeding the pollution standard under the Government Order, but they were measured only sporadically (only 1–3 measurements per year). Yearlong increased concentrations resulting in non-compliance with pollution standards under the Government Order were found in the Rivers Bílina and Mandava for 1,2-cis-dichloroethene, 1,1,2-trichloroethene and 1,1,2,2-tetrachloroethene indicators. Some of the PAH limits – for fluoroanthene, benzo (g,h,i) perylene, indeno(1,2,3-c,d)pyrene – were slightly exceeded in the Rivers Olše, Metuje and Úpa. As regards pesticides, the respective pollution standard under the Government Order was exceeded by desethylatrazine more than 5 times in the River Bílina-Záluží profile, aldrine exceeded the respective pollution standard 1.7 times in the River Elbe-Štětí profile and chloropyrifos exceeded this standard in the River Bílina-Chánov profile (1.1 times), in the River Olšava-Kunovice profile (1.3 times), the River Litava-Židlochovice profile (1.5 times) and the River Haná-Bezměrov profile (2.1 times).

Of the elements that did not meet the pollution standards under the Government Order, vanadium and arsenic were found in the River Bílina, arsenic, selenium, boron, manganese and iron in the Chodovský stream, and cadmium, iron, zinc and manganese in the River Litavka. Copper, iron and manganese did not comply with the pollution standards under the Government Order in the River Trkmanka, while in the River Cidlina aluminium, mercury and iron did not comply with the standards. The mercury limit was not met in the River Morava-Nedakonice profile and the River Odra-Bohumín profile.

The evaluation in accordance with the CSN 75 7221 standard was very positive as regards specific organic substances. The highest class determined for these substances, namely Class III, concerned 1,1,2-trichloroethene and 1,1,2,2-tetrachloroethene in the Rivers Bílina and Mandava; other organic substances specified in the "specific organic substances" group did not exceed the limit for Class II.

The worst classified element in the "metals and metalloids" group was iron, which fell into Class V in the Rivers Trkmanka, Vlkava and Cidlina, and into Class IV in the Rivers Litava and Kyjovka and the Chodovský stream. Cadmium in the River Litavka and manganese in the River Trkmanka were classified in Class V watercourses in North Bohemia: the River Bystřice, the Chodovský stream and the River Bílina; and in South Moravia: the Rivers Trkmanka, Litava and Kyjovka, showed increased concentrations of arsenic at the Class IV level, and the same class was attributed to manganese in the Chodovský stream. The evaluation in Class IV also included zinc in the Rivers Litavka and Svratka, the Teplický stream, the River Olše and the River Trkmanka. The remaining metals in other profiles did not exceed the Class III limits.

It still holds true that in minor watercourses, especially in South Moravia, the loads of pollutants, in particular as regards the group of general chemical indicators, are higher than in the large watercourses. Organic substances originating from the chemical industry were most frequently detected in watercourses in North Bohemia and in the middle and lower course of the River Elbe, while the highest metal loads were found in the River Litavka and the River Lužická Nisa and some watercourses in Moravia with regard to mercury. As expected, pesticides were most often detected in increased concentrations in watercourses with lower flows in the River Elbe and the River Morava catchment areas and in the River Bílina at Ústí nad Labem.

Radioactivity

In surface water radio-chemical indicators are monitored on a long-term basis in selected hydrometric profiles of the national monitoring network. In 2008 these indicators were analysed at locations of nuclear power plants currently in operation and in hydrometric profiles below outlet structures for the discharge of mine waters from locations where uranium ores were formerly mined and in watercourse stretches affected by the seepage from refuse dumps, sludge beds and ash lagoons.

During 2008 the volume activity of tritium in the range of 16–112 Bq/l was detected in the nearest hydrometric profile on the River Jihlava. It was monitored downstream of the orifice of waste waters from the Dukovany nuclear power plant. These values meet the pollution standard set by the Government Order for tritium in surface watercourses, and the identified activities were significantly lower than the values during the last year.

The volume activity of tritium in the surface water of the River Vltava in the hydrometric profile downstream of the outlet of waste waters from the Temelín nuclear power plant did not exceed 40 Bq/l, which meets the pollution standard set by the Government Order. Total volume activity alpha and beta was detected in values categorised as unpolluted water quality. Other activation and fission products produced during nuclear power plant operation were not detected.

Increased values of radiological indicators were detected in the vicinity of uranium ore deposits in the Příbram area, in surface water of the River Kocába at the Višňová hydrometric profile and in the Drásovský stream at the Drásov profile. Under the CSN 75 7221 standard, the surface water quality corresponds to Quality Class V – very heavily polluted water. In comparison with the year 2007, surface water quality in other hydrometric profiles in this area slightly improved: under the above classification standard surface waters are classified in Quality Class IV – heavily polluted water or Quality Class III – polluted water.

The River Vltava, Lipno Reservoir

Surface water quality in Quality Class V – very heavily polluted water was detected in the River Hadůvka at the Skryje hydrometric profile below the outlet of waste water from the Rožínka mine uranium ore concentration plant. Pollution of surface water in other hydrometric profiles in this area continues due to increased values of radiological indicators, based on which these waters are classified in Quality Class IV or III.

Surface water quality in the River Nežárka and especially in the hydrometric profiles on the River Ploučnice in the vicinity of the Stráž pod Ralskem deposit considerably improved compared to the 1990–2000 period as regards the monitored radio-chemical indicators.

Quality of water in water supply reservoirs and other reservoirs

The quality of water in reservoirs in the year 2008 was affected at first by the mild winter, with a low snow pack, and then by the dry and warm summer period. A number of reservoirs showed eutrophication of water (i.e. the process caused by increased content of mineral nutrients, especially phosphorus compounds and also nitrogen in water).

Larger problems with water quality occurred in water supply reservoirs and reservoirs used for drinking water supply purposes: Hamry, Křižanovice, Vrchlice, Seč, Lučina, Vír, Fryšták, Hubenov, Mostiště, Znojmo, Boskovice, Bojkovice, Ludkovice, Opatovice, Nová Říše and Koryčany, and in reservoirs used for purposes other than the supply of drinking water: Les Království, Rozkoš, Mšeno, Pařížov, Fojtka, Skalka, České údolí, Hracholusky, Brněnská přehrada, Horní Bečva, Bystřička, Novomlýnské nádrže reservoirs, Luhačovice, Křetínka, Moravská Třebová, Jevišovice, Oleksovice, Plumlov, Těrlicko and Olešná. In the overall assessment it can be said that the impaired water quality in the year 2008 was satisfactorily resolved in terms of operation: there were no restrictions in water supply to the population. Aerial application of lime eliminating the adverse effect of peaty waters with a low alkalinity and low pH, which has already been used for several years, had a positive impact on the quality of water in the Souš reservoir. Water in some of the reservoirs not used for drinking water supply (such as Orlík, Seč, Rozkoš, Skalka, Hracholusky, Luhačovice, Brněnská přehrada, Baška, Těrlicko and Olešná) was in summer months categorized as less suitable or unsuitable for recreation.

Small watercourses and small reservoirs monitored by the Agricultural Water Management Authority in 2008

The Agricultural Water Management Authority, in cooperation with other bodies, provides operation of the national monitoring system for survey and evaluation of surface water status.

In the year 2008 the Agricultural Water Management Authority monitored in total 944 hydrometric profiles on watercourses and small reservoirs. Water samples were monitored with regard to general physical and chemical indicators, allowing at an early stage identification of minor contamination originating from municipal and agricultural pollution sources as well as foreign substances indicating potential contamination of the environment by heavy metals and some specific organic substances. The content of foreign substances was monitored by single measurements in the same hydrometric profiles and the sedimentary deposit.

Regarding monitoring system operation and conceptual framework, the Agricultural Water Management Authority cooperates with the Ministry of the Environment, the River Boards state

enterprises, the Czech Hydrometeorological Institute, the T. G. Masaryk Water Management Research Institute – public research institution, the Research Institute for Soil and Water Reclamation, the Faculty of Science of Masaryk University in Brno, the State Phytosanitary Administration and the Academy of Science of the Czech Republic.

Within the Water Framework Directive implementation process the Agricultural Water Management Authority prepares every year the operational monitoring network, in cooperation with the River Board state enterprises. In its capacity as an expert body it participates in fulfilling the requirements of the Council Directive 91/676/EEC (Nitrate Directive) registering pollution from agricultural sources.

Statistically evaluated results of this monitoring are published on the website of the Agricultural Water Management Authority (www.zvhs.cz). Access to data and other information for the public is also provided through the Salamander information system (https://is2ms.monsms.cz). Nitrate monitoring data is presented on the Nitrate portal (https://is2ms.monsms.cz/nitr). The information system of the Agricultural Water Management Authority is a part of the WATER INFORMATION SYSTEM of the Czech Republic (www.voda.mze.cz). Monitoring results are also sent to the ARROW information system, to the data warehouse of the CL monitoring of the Ministry of Agriculture and based on specific needs and requirements to all stakeholders (controlling and inspection bodies, scientific institutions, state administration, local councils etc.).

Quality of water used for swimming during swimming season 2008

The most frequent problems with water quality of are connected with a huge presence of cyanobacteria, which every year results in the prohibition of swimming in some localities.

The quality control of recreational waters in the Czech Republic is within the remit of the Ministry of Health and is carried out under Act No. 258/2000 on the protection of public health, as amended, Public Notice No. 135/2004 stipulating requirements for swimming pools and saunas and sanitary requirements regarding sand used in sandboxes in outdoor playgrounds, Act No. 254/2001 on water (Water Act), as amended and Public Notice No. 159/2003 specifying surface waters used for swimming, as amended by Public Notice No. 152/2008.

Surface waters used for swimming ("swimming areas") are defined in Act No. 254/2001, and the list of these waters as well as their delimitation are stipulated by Public Notice No. 159/2003. These sites are not categorised as specific facilities and are not run by any operator but many people use them for swimming. The obligation to carry out water quality control in these areas is under the remit of the bodies responsible for the protection of public health, and the scope and frequency of these controls are stipulated by Public Notice No. 135/2004. There are 130 such swimming areas in the Czech Republic. Open air swimming pools are recreational facilities operated under Act No. 258/2000 and Public Notice No. 135/2004; water quality control is performed by the operator of the respective facility, and its results are to be submitted to the relevant body responsible for the protection of public health in the respective area.

During the 2008 swimming season the bodies responsible for the protection of public health monitored in total 259 sites used for swimming, including 129 open air swimming pools and 130 swimming areas as well as 2 so-called natural biotopes in the Jihomoravský kraj region, the Kovalovice and Bantice localities. The bodies responsible for the protection of public health took approximately 1,500 test samples of water. Based on the laboratory analyses, the bodies responsible for the protection of public health issued a swimming prohibition notice in 19 localities in the Czech Republic (7 open air swimming pools and 12 swimming areas). Water quality classified as unsuitable for swimming was detected in 24 localities while impaired quality of water unsuitable for sensitive persons, who are recommended to take a shower with drinking water after swimming, was detected in 72 localities in the Czech Republic.

As in the previous years, also in the 2008 holiday season the main reason for issuing swimming prohibition notice was the excessive presence of cyanobacteria. The Czech Republic accepted the recommendation of the World Health Organization (hereinafter referred to as the "WHO") as the limit values for the cyanobacteria indicator.

During the 2008 swimming season no swimming prohibition notice was issued because of the unsatisfactory microbiological quality of water.

Salmon and carp waters in the year 2008

Salmon and carp waters are designated by legislation as surface waters suitable for life and reproduction of the indigenous fish species and other aquatic animals.

Based on the assessment of values collected in hydrometric profiles demarcating the delimited waters, it was established that in the 2007–2008 two-year period pollution standards under the Government Order were met in 76% of these waters (79% of salmon waters and 73% of carp waters).

In salmon waters the applicable standard is most frequently not complied with due to the dissolved oxygen indicator or, more specifically, due its maximum value being exceeded (12% of salmon waters). In carp waters the most frequent non-compliance with the applicable standard is caused by excessive values of free ammonia and ammonia ions (21% of carp waters).

Most waters where pollution standards under the Government Order are not complied with (82%) do not meet only one or two related indicators. The largest number of unmet pollution standards under the Government Order were recorded, as in the past, in the River Trkmanka and the River Daníž carp waters and the upper salmon waters of the River Rusava.

Compared to the previously evaluated two-year period, the number of stretches complying with legislative requirements for the quality of salmon and carp waters increased by 12%.

Quality of suspended matter and sediments

Monitoring of suspended matter and stream sediment quality was carried out in the year 2008 as a part of the surveillance monitoring programme, in 47 hydrometric profiles on main watercourses of the Czech Republic, or important tributaries of them. The monitored indicators were heavy metals, metalloids and specific organic substances including priority pollutants with relevance for the constant matrix. The sampling frequency for suspended matter was four times a year and for sediments twice a year.

Sampling was carried out by the Czech Hydrometeorological Institute, and the chemical analyses of samples were made by the T. G. Masaryk Water Management Research Institute – public research institution.

Accumulation bio-monitoring of surface waters in the year 2008

In the year 2008, as in the past, contamination of biomass by harmful substances was monitored in 21 outfall profiles of the main watercourses in the Czech Republic as a part of surface water surveillance monitoring.

In this accumulation bio-monitoring five matrices were selected for surface water quality evaluation: zebra mussel Dreissena polymorpha (18 localities monitored), biofilm (21 localities monitored), fish – European Chub (12 localities monitored), juvenile stages of fish – the fry (21 localities monitored) and passive samplers SPMD simulating the function of fatty tissue and monitoring pollutants with high bioaccumulation potential (21 localities monitored).

The assessed pollutants are substances with very small solubility and easily accumulate in fats. Among heavy metals the monitored pollutants are lead, cadmium, mercury and arsenic, and among specific organic substances indicator PCB congeners (PCB-28, PCB-52, PCB-101, PCB-138, PCB-153, PCB-180) and chlorinated pesticides (o,p and p,p DDT isomers). Newly assessed were polybromated diphenylethers (PBDE), polyaromatic hydrocarbons (PAH) and biochemical parameters (biochemical markers) in fish (European chub).

Organisms selected for evaluation purposes are those ones that accumulate best the individual pollutants (concentration is expressed in µg (in case of organic substances), in mg (in case of metals) per dry matter unit and in ng/SPMD for passive samplers

As regards chlorinated pesticides, the values monitored were DDT concentrations and products of its decomposition (DDE, DDD) in fish (European chub), juvenile fish and in passive samplers. In all of the monitored profiles the highest concentration was found for the p,p´-DDE isomer (product of the partial biodegradation of DDT), where the detected values were different by one order from the pp´-DDD values and compared to p,p´-DDT isomer by two orders.

DDT values (the sum of DDT, DDE, DDD o,p´- and p,p´- congeners) in muscle tissue ranged from 71 (the River Odra at Bohumín) up to 382 µg.kg-1 (the River Dyje at Pohansko). High values were also found in the River Elbe–Schmilka profile and in the River Svratka-Židlochovice outfall hydrometric profile. Concentrations in juvenile stages of fish ranged from 49 (the River Opava at Děhylov) up to 580 µg.kg-1 (the River Elbe-Obříství profile, downstream of Neratovice). High values, similar to the muscle tissue of the European chub, were measured in the River Elbe at Schmilka, the Rivers Svratka and Dyje and also in the River Elbe at Lysá nad Labem.

Comparison of the 2006–2008 period clearly shows that the most polluted hydrometric profiles are the River Dyje-Pohansko, the River Elbe-Obříství, the River Elbe-Schmilka profiles and the outfall hydrometric profile of the River Svratka. Low values in both matrices were found in hydrometric profiles of North Moravia (the River Odra at Bohumín and the River Opava at Děhylov). The juvenile stages of fish tell us much more about the pollution of the respective sampling site than adult fish that can migrate long distances. However, quite surprising was the concordance of the monitored pesticide values in muscle tissue of the European chub and the fry.

The results from SPMD passive samplers also show the highest values of DDT in the River Dyje at the Pohansko outfall profile. High concentrations were also measured in the River Svratka-Židlochovice, the River Jizera-Otradovice and the River Bílina-Ústí nad Labem hydrometric profiles (maximum DDT concentrations were found in zebra mussels in the River Bílina. High values were also in the River Elbe-Hřensko and in the River Dyje-Pohansko profiles).

Monitoring of pollutants in several matrices confirms the presence in the selected locality and also shows that only one monitored matrix often may not provide sufficient information about the locality in question. For example, DDT values found in the fry in the River Bílina were only average values, while in the passive samplers and in zebra mussels they were maximum values.

Polyaromatic hydrocarbons were evaluated in fry and in SPMD. Concentrations in fry ranged from 0 to 208 µg.kg-1 , with a maximum value in the River Jizera at the Otradovice profile. Average values were measured in the River Odra-Bohumín and in the River Elbe-Lysá nad Labem profiles. A zero value (i.e. the sum of concentrations below the detection limit) was found in the River Elbe-Obříství profile. PAH values in this hydrometric profile were also quite low, even in other monitored matrices. The highest concentration found in SPMD was measured in the River Odra at Bohumín outfall profile, and high concentrations were measured in the River Bečva-Troubky and the River Svratka-downstream of Brno profiles.

Polychlorinated biphenyls (the sum of 6 PCB indicator cogeners) and polybromated diphenylethers – PBDE (the sum of PBDE congeners –28, 47, 99, 100, 153, 154 and 183) were evaluated in zebra mussels Dreissena polymorpha.

PCB values ranged from 32 (the River Lužnice-Bechyně profile) up to 249 µg.kg-1 (in the River Svratka-Židlochovice downstream of the Brno outfall profile). High values were measured in the River Elbe hydrometric profiles in Lysá nad Labem and Obříství, while the lowest values were in the River Lužnici-Bechyně profile, similar to the years 2006 and 2007. During the last three years concentrations in the monitored hydrometric profiles either did not change significantly, and in some cases actually increased.

PBDE values ranged from 1.8 (the River Lužnice at Bechyně) up to 56.3 µg.kg-1 (the River Bílina at Ústí nad Labem). High concentrations were also detected in the River Jizera at the Otradovice profile, as well as in the River Svratka-Židlochovice profile, similar to the year 2007. The lowest values in the River Lužnice-Bechyně profile were also measured in the last two years.

The highest concentrations of heavy metals are regularly found in biofilm. The detected concentrations of heavy metals were identified in the following range:

Hg: 0.11 mg.kg-1 (River Morava at Lanžhot) to 2.5 mg.kg-1 (River Bílina at Ústí nad Labem)
As: 4.78 mg.kg-1 (River Morava at Lanžhot) to 64.6 mg.kg-1 (River Bílina at Ústí nad Labem)
Cd: 0.35 mg.kg-1 (River Morava at Lanžhot) to 3.9 mg.kg-1 (the River Lužická Nisa at Hrádek nad Nisou)
Cr: 20,4 mg.kg-1 (River Jizera at Otradovice) to 110 mg.kg-1 (River Jihlava at Ivančice)
Cu: 17 mg.kg-1 (River Morava at Lanžhot) to 153 mg.kg-1 (River Lužická Nisa at Hrádek nad Nisou)
Ni: 15 mg.kg-1 (River Vltava at Zelčín) to 76 mg.kg-1 (River Jihlava at Ivančice)
Pb: 10 mg.kg-1 (River Morava at Lanžhot) to 93 mg.kg-1 (River Berounka at Srbsko)
Zn: 137 mg.kg-1 (River Bečva at Troubky) to 810 mg.kg-1 (River Lužická Nisa at Hrádek nad Nisou)

In general, it can be said that the highest pollution levels caused by heavy metals were found in the River Lužická Nisa–Hrádek nad Nisou and the River Bílina-Ústí nad Labem hydrometric profiles. The lowest values were measured in the River Morava at the Lanžhot boundary hydrometric profile.

The monitored biomarkers in fish show the adverse effect of water ecosystem contamination on the organism of fish and complement the chemical monitoring system. These indicators mostly do not react to a specific pollutant but indicate complex pollution. Measurement of these parameters helps assess to what extent the aquatic environment pollution affects water organisms. One of these indicators is the concentration of vitellogenin (hereinafter referred to as "VTG") in blood plasma showing pollution by xenoestrogenic substances affecting the reproduction system. VTG is a phospholipoprotein, which is synthesized in the liver of female fish. If the substances with an estrogenic effect are present in the aquatic environment, VTG synthesis also takes place in the liver of male fish, which may lead to degenerative changes in the genital organs of males as well as to disorders of the endocrine system and the reproductive capacity of fish. Substances with estrogenic effect include some pharmaceutical products (drugs), tensides degradation products, components of cosmetic products, hormonal contraception, pesticides, mercury etc. In the year 2008 the highest values were detected in the River Elbe at the Schmilka hydrometric profile. High values were also found in the River Elbe-Obříství and the River Vltava-Zelčín profiles.

The upper and middle River Elbe basin district is an area with significant industrial sources of pollution and urban agglomeration, such as Neratovice (Spolana), Liberec, Jablonec nad Nisou, Mladá Boleslav, Hradec Králové and Pardubice (Synthesia). The heavy metals load is shown by high values in the River Lužická Nisa. High values of polychlorinated biphenyls (PCB) and polyaromatic hydrocarbons (PAH) as well as the sum of ortho- and para- isomers of DDT were found in the River Elbe, in the stretch between Lysá nad Labem and Obříství. High concentrations of polybromated diphenylethers and polyaromatic hydrocarbons (PBDE, PAH) were measured in the Rivers Jizera and Lužická Nisa. The River Ohře and the lower River Elbe river basin district are significantly affected by the chemical industry, for example in Ústí nad Labem (Spolchemie) and by old loads. High values of heavy metals and the highest concentrations of PBDE were measured in the River Bílina. High DDT values and the highest VTG

The River Dědina, Žákovec

value were found in the of male chub population in the River Elbe boundary hydrometric profile. The lower River Vltava basin district is characterised by the outfall hydrometric profile of the River Vltava downstream of Prague where high values of PCB, PBDE and VTG were found in the fish population. The upper River Vltava basin district is evaluated in the outfall hydrometric profiles of the Rivers Otava and Lužnice. The detected values of the monitored pollutants are, compared to other river basin districts, quite low. The hydrometric profile which is characteristic for the Berounka River basin district is the River Berounka-Srbsko outfall profile with repeatedly high values of cadmium and lead. The Dyje River basin district is affected by old loads from agricultural sources, which is documented by high DDT values (the sum of ortho- and para- isomers) in the River Dyje outfall profile, and downstream of the Brno agglomeration. This considerably affects the River Svratka, where the highest PCB concentrations were measured. The Morava River basin district is characterised by the River Morava-Lanžhot outfall profile where higher values of DDT (the sum of ortho- and para- isomers) were found in juvenile fish. Other monitored substances were present in relatively low concentrations. Low values were found for heavy metals. The Odra River basin district is affected primarily by the Ostrava industrial agglomeration, and pollution is monitored in the River Odra at the Bohumín boundary profile, where high concentrations of mercury, cadmium and PAH are repeatedly found. In addition, the highest EROD value was measured in this hydrometric profile.

Accumulation bio-monitoring includes monitoring of substances that are, in the process of water analyses, present in low concentrations that are often below the limit of detection by analytical methods. These substances are insoluble in water and persistent with significant bioaccumulation potential in constant matrices. The results of accumulation bio-monitoring clearly shows that these pollutants are present in water ecosystems, and often in high concentrations. Monitoring of pollutants in several matrices confirms the complex contamination of the aquatic environment and shows that monitoring of a single matrix often may not provide true information about the status of environmental contamination. This fact is also confirmed by the Directive 2008/105/EC on environmental quality standards in the area of water policy, which also stipulates environmental quality standards for biota. Bio-monitoring has been used since the year 2000, and so far no significant decrease in values of the monitored substances was observed. The negative reaction of fish to the contamination of the aquatic environment was confirmed.

3.2 Groundwater quality

In the year 2008 the national water quality monitoring network monitored 468 sites comprising 139 springs, 152 shallow wells and 177 deep wells. In total, 169 indicators were determined twice a year in the spring and autumn periods. With regard to the requirements of the Directive 2000/60/EC, the evaluation of groundwater quality in the year 2008 concentrated especially on dangerous substances.

The Czech Hydrometeorological Institute compared the measured values of the groundwater quality indicators with the values of the detection limits, the values of the A, B and C criteria under the guidance document issued by the Ministry of the Environment on 15 September 1996 – the Criteria

for Groundwater and Soil Contamination. It also compared the values with the limits for drinking water under Public Notice of the Ministry of Health No. 252/2004, which stipulates the requirements for drinking water and the scope and frequency of the inspections.

In the year 2008 the highest percentage of measurements exceeding normative C was recorded among indicators for chlorides (5.0% of all samples, 10.2% of samples from shallow wells), ammonia ions (2.8% of all samples, 4.8% of samples from shallow wells) and aluminium (2.5% of all samples, 3.7% of samples from shallow wells). Values exceeding the normative were less frequently found for 1,2-cis-dichloroethene (0.6% of all samples). The normative was seldom exceeded in mercury (0.4% of all samples), chloroethene (0.4% of all samples) and chrysene (0.4% of all samples). Among other evaluated indicators (in particular pesticides, volatile organic substances and metals) values exceeding normative C were recorded very sporadically (0.1 up to 0.3% of all samples). Values above the B limit and below the C limit were measured among indicators for chlorides (2.8% of all samples, 8.2% of samples from shallow wells), ammonia ions (2.8% of all samples, 5.8% of samples from shallow wells), boron (2.3% of all samples, 2.5 of samples from deep wells and springs) and nitrates (1.1% of all samples, 2.4% of samples from shallow wells); other substances sporadically exceeding the B criterion value were aluminium; fluorides; beryllium; cadmium; arsenic; benzo(a)pyrene; tetrachloromethane; 1,2-cis-dichloroethene; vanadium; chrysene; benzo(a)antracene; indeno(1,2,3-cd)pyrene, trichloroethene; tetrachloroethane; and pesticides (2,4-DP, -hexachlorocyclohexane, bentazone, chlorotolurone, isoproturone, MCPA, MCPP, metolachlorine, octachlorostyrene). In general the presence of indicators exceeding the B and criteria values is most frequent in the groundwaters of shallow wells situated in alluvial deposits of those rivers that are most affected by anthropogenic activity.

When comparing the quality indicators to those in the year 2007 (Table 3.2.1), it can be said that with regard to the percentage of sites exceeding the values of the B or C criteria the situation in shallow wells slightly improved as well as in the category of deep wells and springs (although only to a very small extent).

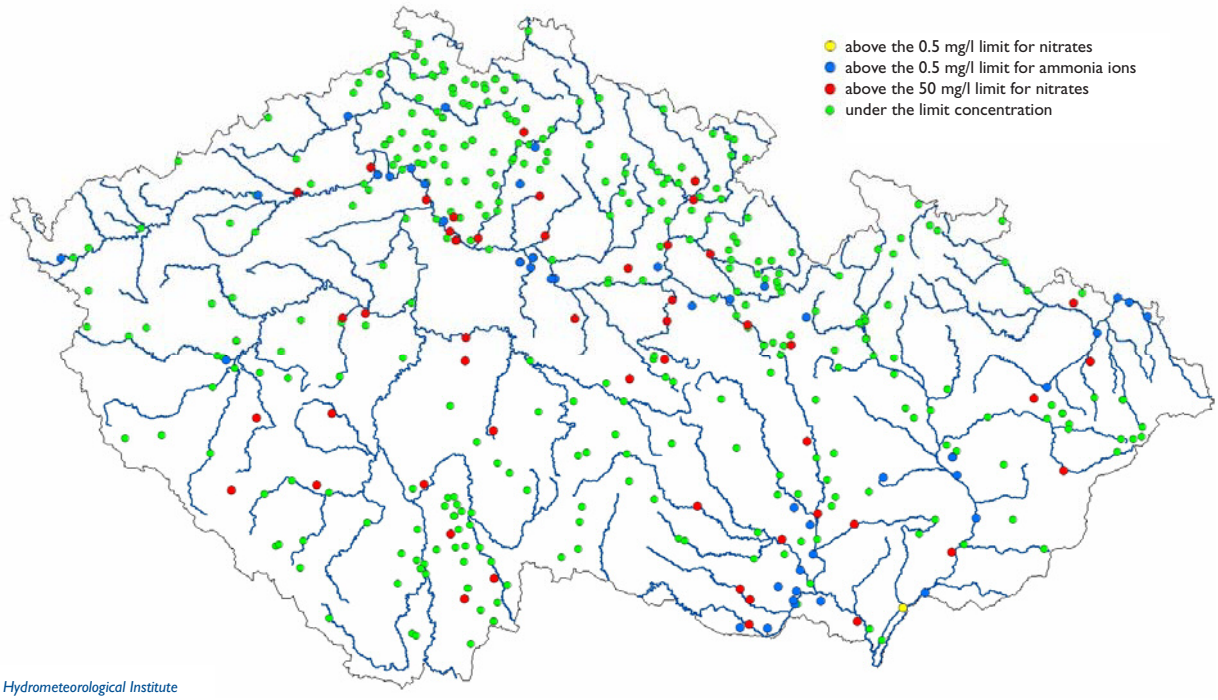
When comparing the groundwater quality indicators with the requirements for drinking water, the most frequently detected values exceeding the limit were found among indicators of: nitrates (11.0% of samples above the limit values); ammonia ions (10.2% of samples above the limit values); sulphates (7.9% of samples above the

Table 3.2.1
Summary of the number of sites where the values of the B or C criteria were exceeded at least in 1 indicator for the year 2008 (compared to 2007)

Sites	Number of sites	Number of sites where B or C was exceeded	% of sites where B or C was exceeded
Shallow wells	152	70	46.1 (49.0 in 2007)
Deep wells and springs	316	51	16.1 (17.2 in 2007)
All sites	468	121	25.9 (27.3 in 2007)

Source: Czech Hydrometeorological Institute

Figure 3.2.1
Concentrations of nitrogenous substances in groundwaters, exceeding the limit in the year 2008 (exceeded limit values under Public Notice No. 252/2004)



Source: Czech Hydrometeorological Institute

limit values), chlorides (7.8% of samples above the limit values); chemical oxygen demand by manganese – permanganate index (6.4% of samples above the limit values); dissolved organic carbon – DOC (5.6% of samples above the limit values); aluminium (4.3% of samples above the limit values); nickel (3.1% of samples above the limit values); arsenic (2.9% of samples above the limit values) and fluorides (2.8% of samples above the limit values). Less frequently exceeded limits were found among the indicators for benzo(a) pyrene (2.7% of samples above the limit values), humic substances (2.6% of samples above the limit values); hexazinone (1.7% of samples above the limit values), atrazine (1.6% of samples above the limit values); desethylatrazine (1.5% of samples above the limit values). All of the substances with values above the limit (except for fluorides) are to a larger extent found in the groundwaters of the shallow wells.

With regard to drinking water requirements, compared to the year 2007, almost the same scope of substances present in the basic composition of water is still found in concentrations above the limit. In addition, the presence of dangerous organic substances in concentrations exceeding the limit is comparable to the year 2007.

To sum up, in general the most distinct groundwater pollution indicators seem to be nitrogenous substances (in particular nitrates and ammonia ions), sulphates, chlorides and metals. Organic substances occur in groundwater contamination to a smaller extent, while the most frequent substances are volatile organic substances (especially in the Neratovice area) and pesticide substances which were detected in groundwaters in shallow wells, in particular in agricultural areas.

The River Výrovka, Toušice

The River Bělá, Děštné v Orlických horách

3.3 Monitoring of waters in the Czech Republic in the year 2008 under the Water Framework Directive requirements

The data used every year for evaluation of the surface water and groundwater status is collected in the hydrometric profiles of the national networks monitored by the Czech Hydrometeorological Institute since the sixties of the 20th century.

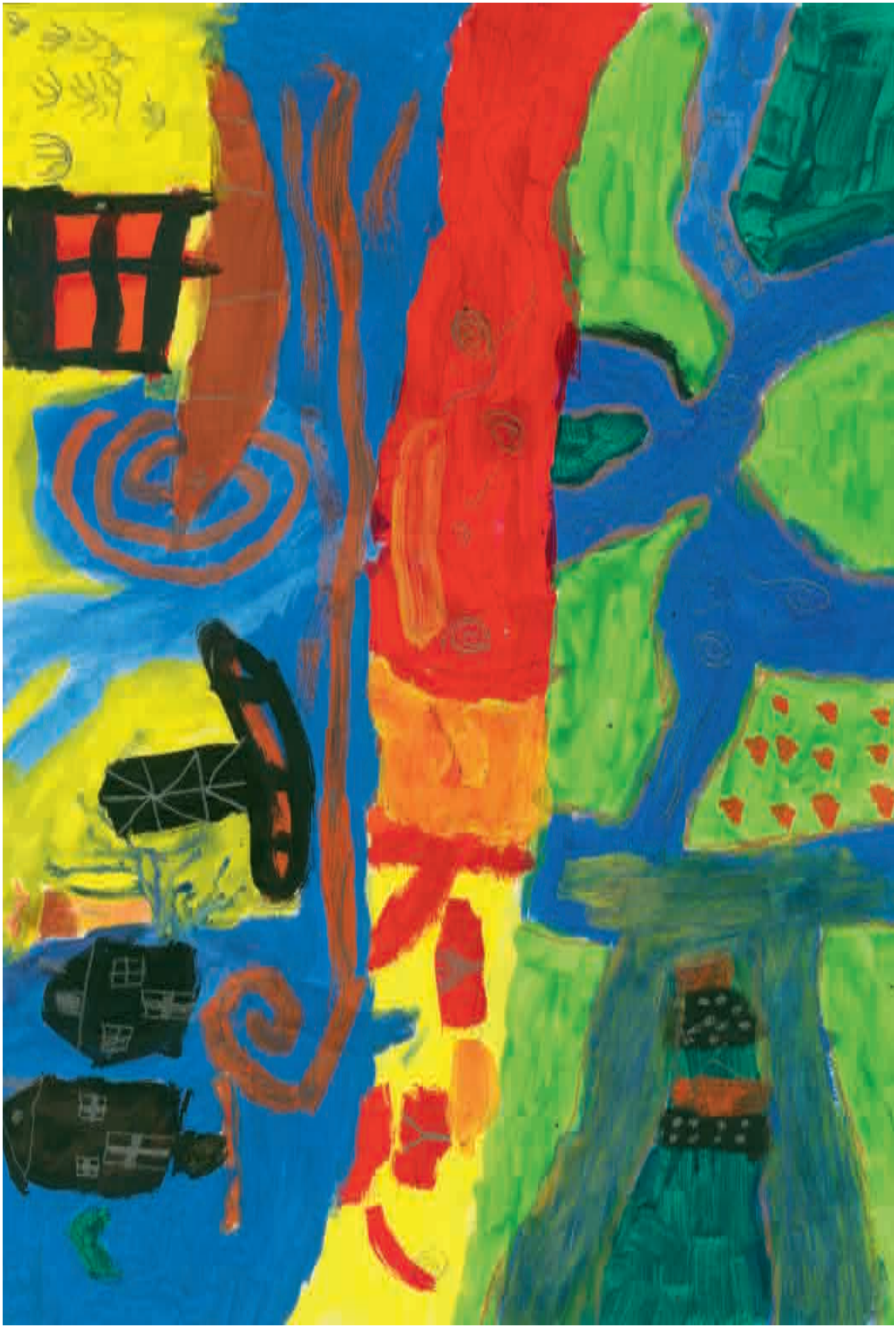
The implementation of Directive No. 2000/60/EC of the European Parliament and the Council of 23 October 2000 establishing the framework for the activities of the Communities in the field of water policy (the Framework Directive) changed the system of water quality monitoring in the Czech Republic as of 22 December 2006. Monitoring of waters is governed by the Guidance Document issued by Water Protection Department of the Ministry of the Environment and Water Management Policy Department of the Ministry of Agriculture for monitoring of waters under Section 21, subsection 4 of the Act No. 254/2001 on water and on amendments to certain laws (the Water Act) of 19 December 2006, as amended. The guidelines and particulars of the monitoring programmes under the Water Framework Directive and the technical particulars regarding the processing of these results are defined by the Framework Monitoring Programme. Under the rules of the Framework Monitoring Programme, waters are monitored by all types of monitoring: surveillance monitoring, operational monitoring, investigative monitoring, quantitative status monitoring, and monitoring of reference conditions.

Monitoring of surface water quantity was in the year 2008 was covered by the quantitative status monitoring programme, which was carried out in 505 flowing water hydrometric profiles and 48 reservoirs.

Surface water quality monitoring was in the year 2008 covered by the surveillance monitoring and operational monitoring programmes. These programmes include the national networks for the monitoring of water quality in watercourses. The total number of samples taken in the Czech Republic as part of the surveillance programme includes 786 samples of water, 184 samples of suspended matter, 94 samples of sediments in 60 hydrometric profiles of the national network and 11 reservoirs and 156 samples for bioaccumulation monitoring in 21 hydrometric profiles of the national network. In addition, 708 samples of biological components were taken to evaluate the ecological status of water. As part of the operational monitoring programme, 15,029 samples of water and 60 samples of suspended matter in 1,245 hydrometric profiles (including 300 profiles of the national network) were taken and analysed.

Groundwater quantity monitoring was covered by the groundwater quantitative status monitoring programme which was carried out on 2,000 sites of the groundwater monitoring network. Monitoring frequency of was once a week, or in the case of automated monitoring, once a day.

Groundwater quality monitoring was covered by the operational groundwater monitoring programme, which was carried out at 468 sites of the national groundwater monitoring network. 925 samples of water were taken and analysed. The groundwater surveillance monitoring programme was not planned for the year and thus no such programme was implemented.



 FILIP KAŠPAR, 9 years, Vajgar basic school, Jindřichův Hradec III, Jihočeský kraj region

Water use

4

4.1 Surface water abstractions

The Reports on water management in the Czech Republic in the years 2006 and 2007 stated that the year-on-year decrease in surface water abstractions ceased. With regard to the situation in the year 2008, it is obvious that in this year, compared to the year 2007, surface water abstractions increased only insignificantly, from 1558.7 million m³ to 1608.2 million m³, i.e. by 1.2%.

The monitoring of data on groundwater and surface water abstractions and on discharged waters is regulated by Public Notice No. 431/2001 on the content of water balance, the method of compiling the content and the water balance data. Pursuant to the provision in Section 10 of this public notice, the scope of reported data changed so that now the registered abstractions (as well as waste water and mine water discharges) only include abstractions exceeding 6,000 m³ per year or 500 m³ per month. The source documents for retrieving the data are the reports submitted by the respective river basin administrators before the deadline of 31 March 2009. The data is arranged both according to the Sector classification of economic activities – SCEA (published by the Czech Statistical Office, Prague 1998) and with regard to NACE – the new classification of economic activities according to Eurostat.

As in previous years, with a view to integrating data provided by the individual River Boards, state enterprises, no water transfers and waters abstracted for fishpond systems were included in surface water abstractions.

The most significant increase in the percentage of water abstractions was observed (similar to the year 2007) in agriculture (including irrigation), namely by 12.4%. A considerable increase was also identified in the energy industry. In the year 2007 the total abstraction in this sector amounted to 868.0 million m³, in the year 2008 to 916.8 million m³, and the year-on-year increase thus was 5.6%. However, it should be borne in mind that major part is constituted by the abstraction for water flow cooling of steam turbines. As regards abstractions for public water supply networks, it can be said that compared to the year 2007 these abstractions decreased by 5.9% (a decrease from 384.1 million m³ to 361.6 million m³). As for industry (including extraction of mineral resources), in the year 2008 the abstractions, compared to the year 2007, again decreased (as in the year 2007) from 311.4 million m³ to 265.6 million m³, i.e. by 14.7%.

As regards surface water abstractions registered by the individual river basins, an increase was recorded only in the Elbe catchment area, to 105.0%, while in the other catchment areas the abstractions in comparison with the year 2007 decreased as follows: to 99.5% in the River Ohře catchment area; 98.6% in the River Morava catchment area; 97.5% in the River Vltava catchment area and 94.6% in the River Odra catchment area. As for public water supply networks, the abstractions decreased in all catchment areas: in the River Morava catchment area to 80.7 %; in the Elbe catchment area to 85.6 %; the River Odra catchment area to 96.7%; in the River Ohře catchment area to 98.1%; and in the River Vltava catchment area to 98.2%. In terms of abstractions for agriculture, the increase amounted to 144.2% in the River Ohře catchment area, 126.9% in the Elbe catchment area and 103% in the River Morava catchment area. In the River Vltava catchment area the abstractions decreased to 13.3% of the year 2007. Abstractions for the industry, the energy sector and other consumers (including the construction industry) increased in the Elbe catchment area to 106.1% and in the River Morava catchment area to 104.6%. On the contrary, in the River Ohře, the River Vltava and the River Odra catchment areas abstractions for the industry and other consumers decreased to 98.3%, 97.5% and 92.8% respectively.

Similar trends were seen for abstractions where water-use charges were imposed (based on the register of River Boards, state enterprises). In total the abstractions where charges were imposed increased from 1,516.6 million m³ in the year 2007 by 27 million m³ to 1,543.6 million m³ in the year 2008, i.e. to 101.8%. The proportion of charged abstractions amounted to 96% of the registered abstractions in total.

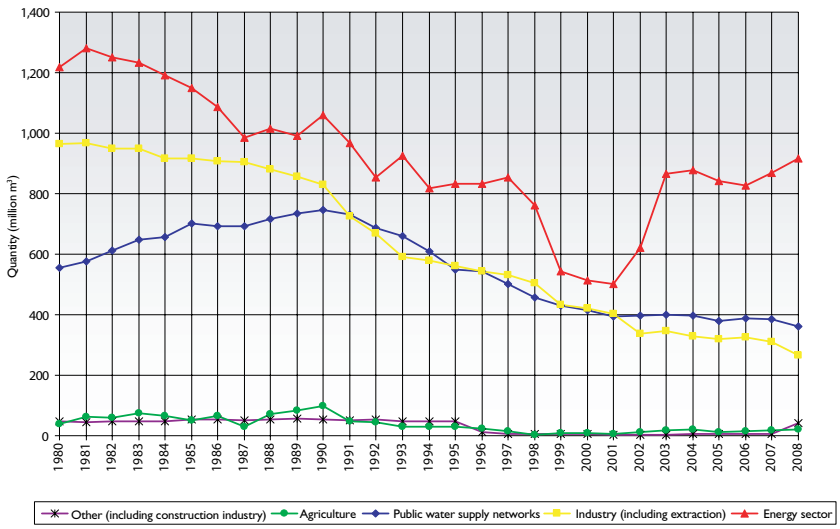
The structure of the registered water abstractions in the respective river basins in the year 2008 is shown in Table 4.1.1. The general development of water abstractions since the year 1985 is shown in Chart 4.1.1. After the year 1990 the improvement of price ratios in water services provided and also 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 361.6 million m³. Thus, the abstractions in the year 2008 amount only to 48.5% 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 265.6 million m³ in the year 2008, i.e. to no more than 32% of the volume in 1990. Similarly, a significant decrease can be seen in agriculture, where the abstraction decreased from 92.2 million m³ to 21.7 mil. m³, i.e. to no more than 22.3% of the volume abstracted in 1990.

Table 4.1.1
Surface water abstractions in the year 2008 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, state enterprise	Public water supply networks		Agriculture incl. irrigations		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.	39.3	29	8.5	41	668.0	12	103.6	99	1.3	42	**820.7**	**223**
Vltava River Board, s.e.	156.4	48	0.2	12	52.7	18	17.2	73	36.4	34	**262.9**	**185**
Ohře River Board, s.e.	51.6	21	6.2	28	51.0	5	51.7	60	3.6	17	**164.1**	**131**
Odra River Board, s.e.	74.0	26	0.0	1	10.3	1	77.2	57	0.8	32	**162.3**	**117**
Morava River Board, s.e.	40.3	35	6.8	41	134.8	2	15.9	104	0.4	15	**198.2**	**197**
Total	**361.6**	**159**	**21.7**	**123**	**916.8**	**38**	**265.6**	**393**	**42.5**	**140**	**1,608.2**	**853**

Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

Chart 4.1.1
Surface water abstractions in the Czech Republic in the years 1980–2008



Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

This fact, however, does not mean that water resources would be less exposed to anthropogenic impacts. Simultaneously with the surface water abstraction decrease there was also a decrease in the volume of discharged waste waters (see Chart 4.3.1.). By contrast, in the energy industry, for example, there was an increase in consumptive water use (the difference between abstraction and discharge) from 118.7 million m³ in the year 1990 to 141.1 million m³ in the year 2008.

Every year the impacts on water resources are invariably evaluated on the basis of the so called water balance, compiled under the Public Notice No. 431/2001 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 relate to all water management activities.

The users were classified in the respective groups both according to the former SCEA classification and according to the new NACE classification (incomplete acronym of the French expression "Nomenclature statistique des activités économiques dans la Communauté européenne"). The following overview shows more detailed information about classification of the individual groundwater and surface water abstractions in the respective user groups according to SCEA classification.

4.2 Groundwater abstractions

The total volume of abstracted groundwater remained, compared to the year 2007, in principle at the same level (0.2% increase). This fact shows that the decrease rate in this abstraction category reached its maximum during the previous periods – now the abstractions tend to remain at the same level.

A radical change in the development trends showing steady decrease occurred already in the year 2006. As regards groundwater abstractions for public water supply networks, we can say that compared to the year 2007 there was stagnation in the year 2008 (insignificant increase from 317.5 million m³ to 320.1 million m³, i.e. by 0.8%). A similar situation also occurred in the previous year, 2007 (compared to the year 2006). The pattern of registered water abstractions in the respective river basins in the year 2008 is shown in Table 4.2.1. In the year 2008 4,096 groundwater abstractions, amounting to 381.3 million m³, were registered (this figure includes only abstractions exceeding 6,000 m³ per year or 500 m³ per month). As for industry (including mineral resources extraction) the abstractions decreased in the year 2008 compared to the year 2007, from 34.5 million m³ to 32.9 million m³, i.e. by 4.6%. In agriculture, compared to the year 2007, the abstractions increased from 10.5 million m³ to 11.4 million m³, i.e. by 8.6%. The energy sector shows an insignificant increase, from 2.35 million m³ to 2.4 million m³, i.e. by 4.3%.

In the individual river basins the largest percentage of groundwater abstractions in total was recorded in the River Morava catchment area (34.1%); the lowest percentage of groundwater abstractions was recorded in the River Odra catchment area (6.1%).

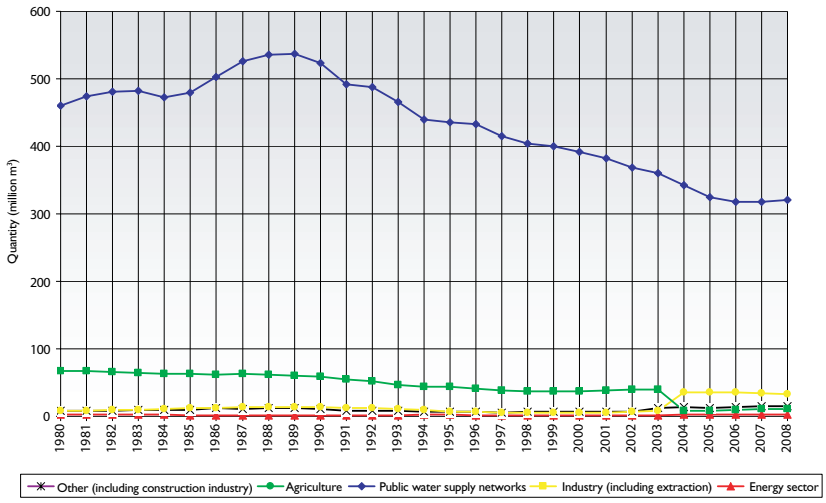
Looking at the spatial pattern, the registered groundwater abstractions in total decreased in the following river basins: the River Vltava catchment area to 99.6% of the 2007 level and the River Ohře catchment area to 97.4%. In the catchment areas of the Elbe, the River Odra and the River Morava the total registered groundwater abstractions slightly increased in the year 2008 to 101.2%, 100.9% and 100.8% of the 2007 level.

Table 4.2.1
Groundwater abstractions in the year 2008 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, state enterprise	Public water supply networks		Agriculture incl. irrigations		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.	101.4	634	2.3	154	0.9	7	8.6	155	1.7	58	**114.9**	**1,008**
Vltava River Board, s.e.	33.1	566	4.0	280	0.2	7	9.1	121	7.7	300	**54.1**	**1,274**
Ohře River Board, s.e.	50.9	313	0.6	24	1.2	1	5.0	104	1.4	16	**59.1**	**458**
Odra River Board, s.e.	20.4	136	0.4	26	0.0	1	1.6	34	0.7	27	**23.1**	**224**
Morava River Board, s.e.	114.3	632	4.1	248	0.1	1	8.6	159	3.0	92	**130.1**	**1,132**
Total	**320.1**	**2,281**	**11.4**	**732**	**2.4**	**17**	**32.9**	**573**	**14.5**	**493**	**381.3**	**4,096**

Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

Chart 4.2.1
Groundwater abstractions in the Czech Republic in the years 1980–2008



Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

Water-supply tank Bratčice

4.3 Waste water discharges

In the year 2008 1970.2 million cubic metres of waste waters and mine waters were discharged into surface waters. Compared to the year 2007, this represented a decrease of 2.4%. As in previous 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 was until the year 2001 based on the data reported by water users under Directive No. 7/1977 U. V. 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 an groundwaters. Since 2002 this evaluation has been carried out under Public Notice No. 431/2001 on the content of water balance, the method of its compilation and the water balance data. Pursuant to the provision in Section 10 of this public notice, the scope of reported data changed so that now the registered abstractions (as well as waste water and mine water discharges) include abstractions exceeding only 6,000 m³ per year or 500 m³ per month. This resulted in an increased number of the registered entities. The 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, which were originally called special waters. These waters were pursuant to Section 2 of the Act No. 138/1973 (in force until 31 December 2001) mine 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. Under the above mentioned Act No. 254/2001, the term "special waters" was cancelled. There are therefore, pursuant to Sections 3 and 4 of this act, surface waters, groundwaters, waters constituting under a special act (Act No. 44/1988 as amended) reserved minerals, natural curative resources (springs) and natural mineral water resources as well as mine waters which are subsequently (under Act No. 254/2001) considered as surface waters or, as the case may be, groundwaters. Since the year 2003, the data on the quantity of waste waters discharged into surface waters has been taken from the statistics of the Czech Hydrometeorological Institute.

The largest percentual increase in the quantity of discharged waste waters compared to the year 2007 was observed in the agriculture category (by 386.7%). The above mentioned fact is, however, rather an "administrative" issue and was caused by only two newly reported discharge locations on the River Ohře, namely the sites of the České rybářství, s. r. o. (Czech Fishery, limited liability company) that makes use of the discharged warmed up cooling water from the Tisová power plant. With regard to the valid water permit, these discharged waters may not be considered as surface waters (from fishpond systems), they fall into the categovy of waste waters. Additional decrease (similar to surface water abstractions) occurred in industry. It is the decrease from 362.1 million m³ to 306.0 million m³ in the year 2008, i.e. by 15.5%. The energy sector shows a year-on-year increase from 716.8 million m³ in the year 2007 to 778.1 million m³ in the year 2008, i.e. by 8.6%. A decrease was observed in the public sewer systems category, namely from 850.8 million m³ to 814.9 million m³ in the year 2008, i.e. by 4.2%. With regard to the methodology, which is not fully explicit (Annex to Public Notice No. 431/2001 on the content of water balance, the method of its compilation and the water balance data and the explanatory notes to the statistical statement – the Annual statement on watercourses and surface water supplies VH 8a-01), many public sewer systems (as defined by the Act No. 274/2001 on Public Water Supply and Sewerage Systems and on amendment to certain laws (Water Supply and Sewerage Systems Act) as amended) are included in the category of and reported as SCEA 751100 or NACE 8411 (concerning smaller municipalities operating a public sewer system or waste water treatment plant independently). A similar situation occurred in the year 2007.

It is evident that compared to the year 2007 the annual quantity of discharged waters decreased. In the River Vltava catchment area it decreased to 97.7%, in the River Odra catchment area to 96.2%, in the River Morava catchment area to 97.6% and in the River Ohře catchment area to 75.8% of the 2007 level. By contrast, an increase in the quantity of discharged waters to 104.3% was in the year 2008 recorded in comparison with the year 2007 in the Elbe catchment area.

The users were classified in the respective groups both according to the formerly valid sector classification of economic activities (SCEA) and according to NACE classification.

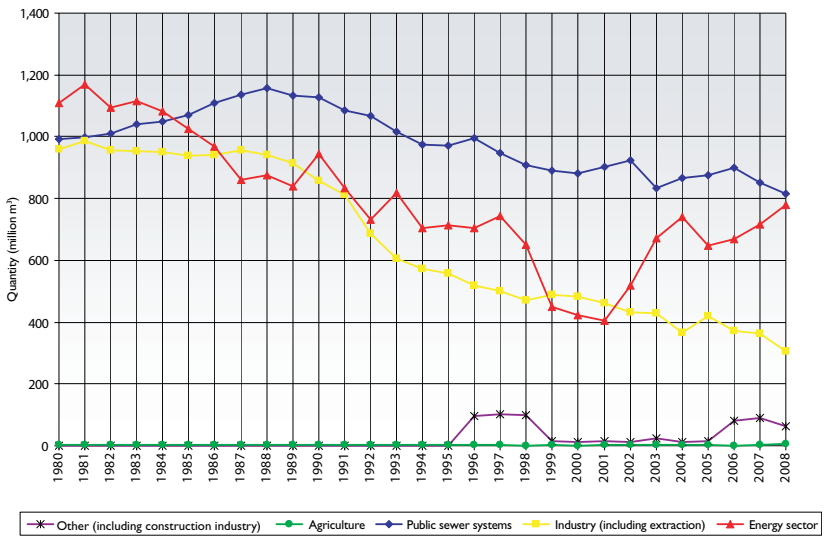
Public sewer systems (without transfers) SCEA 90, NACE 37.

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 2008 in millions of m³

River Board, state enterprise	Public sewer systems		Agriculture incl. irrigations		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.	171.2	554	0.0	1	635.3	20	102.2	199	4.0	57	**912.7**	**831**
Vltava River Board, s.e.	265.0	601	1.5	6	16.1	19	27.1	147	51.1	521	**360.8**	**1,294**
Ohře River Board, s.e.	80.4	275	5.7	2	20.7	16	89.7	170	1.8	27	**198.3**	**490**
Odra River Board, s.e.	107.6	315	0.0	1	5.8	1	65.4	53	5.0	99	**183.8**	**469**
Morava River Board, s.e.	190.7	917	0.1	4	100.2	3	21.6	168	2.0	34	**314.6**	**1,126**
Total	**814.9**	**2,662**	**7.3**	**14**	**778.1**	**59**	**306.0**	**737**	**63.9**	**738**	**1,970.2**	**4,210**

Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

Chart 4.3.1
Discharges of waste waters in the Czech Republic in the years 1980–2008



Source: MoA, River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution

Public water supply networks (excluding water transfers)	SCEA 41 excluding 410010, NACE 36
Agriculture (including irrigations) (excluding fish farming)	SCEA 01 – 05, excluding 050200, NACE 01 – 03
Energy sector (production and distribution of electric power and heat)	SCEA 401 a 403, NACE 35
Industry (including mineral resources extraction) (excluding energy industry and water supply systems)	SCEA 10 – 45, excluding 401, 403 and 41, NACE 05 – 35
Other (including construction industry)	SCEA 50 – 93, NACE 38 – 96
In total (excluding fishponds and water transfers)	**SCEA 01 – 93, excluding 050200 and 410010, NACE 01 – 96**

 TEREZA BENEŠOVÁ, 7 years, Poštovní basic school, Karlovy Vary, Karlovarský kraj region

Sources of pollution

5

5.1 Point pollution sources

Surface water quality is affected primarily by point sources of pollution (municipalities, industrial plants and farms with intensive agricultural animal production). The level of protection against pollution is most frequently evaluated with regard to the produced and discharged pollution.

Produced pollution means the quantity of contamination in produced (untreated) wastewaters. In the context of the EU and OECD requirements, increased attention is paid to the produced pollution development. In the first place the extended scope of measured data collection from a larger number of entities is being ensured. Production of organic pollution in the year 2008 was practically stagnant in the BOD_5 indicator, which increased only by 221 tonnes (by 0.1%) and the COD_{cr} indicator, which increased by 945 tonnes (by 0.2%). In the SS indicator production in the year 2008 decreased by 17,265 tonnes (by 5.9%) and in the DIS indicator by 43,064 tonnes (by 5.1%).

Discharged pollution is the contamination contained in wastewater discharged to surface water. Compared to the year 2007, the discharged pollution decreased in the year 2008 by 122 tonnes (by 1.6%) in the BOD_5 indicator, by 3,392 tonnes (by 6.1%) in the COD_{cr} indicator, by 2179 tonnes (by 13.6%) in the SS indicator and by 38,977 tonnes (by 4.6%) in the DIS indicator. The positive trend in the decrease of discharged pollution according to the BOD_5 and COD_{cr} indicators thus also continued in the year 2008. This decrease was observed in almost all catchment areas. The BOD_5 indicator increased in the River Elbe and the River Morava catchment areas. A partial increase can be noted regarding $N_{-inorganic}$ in the Rivers Vltava and Ohře. 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 River Dyje, Jevišovka

Between the years 1990 and 2008 the discharged pollution decreased in the BOD_5 indicator by 94.8%, in the COD_{cr} indicator by 88.8%, in the SS indicator by 92.7% and in the DIS indicator by 18.5%.

In the 1990–2008 period the water management sector succeeded in also reducing the quantity of the discharged dangerous and especially dangerous harmful substances. A signifant decrease was also observed in nutrients (nitrogen, phosphorus) as a result of the fact that the waste water treatment technologies in the new and the so-called intensified waste water treatment plants apply focused use of biological removal of oxygen, and biological or chemical removal of phosphorus.

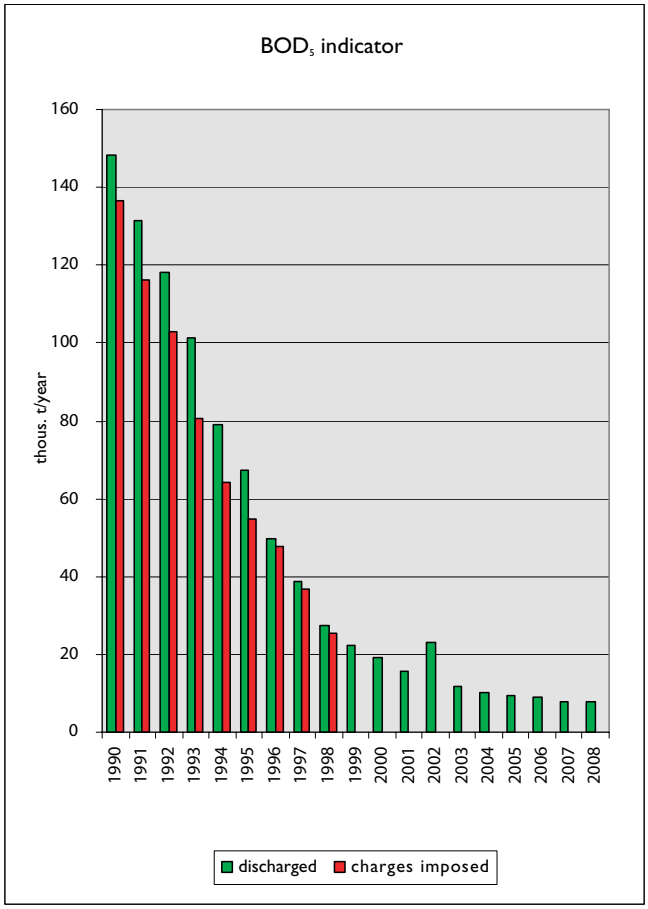
Table 5.1.1
Produced and discharged pollution in the year 2008

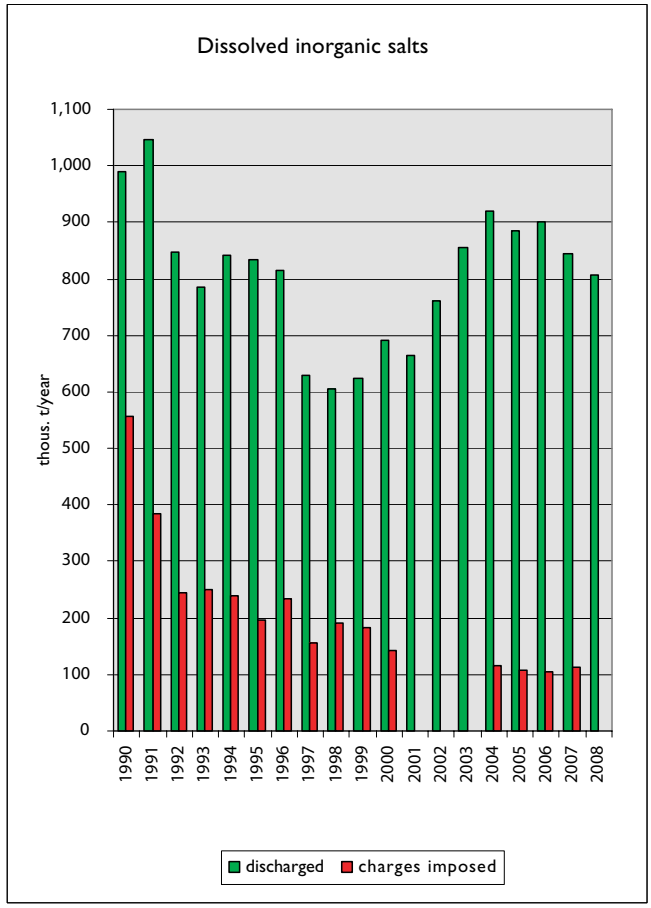
River Board, state enterprise	Produced pollution in tons/year						Discharged pollution in tonnes/year					
	BOD_5	COD_{Cr}	SS	DIS	$N_{-inorganic}$	P_{total}	BOD_5	COD_{Cr}	SS	DIS	$N_{-inorganic}$	P_{total}
Elbe River Board, s.e.	48,200	120,002	53,659	228,319	7,775	1,061	2,326	13,339	4,289	214,291	5,199	261
Vltava River Board, s.e.	86,783	198,758	95,618	123,197 *)	9,218	2,119	2,031	11,893	3,025	136,258	4,072	236
Ohře River Board, s.e.	16,952	62,611	21,288	113,779 *)	2,119	692	874	5,029	2,170	117,819	1,177	231
Odra River Board, s.e.	60,400	136,516	71,727	123,747	6,445	1,357	1,709	8,352	2,376	120,949	2,391	213
Morava River Board, s.e.	36,625	74,378	35,387	216,480	3,667	814	796	6,869	2,035	216,480	1,354	106

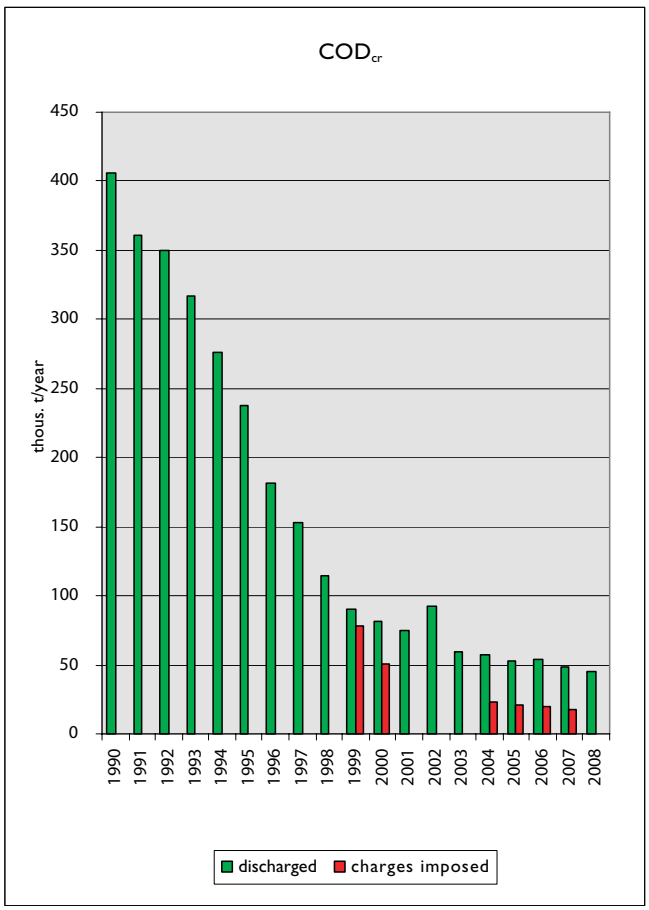
Source: T.G.Masaryk Water Management Research Institute – public research institution, from the source documents of the Czech Hydrological Institute, the River Boards, s.e.
*Note : *) Incomplete data.*

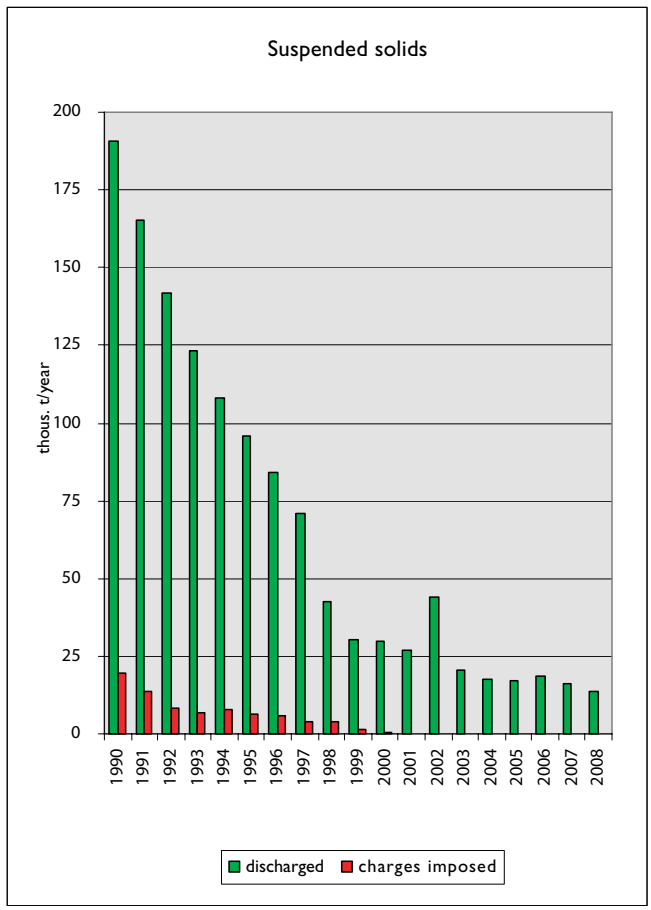
The Harcovský stream, Harcov

Chart 5.1.1
Discharged pollution and pollution on which charges were imposed in the years 1990–2008









Source: T.G.Masaryk Water Management Research Institute – public research institution, from the source documents of the Czech Hydrological Institute, the River Boards, s.e.

5.2 Area pollution

Surface water and groundwater quality is also significantly affected by area pollution, in particular the pollution from farming, atmospheric depositions and erosive runoff in the landscape. The importance of area pollution is increasing in parallel with the continued decrease in point source pollution. The proportion of area pollution is substantial especially as regards nitrates, pesticides and acidification, while it is less important as regards phosphorus. This proportion varies in different areas of the Czech Republic, depending on the settlement density, the proportion of waste water treatment, the intensity and the method of farming and the level of atmospheric deposition.

The main measures aimed at reducing area pollution of waters from agricultural sources include the Government Order No. 103/2003 on delimitation of vulnerable areas, storage of manure, crop rotation and carrying out anti-erosion measures in these areas as amended. This government order defines the "vulnerable areas" and declares an action programme.

An action programme is a set of measures in vulnerable areas to reduce water pollution caused by nitrates and prevent additional contamination of water. The main measures of this action programme aimed at area pollution reduction include reduction of the application of fertilisers and manure, use and storage of fertilisers and manure, prohibition of certain types of fertilisers and manure, crop rotation and soil erosion control measures. The effectiveness of the action programme is evaluated in a four-year period pursuant to Article 5 of the Nitrate Directive based on the action programme for monitoring and evaluation of the efficiency of the first action programme.

The action programme monitoring includes:

- pilot study of fulfilment of the action programme requirements in farming companies in vulnerable areas (approximately 30 companies),
- evaluation of the field investigation of farming companies in vulnerable areas (approximately 300 companies),
- monitoring of the impacts of farming under the action programme on water quality in the vulnerable areas pilot zone,
- 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,
- evaluation of soil and climate conditions and the impact of farming on water quality in the monitored surface water quality hydrometric profiles in 360 river basin districts in the Czech Republic,
- monitoring of the development in farming methods in vulnerable areas, based on the data provided by the Ministry of Agriculture, the Czech Statistical Office, the Land Register according to the user relations and the Livestock Register.

The River Morava, Rohatec

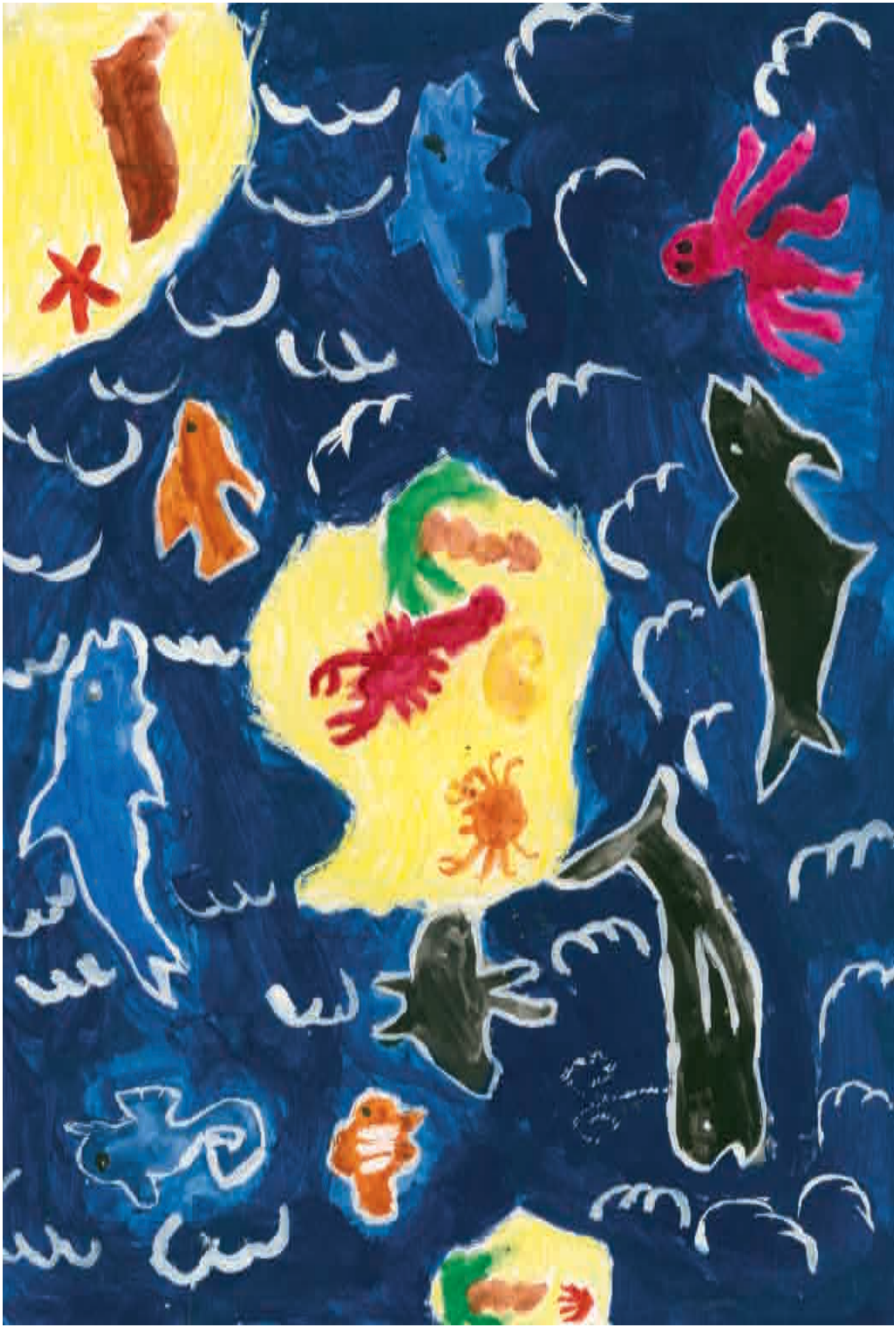
The first report on the fulfilment of the Nitrate Directive pursuant to Article 10 for the 2004–2007 period was sent to the European Commission in October 2008.

The River Jizera, Vilémov

5.3 Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In the year 2008 the Czech Environmental Inspectorate registered 136 accidental pollution events and events posing a threat to water quality, including 7 events in groundwaters.

Compared to the year 2007, the total number of accidents affecting water quality in the year 2008 decreased by 45 events. The most numerous group of pollutants still included oil and oil products: 46.3% of the total number of the registered events, followed by waste waters: 13.2% and chemical substances (except heavy metals), at 11.1%. Classified by the cause (inflictor) of the accident, the most numerous were accidents caused in traffic (22.1%), followed by accidents during elimination of waste waters and removal of solid waste, in agriculture, in hunting and game management and related activities (7.4%). The inflictor was not identified in 45.6% of all cases (in the year 2007 it was 46.3% of all cases). In 2008 the Czech Environmental Inspectorate imposed in total 669 financial penalties for breach of legal regulations effective in the field of water protection, of which 624 penalties became fully effective and amounted in total sum to CZK 26.425 million.



 TOMÁŠ KURFIŘT, 10 years, Pěnčín basic school, Bratříkov, Liberecký kraj region

Watercourse administration

6

6.1 Professional administration of watercourses

The Czech Republic is an important headwater area of the European continent, and from the hydrological point of view we may call it "the roof of Europe". The hydrological system is constituted by approximately 79,000 km of watercourses (with both natural and regulated stream channels). Watercourses in the Czech Republic are divided into two categories: significant watercourses and minor watercourses. In the year 2008, as in the previous years, the professional administration of watercourses was carried out in accordance with the provision of Section 47 of the Act No. 254/2001 on Water and on amendment to certain laws (the "Water Act") as amended.

The main watercourse administrators are, as in previous years, the River Boards, state enterprises, the Agricultural Water Management Administration and the Forests of the Czech Republic, state enterprise; all of them report directly to the Ministry of Agriculture. Together they are responsible for the administration of about 95.1% 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 4.9% of watercourse administration. The data shows that all the changes in the delimitation of watercourses are made in favour of the watercourse administrators in dominant position. The largest growth in the administrative delimitation of minor watercourses was recorded by the Agricultural Water Management Administration.

The structure of the professional watercourse administration arranged by the individual watercourse administrators is shown in Table 6.1.1.

The River Fryšávka, Jimramov

The specific account of significant watercourses is published in Public Notice No. 470/2001 stipulating the list of significant watercourses and the method of carrying out the activities relating to watercourse administration, as amended by Public Notice No. 267/2005, which came into force as of 1 July 2005. It provides an overview of 814 watercourses included in the "List of significant watercourses", which forms Annex 1 to the above Public Notice. This list also includes the identifiers of significant watercourses (Central Register of Watercourses). The significant watercourses, with a total length of 15,538 km, are administered under the provision in Section 4 of Act No. 305/2000 on river basins, by the respective River Boards, state enterprises: the Elbe River Board, the Morava River Board, the Odra River Board, the Ohře River Board and the Vltava River Board. The backbone watercourses are the Elbe (370 km) with the River Vltava (433 km) in Bohemia, the River Morava (272 km) with the River Dyje (306 km) in South Moravia, and the River Odra (135 km) with the River Opava (131 km), in North Moravia and Silesia.

All the other watercourses (provision of Section 43 of the Water Act) are minor watercourses. The total length of minor watercourses is almost 63,500 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 spe-cified in detail in the above Public Notice No. 470/2001.

More detailed information dealing with more than the establishment of the administration of the respective watercourse is available in the "Register of watercourses" on the water management portal called WATER INFORMATION SYSTEM in the Czech Republic, i.e. www.voda.gov.cz.

Table 6.1.1
Professional watercourse administration

Category	Administrator	Length of watercourses in km	
		2007	2008
Significant watercourses	Elbe River Board, s.e.	3,560.10	3,560.10
	Vltava River Board, s.e.	4,761.10	4,761.10
	Ohře River Board, s.e.	2,290.81	2,290.81
	Odra River Board, s.e.	1,111.39	1,111.39
	Morava River Board, s.e.	3,814.08	3,814.61
	Total	**15,537.48**	**15,538.01**
Minor watercourses	Agricultural Water Management Administration	35,835.03	38,682.02 [1]
	Forests of the Czech Republic, s.e.	19,577.47	19,570.83
	River Board, s.e.	1,382.58	1,357.37
	Other [2]	3,667.44	3,880.77
	Total	**60,462.52**	**63,490.99**
Watercourses in total		**76,000.00**	**79,029.00**

Source: MoA

Note: [1] *The increase in the number of kilometres of the delimitated watercourses administered by the Agricultural Water Management Administration in the year 2008 was caused by transferring category "B" property (main drainage facilities) to the "A" category property (minor watercourses).*

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

The acquisition value of the non-current tangible assets relating to watercourses amounted in the year 2008 to CZK 48.45 billion. Compared to the previous period, this value shows a year-on-year growth of more than CZK 1 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 construction and by consecutive entries of the assets taken over, and the completed hydraulic structures in the accounting records. In the year 2008 no watercourse administrator completed the construction of, received an occupancy permit for or put in operation any hydraulic structure that would significantly affect the indicators expressing the acquisition value of the non-current tangible assets. The non-current tangible assets value in purchase prices and the year-on-year development (increase in the non-current tangible assets) in respect of the individual watercourse administrators is shown in Table 6.1.2.

In connection with the Order of the Minister of Agriculture No. 21/2008, regarding the competence of the office authorised to establish state organisations such as state enterprises and joint stock companies, new statutes of the River Boards, state enterprises and rules of procedure of the supervisory boards were issued.

The changes in governing bodies and in the composition of supervisory boards reflected on an ongoing basis in the changes made in the Deed of Foundation of the respective River Board, state enterprise.

Auditing activities in the individual River Boards, state enterprises, are carried out by the respective controlling bodies. The following complete and selective audits were carried out in the year 2008.

Ministry of Agriculture

As in the past, the Ministry of Agriculture mainly carried out ongoing public inspections focusing on fulfilment of conditions and on the use of public funds. In total 12 audits were carried out in year 2008, namely at the Vltava River Board, the Ohře River Board, the Odra River Board and the Morava River Board state enterprises. During the audits no major irregularities were identified, and it was established that the state budget funds are used in compliance with all regulations.

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	2007	2008
Elbe River Board, s.e.	8.47	8.51
Vltava River Board, s.e.	7.53	7.56
Ohře River Board, s.e.	7.99	8.19
Odra River Board, s.e.	4.94	5.01
Morava River Board, s.e.	6.87	6.88
River Boards, s.e. in total	**35.80**	**36.15**
Agricultural Water Management Administration	8.90	9.56
Forests of the Czech Republic, s.e.	2.60	2.74
Total	**47.30**	**48.45**

Source: MoA

Financial Authorities

In the year 2008 these state administration bodies carried out in total 14 financial audits in all River Boards, state enterprises, focused on inspecting the legitimacy of the use of subsidies and the observance of budget rules and budgetary discipline. During some audits only minor shortcomings were found, and remedied.

The Czech Social Security Administration

In the year 2008 the district branches of this institution carried out in total 9 audits at the Vltava River Board, the Ohře River Board and the Odra River Board state enterprises, focused on social security contributions, sickness insurance and fulfilment of tasks regarding pensions. During these audits no shortcomings were found.

Health Insurance Company

The obligation of the employer in the field of health insurance premium payments was audited at all River Boards, state enterprises, in 18 audits. These investigations identified no irregularities in health insurance premiums.

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 7 audits were carried out in the Vltava River Board state enterprise. No breach of duties was identified in these audits.

The Health and Safety Inspectorate, Employment Agency and Trade Union of Workers in Woodworking Industries, Forestry and Water Management in the Czech Republic

The Health and Safety Inspectorate, together with the Employment Agency and the Trade Union of Workers in Woodworking Industries, Forestry and Water Management in the Czech Republic carried out in total 3 successive audits at the Vltava River Board, the Odra River Board and the Morava River Board, state enterprises. The audits focused on the observance of occupational health and safety regulations and on state support control. No major malpractices in this respect were identified based on these investigations.

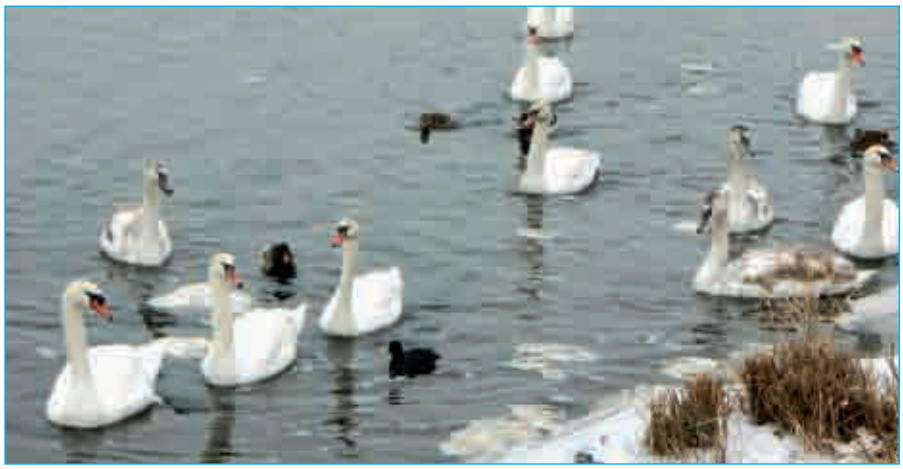
Fire Service

The locally responsible Fire Brigade carried out a complete fire inspection at the Vltava River Board, the Elbe River Board and the Odra River Board, state enterprises, including the audit of observance of duties stipulated by fire protection regulations. Some of the audits identified only minor shortcomings and remedy measures were imposed.

Audits carried out by other state administration bodies

The Czech Environmental Inspection audited compliance with Act No. 114/1992 on the Protection of Nature and Landscape during an inspection at the Vltava River Board and the Odra River Board state enterprises. The Ministry of Transport carried out in total 2 audits focused on working procedures, tenders and the use of funds. A similar audit was also carried out by Ostrava City Council at the Odra River Board, state enterprise, with focus on public oversight of the legitimacy of the requirement for investment subsidy in the framework of the Flood Prevention Programme II. The Czech Metrological Institute in Prague carried out state metrological supervision under Act No. 505/1990 at the Odra River Board state enterprise. The audit engagement of the Supreme Audit Office at the Elbe River Board state enterprise was focused on the audit of funds allocated for development and repair of waterways and ports. The Morava River Board, s.e. was also audited by the Moravian Land Archive in Brno and the National Authority for Nuclear Safety. In addition, the Odra River Board state enterprise was audited by the Centre for Regional Development and the State Environmental Fund. In most audits no serious shortcomings were identified, and the minor shortcomings detected were promptly remedied.

Audits at the Agricultural Water Management Administration are carried out by the respective controlling bodies. The following complete and selective audits were carried out at this organisation in the year 2008.



The River Elbe, Litoměřice

Ministry of Agriculture

The Department of Programme Financing in Water Management carried out ongoing on-site public inspections at the Agricultural Water Management Administration by virtue of Act No. 320/2001. These audits were aimed at fulfilling the conditions for the use of state budget funds for projects financed under the sub-programme 229 114: "Remedying of the impacts of floods in the year 2006" and the sub-programme 229 013: "Minor watercourses administered by the Agricultural Water Management Administration". These audits identified no irregularities and neither the Binding Criteria for Provision of Funds in the Field of Water in the year 2008 nor the method of the audit of their use were breached. In total three projects were audited.

External audits of the activities in the financial department

In the year 2008 three audits were carried out at the financial department of the Agricultural Water Management Administration by the Czech Social Security Administration bodies and one by the health insurance company. These audits identified only minor irregularities and no financial sanctions were imposed on the basis of the audit results.

6.2 River Boards, state enterprises

The overall revenues of the River Boards, state enterprises in the year 2008 showed a year-on-year increase amounting to 3.4%, i.e. in absolute figures an increase in revenues by more than CZK 135 million. This increase was mainly generated by payments for surface water abstractions, which are in terms of methodology included in the revenue structure.

The year-on-year increase in the overall revenues of the River Boards, state enterprises was influenced by the increase in surface water sales by almost CZK 104 million, which equals a year-on-year increase amounting to 4%. In addition, other revenues showed quite a significant year-on-year increase, by almost CZK 94 million (i.e. a year-on-year increase of over 27%). In electric power generation the year-on-year growth increased by 12%, i.e. CZK 57 million. Revenues from payments for the use of impounding structures showed only an insignificant increase, by CZK 0.4 million in absolute terms. On the contrary, the total operating grants show a year-on-year decrease of 25%, which means a sales deficit of almost CZK 120 million.

The structure of the revenues of the River Boards, state enterprises, in the year 2008 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 for payment 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.

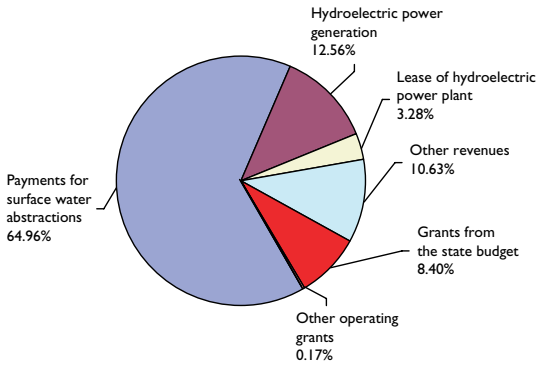
The average price of surface water quoted by the River Boards, s.e. in the context of other abstractions remained virtually unchanged compared to the 2007. In the year 2008 this price was around CZK 2.67 per m³. These prices are the so called subject regulated prices, which may include only eligible 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 2008 in thousands of CZK

Indicator	Elbe River Board, s.e.	Vltava River Board, s.e.	Ohře River Board, s.e.	Odra River Board, s.e.	Morava River Board, s.e.	Total
Payments for surface water abstractions	734,561	608,527	449,773	444,905	440,484	**2,678,250**
Electric power generation	34,773	181,435	197,824	68,710	34,922	**517,664**
Sales from payments for the use of impounding structures	13,896	112,156	4,036	-	4,956	**135,044**
Other revenues	105,185	82,165	110,493	61,628	78,966	**438,437**
Grants from the state budget	185,376	2,906	11,780	18,770	127,396	**346,228**
Other operating grants	153	1,112	-	744	4,934	**6,943**
River Boards, s.e. in total	1,073,944	988,301	773,906	594,757	691,658	**4,122,566**

Source: MoA, River Boards, s.e.

Chart 6.2.1
Structure of the revenues of the River Boards, s.e. in the year 2008



Source: MoA

Table 6.2.2
Surface water supplies for payments in the years 2001–2008 in thousands of m³

River Board, s.e.		2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	a)	508,435	571,365	803,416	815,491	777,041	748,522	765,070	807,073
	b)	43,279	41,618	36,334	39,182	39,818	46,518	39,396	36,031
Vltava River Board, s.e.	a)	264,802	266,916	286,889	274,084	262,532	263,685	260,008	252,659
	b)	171,924	167,878	173,773	163,896	160,483	161,528	155,382	153,131
Ohře River Board, s.e.	a)	176,403	169,092	170,975	162,934	155,315	161,071	152,636	150,115
	b)	60,263	57,807	58,951	57,033	53,644	55,385	52,410	51,514
Odra River Board, s.e.	a)	166,799	173,275	172,795	163,874	165,044	171,301	164,087	153,946
	b)	66,255	72,167	74,183	70,729	72,682	75,001	71,979	69,288
Morava River Board, s.e.	a)	132,680	135,366	165,653	145,185	154,770	162,336	174,803	179,833
	b)	39,398	38,112	38,256	36,969	34,953	34,128	33,554	32,553
River Boards, s.e. in total	**a)**	**1,249,119**	**1,316,014**	**1,599,728**	**1,561,568**	**1,514,702**	**1,506,915**	**1,516,604**	**1,543,626**
	b)	**381,119**	**377,582**	**381,497**	**367,809**	**361,580**	**372,560**	**352,721**	**342,517**

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

Table 6.2.3
Price for abstractions used for water flow cooling in the years 1999–2008 in CZK/m³

River Board, s.e.	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	0.61	0.67	0.67	0.65	0.39	0.40	0.40	0.40	0.44	0.49
Vltava River Board, s.e.	0.70	0.76	0.81	0.86	0.91	0.92	0.93	0.94	0.96	1.00
Morava River Board, s.e.	0.53	0.56	0.60	0.53	0.41	0.49	0.54	0.56	0.62	0.67

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 1999–2008 in CZK/m³

River Board, s.e.	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	1.39	1.54	1.71	1.88	2.04	2.20	2.35	2.51	2.70	2.93
Vltava River Board, s.e.	1.41	1.55	1.65	1.70	1.79	1.90	2.00	2.11	2.24	2.45
Ohře River Board, s.e.	1.87	1.99	2.11	2.23	2.33	2.41	2.53	2.71	2.85	3.01
Odra River Board, s.e.	1.59	1.74	1.80	2.01	2.08	2.12	2.40	2.53	2.70	2.89
Morava River Board, s.e.	2.27	2.53	2.66	2.89	3.06	3.12	3.26	3.49	3.88	4.19
Average price quoted by River Boards, s.e.	**1.59**	**1.76**	**1.90**	**2.10**	**2.23**	**2.44**	**2.42**	**2.56**	**2.68**	**2.67**

Source: River Boards, s.e., T. G. Masaryk Water Management Research Institute – public research institution
Note: Unit price for m³ is quoted excluding VAT.
Calculated by means of weighted average.

Table 6.2.5
Payments for surface water abstractions in the years 1999–2008 in millions of CZK

River Board, s.e.	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	530	532	536	566	613	669	669	678	705	735
Vltava River Board, s.e.	383	401	408	438	495	508	513	547	572	609
Ohře River Board, s.e.	375	367	397	399	427	420	393*)	434*)	434*)	450*)
Odra River Board, s.e.	279	294	301	347	359	347	396	433	443	445
Morava River Board, s.e.	266	277	287	300	368	359	362	394	420	440
River Boards, s.e. in total	**1,833**	**1,871**	**1,929**	**2,050**	**2,262**	**2,303**	**2,333**	**2,486**	**2,574**	**2,679**

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

Table 6.2.6
Small hydro power plants owned by River Boards, s.e. in the years 2003–2008

River Board, s.e.	Indicator	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	Number of small hydro power plants	17	17	17	19	19	20
	Installed capacity in kW	4,876	4,876	4,876	5,217	5,217	5,892
	Electric power generation in MWh	7,792	15,284	19,135	18,619	19,270	18,325
	Sales in thousands of CZK	14,590	24,109	30,786	31,873	34,429	34,773
Vltava River Board, s.e	Number of small hydro power plants	15	16	16	17	17	17
	Installed capacity in kW	15,500	15,900	15,300	18,400	18,400	18,400
	Electric power generation in MWh	43,030	67,706	74,050	73,485	83,568	82,039
	Sales in thousands of CZK	62,363	103,649	115,982	126,279	151,919	181,435
Ohře River Board, s.e.	Number of small hydro power plants	20	20	20	20	20	21
	Installed capacity in kW	16,750	16,677	16,677	16,677	16,677	16,949
	Electric power generation in MWh	75,560	87,465	96,967	96,188	107,876	94,056
	Sales in thousands of CZK	111,312	137,879	157,570	167,066	209,510	197,824
Odra River Board, s.e.	Number of small hydro power plants	14	14	14	14	14	16
	Installed capacity in kW	4,985	4,985	5,103	5,103	5,103	5,731
	Electric power generation in MWh	20,250	24,292	20,649	20,801	25,827	31,964
	Sales in thousands of CZK	27,798	36,484	35,049	35,033	50,120	68,710
Morava River Board, s.e.	Number of small hydro power plants	14	14	14	13	16	15
	Installed capacity in kW	3,612	3,612	3,612	3,400	3,530	3,522
	Electric power generation in MWh	12,412	13,803	14,415	14,483	8,709	14,281
	Sales in thousands of CZK	18,324	21,221	23,125	24,394	14,982	34,922
River Boards, s.e. in total	**Number of small hydro power plants**	**80**	**81**	**81**	**83**	**86**	**89**
	Installed capacity in kW	**45,723**	**46,050**	**45,568**	**48,797**	**48,927**	**50,494**
	Electric power generation in MWh	**159,044**	**208,550**	**225,216**	**223,576**	**245,250**	**240,665**
	Sales in thousands of CZK	**234,387**	**323,342**	**362,512**	**384,645**	**460,960**	**517,664**

Source: MoA, River Boards, s.e.

In addition to water flow cooling, since the year 2003 abstraction levels and prices of surface water have also been identified with regard to agricultural irrigation and flooding of artificial depressions in the landscape. Except the River Odra catchment area, in the year 2008 the River Boards, s.e. in total abstracted water for the purposes of agricultural irrigation of 269 thousand m³ of land which in the aggregate for all River Boards, state enterprises in the year-on-year comparison corresponds to a decrease by 485 thousand m³ compared to the last year. The Morava River Board, s.e. participated in this decrease in abstractions for the purposes of agricultural irrigation the most significantly, and a considerable decrease has been also reported by the Elbe River Board, s.e. The Ohře River Board, s.e. is the only one reporting abstractions of surface water for flooding of artificial depressions in the terrain, amounting to 3,606 thousand m³ (i.e. as part of the Most lake flooding project).

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 Sb. 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 the River Boards, state enterprises altogether reported an increase in revenues from payments for surface water abstractions, which in absolute figures approximately amounts to CZK 105 million and corresponds to a year-on-year increase in this revenue category of 4%. The largest increase in sales of surface water abstractions is reported by the Vltava River Board, s.e. with a year-on-year increase amounting to CZK 37 million. By contrast, the lowest increase is reported by the Odra River Board, s.e. where the year-on-year increase amounted only to CZK 2 million.

Payments for surface water abstractions in a ten-year time series is shown in Table 6.2.5.

The favourable hydrological situation also continued in the year 2008, allowing an increase in the sales of electric power from small hydro power plants owned by the River Boards, s.e. by almost CZK 57 million and the overall revenues in this revenue category amounted almost to CZK 518 million.

The high level of the increasing sales of electric power generated in small hydro power plants owned by the River Boards, s.e. was influenced, in addition to the favourable hydrological situation, by four new power plants (two plants owned by the Odra River Board, s.e., one by the Elbe River Board, s.e. and another by the Ohře River Board, s.e.) being put into operation. By contrast, at the Morava River Board, s.e. the total number of small hydro power plants decreased from 16 to 15. The highest revenues from electric power are traditionally reported by the Ohře River Board, s.e., currently operating the largest number of its own small hydroelectric power plants. The sales of electric power amounting to a sum exceeding CZK 180 million were also reported by the Vltava River Board, s.e.

More detailed information about the total number of small hydro power plants owned by the individual River Boards, state enterprises, their 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 production, laboratory work and from design and engineering activities, with capital yields also contributing 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 by the amount of transfers of certain specified sales which relate to the past periods but were not materialised until this 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. The overall year-on-year increase in other revenues of the River Boards, state enterprises amounted in the year 2008 to almost CZK 94 million. All River Boards, state enterprises, reported a year-on-year increase in sales in the other revenues category and only the Elbe River Board, s.e. reported a slight decrease.

The summary of other revenues of the River Boards, state enterprises in a longer timescale is shown in Table 6.2.7.

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 protection measures and produce a number of conceptual studies.

The total amount of grants in the year 2008 increased compared to the previous year by 17%; however with a different proportion of the impacts of operating grants and investment grants. Grants of operating nature showed a year-on-year decrease by almost 19% compared to investment subsidies showing a year-on-year increase by 46%. In total the grants in the year 2008 amounted to CZK 1.193 billion. Grants are 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 State Fund for Transport Infrastructure of the Ministry of the Environment through the funds of the State Environmental Fund. Flood protection measures were also co-financed with the contribution of some regional authorities.

The total of operating (non-investment) and investment grants allocated to the individual River Boards, s.e. in the year 2008 is shown in Table 6.2.8.

The overall costs also increased in the year 2008, namely by CZK 222.6 million compared to the previous year. This was mainly caused by personnel costs, which increased by CZK 93 million compared to the previous year, and repairs, which increased by CZK 45 million.

The other items also showed a slight increase or stagnation. The highest increase in costs was observed in the Morava River Board, state enterprise,

Table 6.2.7
Other revenues of River Boards, s.e. in the years 2000–2008 in thousands of CZK

River Board, s.e.	2000	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	145,989	124,730	173,429	68,368	87,233	92,256	162,403	115,334	105,185
Vltava River Board, s.e.	55,481	79,505	191,391	136,859	85,855	77,430	304,594	73,143	82,165
Ohře River Board, s.e.	66,836	57,809	65,606	67,525	59,410	73,068	80,937	74,837	110,493
Odra River Board, s.e.	49,113	28,208	47,853	41,618	34,712	35,656	41,780	34,911	61,628
Morava River Board, s.e.	54,879	46,462	44,975	55,643	48,960	58,411	61,959	46,423	78,966
River Boards, s.e. in total	**372,298**	**336,714**	**523,254**	**370,013**	**316,170**	**336,821**	**651,673**	**344,648**	**438,437**

Source: River Boards, s.e.

Table 6.2.8
Grants allocated to River Boards, s.e. in the year 2008 in thousands of CZK

River Board, s.e.	Operating grant	Investment grant	Grants in total
Elbe River Board, s.e.	185,529	273,361	**458,890**
Vltava River Board, s.e.	4,018	243,283	**247,301**
Ohře River Board, s.e.	11,780	110,793	**122,573**
Odra River Board, s.e.	19,514	109,036	**128,550**
Morava River Board, s.e.	147,576*)	87,798	**235,374**
River Boards, s.e. in total	**368,417*)**	**824,271**	**1,192,688**

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 the years 2007 and 2008 reported by River Boards, s.e in millions of CZK

Type of cost	Elbe River Board, s.e.	Vltava River Board, s.e.	Ohře River Board, s.e.	Odra River Board, s.e.	Morava River Board, s.e.	River Boards, s.e. in total
Depreciation						
2007	150.4	181.6	174.2	125.5	120.5	**752.2**
2008	157.3	200.3	177.7	126.3	119.5	**781.1**
Repairs						
2007	280.8	314.2	137.0	95.0	103.5	**930.5**
2008	296.5	245.5	151.8	120.9	161.0	**975.7**
Materials						
2007	45.4	24.5	22.1	37.0	43.5	**172.5**
2008	46.7	31.6	22.2	39.8	43.9	**184.2**
Energy and fuels						
2007	36.5	28.7	24.8	5.3	11.3	**106.6**
2008	41.8	33.2	32.0	5.8	12.3	**125.1**
Personnel costs						
2007	378.6	335.4	253.5	181.6	267.0	**1,416.1**
2008	400.1	357.4	271.4	194.6	285.6	**1,509.1**
Services						
2007	68.8	81.8	30.2	46.6	36.4	**263.8**
2008	71.0	88.6	32.4	40.2	37.7	**269.9**
Financial costs						
2007	0.8	4.8	0.3	1.3	0.3	**7.5**
2008	0.5	4.6	0.2	1.2	1.0	**7.5**
Other costs						
2007	63.5	19.9	31.3	22.5	8.7	**145.9**
2008	43.3	3.7	63.8	36.7	17.6	**165.1**
Total costs						
2007	**1,024.8**	**990.9**	**673.4**	**514.8**	**591.2**	**3,795.1**
2008	**1,057.2**	**964.9**	**751.5**	**565.5**	**678.6**	**4,017.7**

Source: River Boards, s.e.

Table 6.2.10
Investments made by the River Boards, s.e. in the years 1999–2008 in millions of CZK

River Board, s.e.	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	248.4	328.5	347.1	529.1	607.6	915.2	485.2	394.9	212.0	455.0
Vltava River Board, s.e.	116.3	115.2	114.1	199.3	321.6	219.0	362.4	236.6	275.2	611.3*)
Ohře River Board, s.e.	212.5	148.2	173.4	212.8	339.8	329.5	354.4	170.4	215.7	322.5
Odra River Board, s.e.	484.4	361.6	226.8	282.3	316.3	301.3	260.6	254.7	199.7	244.2
Morava River Board, s.e.	357.3	356.8	257.8	200.5	407.4	411.9	462.3	518.2	413.5	257.8
River Boards, s.e. in total	**1,418.9**	**1,310.3**	**1,119.2**	**1,424.0**	**1,992.7**	**2,176.9**	**1,924.9**	**1,574.8**	**1,316.1**	**1,890.8**

Source: MoA, River Boards, s.e.
*Note: *) The investments were made in the aggregate in the year 2008 but the financial settlement was made as late as in January 2009 (some of the grants were carried forward to the year 2009).*

as well as in the Ohře River Board, state enterprise. A decrease in costs was, on the contrary, reported by the Vltava River Board, state enterprise.

The summary of costs in the year 2008 reported by the River Boards, s.e. and their comparison with the previous year is shown in Table 6.2.9.

In the last year the River Boards, state enterprises spent on investments CZK 1,890.8 million. Of this sum, approximately CZK 1,030.6 million was drawn from their own resources while investment means amounting to the total of more than CZK 840.2 were not covered by the River Boards´ own resources.

Compared to the previous year the investments made by the River Boards, state enterprises, in the year 2008 increased in total by CZK 574.7.

The summary of investments means over a longer period is shown in Table 6.2.10 and Chart 6.2.2.

The financial results of all River Boards, state enterprises showed only a profit. This profit amounted to almost CZK 105 million.

Compared to the previous period the total profit is lower by almost CZK 87.5 million. In reality, however, except for the Vltava River Board and the Ohře River Board, state enterprises, the results were better than in the year 2007.

Successive development of the profit/loss in the course of the last eight years and the share of the individual River Boards, s.e. in the total profit/loss is documented in Table 6.2.11.

Table 6.2.12 shows a more detailed breakdown of profit into individual funds together with the proposals for covering losses in the respective River Boards, s.e.

Average recalculated number of employees in River Boards, state enterprises decreased in the year 2008 by 43 employees to a total of 3,526 persons.

A significant decrease in the number of employees was observed in the Vltava River Board, s.e., which shows a decrease of 27 employees and the Morava River Board, s.e. reporting a decrease by 14 employees. The Elbe River Board, s.e. and the Odra River Board, s.e, reported a decrease in staff numbers by 1 employee only. The Ohře River Board, s.e, reported the same number of employees in the year 2008

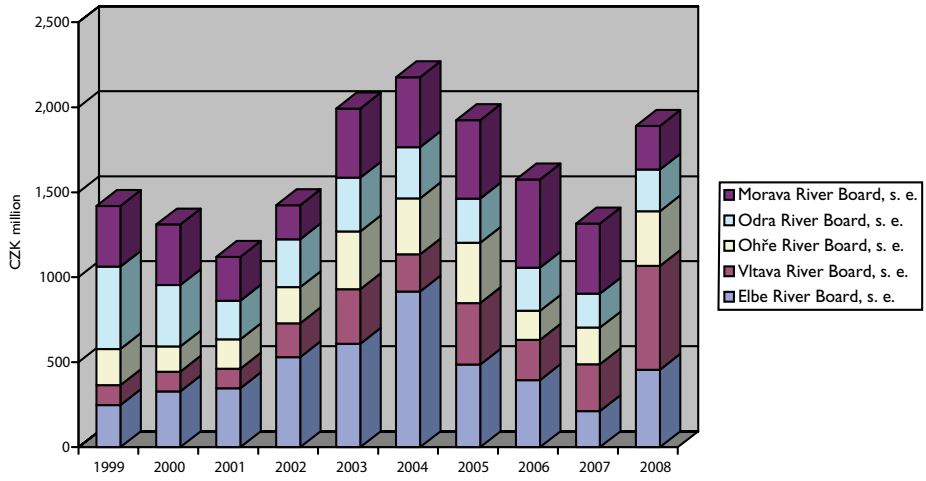
An overview of the development in the numbers of employees of the significant watercourse administrators is shown in Table 6.2.13.

Table 6.2.13
Number of employees of River Boards, s.e. in the years 2007 and 2008 (average recalculated number)

River Board, s.e.	2007	2008
Elbe River Board, s.e.	943.4	942.8
Vltava River Board, s.e.	808.7	782.0
Ohře River Board, s.e.	605.2	605.5
Odra River Board, s.e.	459.8	458.9
Morava River Board, s.e.	750.8	736.4
River Boards, s.e. in total	**3,567.9**	**3,525.6**

Source: River Boards, s.e.

Chart 6.2.2
The development of capital construction in River Boards, s.e. in the years 1999–2008



Source: River Boards, s.e.

Table 6.2.11
Profit/loss of River Boards, s.e. in the years 2001–2008 in thousands of CZK

River Board, s.e.	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	17,166	4,774	26,542	39,445	36,777	6,132	15,798	16,692
Vltava River Board, s.e.	48,735	- 45,525	45,752	42,008	34,376	177,869	67,625	23,375
Ohře River Board, s.e.	12,415	11,334	28,274	16,817	17,070	47,735	71,817	22,401
Odra River Board, s.e.	22,575	23,002	38,671	11,877	16,680	56,401	24,595	29,296
Morava River Board, s.e.	17,939	24,515	32,170	37,142	13,038	11,054	12,417	13,035
River Boards, s.e. in total	**118,830**	**18,097**	**171,409**	**147,289**	**117,941**	**299,191**	**192,252**	**104,799**

Source: River Boards, s.e.

Table 6.2.12
Allocation of profit of River Boards, s.e. for the year 2008 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.	**16,692**	1,670	8,000	3,022	-	4,000	-
Vltava River Board, s.e.	**23,375**	-	5,000	11,875	-	6,500	-
Ohře River Board, s.e.	**22,401**	4,480	5,000	7,921	-	5,000	-
Odra River Board, s.e.	**29,296**	-	9,500	10,296	-	9,500	-
Morava River Board, s.e.	**13,035**	1,304	7,150	-	-	4,000	581

Source: River Boards, s.e.

Table 6.2.14
Average salaries in the individual River Boards, s.e. in the years 2001–2008 in CZK/month.

River Board, s.e.	2001	2002	2003	2004	2005	2006	2007	2008
Elbe River Board, s.e.	16,565	17,941	18,750	20,125	21,781	23,036	24,318	25,778
Vltava River Board, s.e.	16,526	18,444	19,073	20,556	21,909	23,414	24,611	27,325
Ohře River Board, s.e.	17,085	18,435	19,420	20,661	22,091	23,464	24,971	26,794
Odra River Board, s.e.	15,811	17,516	18,362	19,656	21,050	22,337	23,817	25,534
Morava River Board, s.e.	15,820	16,216	16,899	17,975	19,233	20,798	22,052	23,823
Average monthly salary in River Boards, s.e.	**16,396**	**17,724**	**18,505**	**20,072**	**21,243**	**22,637**	**23,954**	**25,856**

Source: River Boards, s.e.
Note: Calculated by weighted average.

The average monthly salary in the River Boards, state enterprises in the year 2008 amounted to CZK 25,856.

Compared to the previous year, the average monthly salary increased by almost CZK 2,000. The annual increase ranges from CZK 1,460 in the Elbe River Board, s.e. up to CZK 2,714 in the Vltava River Board, s.e. The lowest average monthly salary, amounting to CZK 23,823 is still reported by the Morava River Board, s.e.

The average monthly salaries are specified in Table 6.2.14.

6.3 Agricultural Water Management Administration

The activities carried out by the Agricultural Water Management Administration are predominantly public services of a non-profit nature in the context of managing state property and sector interests in the field of water non-profit management in the river basin districts situated in a landscape which is used for farming, as well as in the context of landscaping, landscape protection and ecological stability.

In accordance with the provisions of the Deed of Foundation, the Act No. 254/2001 on Water and on amendment to certain laws (the Water Act), as amended, the Act No. 219/2000 on the property of the Czech Republic and its performance in legal relations, as amended, in the year 2008 the Agricultural Water Management Administration carried out administration of minor watercourses with a total length of 38,682 km (including 16,437 km of regulated streams) and 507 reservoirs. The total acquisition value of these non-current tangible assets administered by the Agricultural Water Management Administration amounts to CZK 9.556 billion.

Since the year 2005 the Agricultural Water Management Administration has at the same time been carrying out the administration of large property falling into the category of main drainage facilities. At present, this property comprises in total 9,156 km of open channels and channels regulated in pipelines, 137 pumping plants, 11 reservoirs relating to drainage systems and 551 culverts. The acquisition value of this property amounts to CZK 2.560 billion.

In the year 2008 the activities and management of the Agricultural Water Management Administration focused particularly on tasks relating to the administration, operation and maintenance of the water management property of the Czech Republic, the acquisition and technical repair of capital assets administered by the Agricultural Water Management Administration, programme solution and financing, remedying flood damages, the implementation of flood protection measures, the development of the public administration information system at the Ministry of Agriculture, the implementation and evaluation of surface water monitoring, monitoring of foreign substances in surface waters and the approximation strategy (Council Directive 91/676/EEC).

The main priorities of the Agricultural Water Management Administration included in 2008 the development and implementation of projects under Flood Prevention Programme II. When preparing these projects, complex negotiations were held in terms of settlement of property rights to land. The Agricultural Water Management Administration welcomed the inputs of proponents: municipalities or regions significantly assisting in project preparation as well as in the field of property rights. The implemented measures were especially aimed at construction of reservoirs and flood banks and increasing the flow capacity of watercourse channels in urban areas. These landscape measures regulate run-off conditions in the respective catchment area in order to prevent or mitigate the impacts of storm rainfall. The financial resources spent on flood protection measures amounted in the year 2008 to CZK 63.940 million.

In the year 2008 the Agricultural Water Management Administration focused its activity mainly on completing the projects implemented under the programme 229 010 – "Development and Renewal of the Technical and Material Base of the Ministry of the Agriculture" (sub-programme 229 013). This Ministry of Agriculture grant primarily dealt with regulation and stabilisation of watercourse channels and rehabilitation of reservoirs. The construction aspects of all of the projects were completed as scheduled by the end of the year. In total CZK 73.194 million were spent on the measures dealt with in this programme in the year 2008.

At the same time, during the last year the Agricultural Water Management Administration continued in negotiating the financial settlement with the owners of land below hydraulic structures administered by the Agricultural Water Management Administration by virtue of Section 50 and Section 56 of the Water Act. The settlement process was under way throughout the year, following the methodology of the Agricultural Water Management Administration. The funds from the state budget used for land acquisition and land use amounted to CZK 20.378 million.

In the last year the Agricultural Water Management Administration unfortunately did not succeed in linking together the nature and landscape protection requirements and its intentions which were dealt with through the landscaping programmes of the Ministry of the Environment. In particular, the funds used through the "Programme of Revitalisation of River Systems" enabled the Agricultural Water Management Administration to participate in the successive improvement of hydrological regime in the landscape and the renewal of the nature-friendly status of water ecosystems. Unfortunately, the Programme of Revitalisation of River Systems was not fulfilled in terms of financing. A definite promise for the next years

from the Agricultural Water Management Administration´s point of view is the fact that this programme and its funding will be continued, as well as the possibility to implement similar measures under the Operational Programme Environment.

The funds allocated to the Agricultural Water Management Administration, with the objective of ensuring the proper function and operability of watercourses and hydraulic structures as well as the maintenance, repairs and remedying of the states of disrepair, amounted to CZK 156.969 million. This level of funding helped the Agricultural Water Management Administration to provide for the necessary management of the administered property, giving it a signifiacanly systemic character, which is documented by the positive response of mayors or farmers. The maintenance of watercourses included in particular grass mowing, repairs of flood protection structures, elimination of non-indigenous invasive plant species (hogweed, Japanese knotweed) and maintenance of riparian stand. The funds allocated for current maintenance were partially used for remedying local flood damage. By virtue of Annex 11 to the Act No. 360/2007, these funds were also used to take immediate action due to emergency situations.

In the year 2008 measures of non-investment nature also included remedying flood damage from the year 2006, operation of watercourses and hydraulic structures and implementation of projects and schemes under programme 129 120 and the landscape conservation programme, settlement of land claims by virtue of Sections 50 and 56 of the Water Act and operation and maintenance of main drainage facilities. In total CZK 37.538 million were used for main drainage facilities maintenance, primarily for grass mowing and cleaning the channels ensuring runoff from drainage systems. Some of the funds (CZK 0.8 million) were used to deal with emergency situations.

Summary of the real utilisation of funds allocated for non-investment measures in the year 2008 is shown in Table 6.3.1.

Table 6.3.1
Use of individual non-investment funds of the Agricultural Water Management Administration in the year 2008 in millions of CZK

Activity	Resource	Budget	Reality
Maintenance and repairs of watercourses	State budget	156.969	156.819
Operation of watercourses and related hydraulic structures	State budget	21.945	21.782
Landscape conservation programme	State budget	0.114	0.114
Flood prevention	State budget	2.882	2.881
Remedying of flood damage from 2006	State budget	42.706	42.638
Maintenance of main drainage facilities	State budget	37.603	37.538
Operation of main drainage facilities	State budget	14.000	13.705
Alternative land reclamation	State budget	0.227	0.226
Other non-investment costs	State budget	20.463	20.436
Compensation pursuant to Sections 50 and 56 of the Water Act	State budget	11.126	11.116
Total		**308.035**	**307.255**

Source: Agricultural Water Management Administration
Note: Non-investment expenditures on remedying flood damages are shown in separate tables.

A summary of funds from the individual financial resources used in the recent years for maintenance and repairs of watercourses and hydraulic structures is shown in Table 6.3.2.

Allocation of non-investment expenses drawn for maintenance and repairs of watercourses and main drainage facilities administered by the Agricultural Water Management Administration in the year 2008 by the individual river basin districts is shown in Table No. 6.3.3.

The revenues of the Agricultural Water Management Administration have the nature of its own business activity income with other revenues comprising supplementary, incidental and other revenues. Revenues received in the year 2008 amounted in total to CZK 17.6 million, including payments for surface water abstractions, amounting to CZK 2.9 million. The surface water price was set for the year 2008 at CZK 1.29 per m³. This price does not include VAT since the Agricultural Water Management Administration, as one of the organisational units of the state does not invoice this tax. The overall structure of revenues of the Agricultural Water Management Administration is shown in Table 6.3.4.

In the year 2008 the Agricultural Water Management Administration continued remedying flood damages of both an investment and non-investment nature from the year 2006 while making use of programme 229 114 – "Remedying the Impacts of Floods in the Year 2006". With the exception of four measures, all projects were finalised in terms of construction. The total sum used in the last year for remedying flood damage from the year 2006 amounted to CZK 91.271 million. Remedy of flood damage from the year 2007 was partially dealt with from the funds allocated for current maintenance. An overview of funds used for remedying flood damages in the course of the year 2008 is shown in Table 6.3.5.

In the year 2008 the Agricultural Water Management Administration carried out capital construction amounting to approximately CZK 182.9 million, including the implementation of flood protection measures amounting to CZK 61.1 million and remedying flood damages from the year 2006 amounting to CZK 48.6 million. The structure of incurred expenditures is shown in Table 6.3.6.

The Agricultural Water Management Administration, together with other organisations, ensures the the operation of a monitoring system for assessing and evaluating the surface water quality status throughout the Czech Republic. In the year 2008 a total of 944 hydrometric profiles on minor watercourses and small water reservoirs were monitored. By means of water samples, the Administration monitors both general physical and chemical indicators. This allows timely identification of municipal and agricultural sources of pollution and foreign substances, indicating the possibility of contamination of the environment by heavy metals and certain specific organic substances. Hydrobiological monitoring is also carried out on selected hydrometric profiles. In its activities the Administration actively cooperates with other watercourse administrators, state institutions, research institutes and scientific organisations.

In the process of implementing the Framework Directive, the Agricultural Water Management Administration, together with the River Boards, provides the operational monitoring network. In the capacity of the authorised expert body, the Administration also significantly participates in meeting the requirements resulting from the Council Directive 91/676/EEC (the Nitrate Directive).

Table 6.3.2
Coverage of the expenditures of the Agricultural Water Management Administration for maintenance and repairs of watercourses and hydraulic structures in the years 2004–2008 in millions of CZK

Source of funds to cover the expenses	2004	2005	2006	2007	2008
MoA Budget – Watercourses and reservoirs	102.4	90.1	81.5	169.7	156.8
MoA Budget – Main drainage facilities	0	17.5	19.4	60.5	37.6
Landscape conservation programme	0.2	0.2	0.1	0.1	0.1
Flood protection measures	24.2	0	0	0	2.9
State budget total	**126.8**	**107.8**	**101.0**	**230.3**	**197.4**
State Fund for Land Reclamation	1.5	15	0	0	0
Total	**128.3**	**109.3**	**101.0**	**230.3**	**197.4**
Remedying of flood damages from the resources of the Land Fund of the Czech Republic	0	0	0	0	0
Maintenance and repairs of the main land reclamation facilities and equipment from the resources of the Land Fund of the Czech Republic	54.8	0	0	0	0
Expenditures in total	**183.1**	**109.3**	**101.0**	**230.3**	**197.4**

Source: Agricultural Water Management Administration

Table 6.3.3
Non-investment expenses for watercourses, maintenance and repairs of main drainage facilities administered by Agricultural Water Management Administration in the year 2008 by river basin districts in millions of CZK

River Board, s.e.	Maintenance and repairs of watercourses	Operation	Remedying of flood damages	Maintenance of main drainage facilities	Operation of main drainage facilities	Total
Vltava River Board, s.e.	50.982	1.138	6.308	16.737	1.319	**76.484**
Elbe River Board, s.e.	33.571	3.139	8.939	9.131	2.856	**57.636**
Ohře River Board, s.e.	10.904	1.268	0	2.268	0	**14.440**
Morava River Board, s.e.	49.978	12.339	23.049	6.502	8.566	**100.434**
Odra River Board, s.e.	11.384	3.898	4.342	2.900	0.964	**23.488**
Total	**156.819**	**21.782**	**42.638**	**37.538**	**13.705**	**272.482**

Source: Agricultural Water Management Administration

Table 6.3.4
Structure of revenues of the Agricultural Water Management Administration in millions of CZK in the years 2004–2008

Revenues	2004	2005	2006	2007	2008
Payments for water abstractions	2.7	3.9	4.2	2.9	2.9
Rentals of hydraulic structures	5.0	5.2	5.4	3.4	3.4
Other revenues	1.4	5.1	2.7	4.7	11.3

Source: Agricultural Water Management Administration

Table 6.3.5
Remedying flood damages from the years 2000, 2002, 2006 and 2007 on watercourses administered by the Agricultural Water Management Administration in 2008 in millions of CZK

Source – programme	Capital costs	Non-investment costs	Total
Programme 229 112	0	0	**0**
Programme 229 113	0	0	**0**
Programme 229 114	48.633	42.638	**91.271**
Total	**48.633**	**42.638**	**91.271**

Source: Agricultural Water Management Administration

Table 6.3.6
Structure of investments and financial resources of the the Agricultural Water Management Administration in the years 2005–2008 in millions of CZK

Structure of investments	Funds	2005	2006	2007	2008
Watercourse regulation	State budget – MoA Special-purpose fund (alternative land reclamation) State Fund for Land Reclamation	41.5 0 0	80.5 0 0	93.6 0 0	73.2 0 0
Study of runoff conditions	State budget	0	0	0	0
Revitalisation of watercourses	State budget	22.3	26.1	14.4	0
Flood protection measures	State budget European Investment Bank	58.6 129.0	55.9 12.1	20.5 0	61.1 0
Remedying of flood damage from the year 1997	State budget European Investment Bank	0 0	0 0	0 0	0 0
Remedying of flood damage from the year 1998	State budget	0	0	0	0
Remedying of flood damage from the year 2000	State budget	0.5	0	0	0
Remedying of flood damage from the year 2002	State budget European Investment Bank	21.3 113.1	1.1 0	0 0	0 0
Remedying of flood damage from the year 2006	State budget	-	1.6	3.6	48.6
Remedying of flood damage from the year 2007	State budget	-	-	-	-
Total		**386.3**	**177.3**	**132.1**	**182.9**

Source: Agricultural Water Management Administration

As regards information technologies, the Administration participated in preparing and processing source documents for the Water Management Information Portal with regard to the registration of structures used in water management land reclamation, preparing source documents for the Central Register of Watercourses (CEVT 10) and ensuring, on an ongoing basis, the update of information relating to the register of surface water quality in the monitored hydrometric profiles and the Central Register of Reservoirs (CEVN). The Administration made use of the already established Virtual Private Network for its intranet projects and data communication within the organisation.

6.4 Forests of the Czech Republic, s.e.

In performing its main mission, i.e. the management of state-owned forests, the Forests of the Czech Republic, state enterprise, deals with one of many other important activities: the administration of the specified minor watercourses. At present the Forests of the Czech Republic administer 19.6 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 acquisiton value exceeding CZK 2.7 million (in particular watercourse regulation, flood protection measures and reservoirs). The watercourse administration is with regard to methodology managed by the Water Management Department at the Head Office of the Forests of the Czech Republic, s.e. and is carried out by 90 employees in seven Watercourse Administrations, with territorial responsibility according to the respective river basin districts.

The watercourse administration and the implemented measures (repairs, rehabilitation and new investments) were financed from the administration's own resources and to a certain extent from subsidies. As for subsidies, the funds in question include measures carried out in the public interest pursuant to Section 35 of the Forest Act or financial means from the state budget and the loan provided by the European Investment Bank for the programmes of the Ministry of Agriculture Support for Flood Prevention and Support for Remedying Flood Damages on 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 EU funds from the "Operational Programme Environment" and the "Programme of Rural Development". Measures on 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 spent generate virtually no profit.

In the year 2008 the activities of the Forests of the Czech Republic, s.e. were focused in particular on:

- Carrying out the administration of the specified minor watercourses as stipulated by the Water Act and the related legal regulations,
- Implementation of both investment and non-investment projects aimed at flood protection, erosion control measures and also the public interest projects pursuant to Section 35 of the Forest Act,
- Completion of remedying flood damages from the years 2006 and 2007,

The River Opava, Vrbno pod Pradědem

- Ensuring the design and engineering stages of projects prepared for implementation in the following years,
- Other activities aimed at riparian stand management, revitalisation 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.

In connection with watercourse administration, the Forests of the Czech Republic, s.e., through its organisational units, the Watercourse Administrations, disbursed in total CZK 512.1 million, including expenditures of an investment nature amounting to CZK 262 million. Its own funds used for these investments amounted to CZK 105.7 million. The projects were aimed at flood prevention measures as well as the construction and repair of torrent control structures. These measures are implemented mainly with the intention of creating a retention capacity for floating solids trapping and provide flood protection in urban areas of municipalities by increasing the capacity of watercourse channels and their stabilisation. In total, CZK 250.1 million, including own funds amounting to CZK 230.7 million, were used for repairs and maintenance of torrent control fixed assets. The above amounts include all costs relating to watercourse administration.

Some of the costs incurred by the Forests of the Czech Republic, s.e. in the water management sector included expenditure on remedying flood damages caused by the three flood waves in the year 2006, the flood at the beginning of September 2007, especially in Moravia, and smaller flood damages from the year 2008. These measures were primarily aimed at increasing the watercourse channel capacity, removing fluvial deposits and repairs of bulkheads and abutment walls, masonry lining, transverse dikes and check dams. In total CZK 91.4 million, including CZK 40.2 million of the organisation's own funds, were expended on remedying flood damages. The structure of financing water management by the Forests of the Czech Republic, s.e. in the year 2008 is shown in Table 6.4.1.

Measures in river basins

The Watercourse Administration – the Elbe river basin district completed in 2008 projects of investment nature financed by subsidies provided by the Ministry of Agriculture, aimed at remedying flood damage from the year 2006: The Knapovecký stream and the River Tichá Orlice tributary in the Ústecko-orlicko region; the Veselka stream near Rovensko pod Troskami, the River Doubrava tributary near Chotěboř and the Vižňovský and the Ruprechtický streams in the Broumov district.

As regards the "Flood Prevention II" programme of the Ministry of Agriculture, the completed schemes included projects on the Městecký stream near Vojnův Městec in the Žďár district, the Nekořský stream near Jablonné nad Orlicí and the Žďárský stream in the Podkrkonoší district. In addition, the implementation of other flood protection measures was commenced in the Orlické mountains: Hluky IV and VI; the Hořenský stream in the Semily district; and the Jamenský stream near Žamberk.

Here also the respective measures were implemented in the public interest pursuant to Section 35 of the Forest Act: the Černostudniční stream in the Jablonec nad Nisou district, the tributaries of the Heřmanický stream at Heřmanice near Frýdlant and the Od Rozkoše stream in the Jablonec district. Other measures will be started, e.g. on the Debrný stream near Nasavrky.

Table 6.4.1
Structure of financing watercourse administration by the Forests of the Czech Republic, s.e. in the year 2008 in millions of CZK

Forests of the Czech Republic, s.e.	Own resources	Subsidies	Flood damages	
			Own resources	Subsidies
Investments	105.7	156.3	10.7	42
Non-investments	230.7	19.4	29.5	9.2
Total	**336.4**	**175.7**	**40.2**	**51.2**

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

The River Svratka, Křižánky

Other larger investment projects were carried out without any subsidies, e.g. on the River Divoká Orlice tributary in Klášterec nad Orlicí, a small water reservoir in Podlesí in the Orlické hory mountains and other schemes in the Vižňovský and Ruprechtický streams in the Broumov region. Among the non-investment projects we may mention e.g. the Horský stream stage IV in Kunvald in the Žamberk region, repair of the Hluky check dam (Kounov in the Orlické hory mountains), the Bílý stream and the Prosečský stream retention reservoirs in the Žďárské vrchy hills.

This watercourse administration carries on with the reintroduction of freshwater crayfish in the foothills of the Orlické mountains and the reintroduction of minnow and brown trout in the Jizerské mountains protected landscape area under the programme for preserving the non-productive functions of the forest.

Last but not least, applications for three projects with EU subsidies were filed and accepted, together with proposals for revitalisation of watercourses improperly regulated in the past, and restoration of retention capacities.

The Watercourse Administration – the Vltava river basin district carried out in the year 2008 to a large extent subsidised construction projects having the nature of flood protection measures and remedying of flood damages from the year 2006. The latter was completed on the Vyšenský stream and on three tributaries of the River Stropnice in South Bohemia. In addition, the completed schemes included the construction of a flood protection measure on another tributary of the River Stropnice and the renovation of lining in the River Kocába tributary, and the Sudovický stream in the Nový Knín urban area in the Příbram district.

The Watercourse Administration used its own funds to complete the regulation of the Olešenský stream near Ledeč nad Sázavou.

Maintenance work, financed by the subsidies pursuant to Section 35 of the Water Act, was also carried out on the property on watercourses, for example the construction project called "Maintenance of the Torrent Control in Hradové Střimelice" in the Benešov district, as well as maintenance of riparian stands.

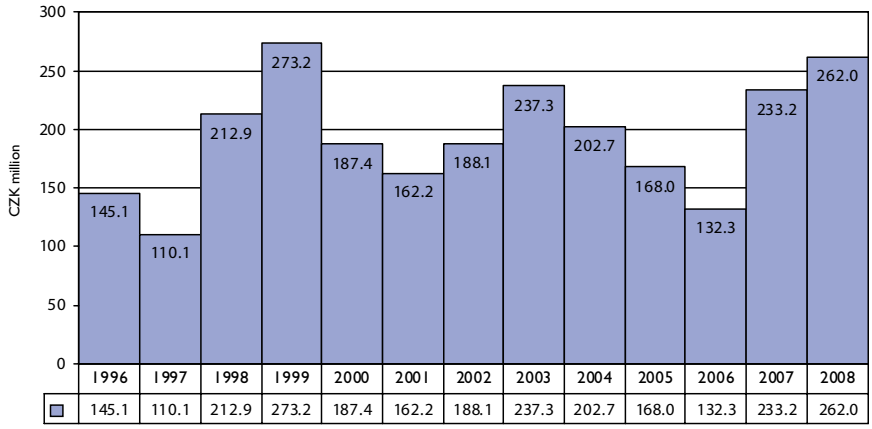
The Watercourse Administration - the Berounka river basin district completed in the year 2008 the second stage of the 346m-long flood protection measure in the Stroupinský stream in Žebrák municipality in the Beroun district, worth almost CZK 7 million. This project was funded by a Ministry of Agriculture programme. The same programme is used for financing another construction project, the Čižický stream in Plzeň, which has already been launched and is scheduled to be completed in the year 2009. In addition, reconstruction of the "Vrátnice" reservoirs was commenced. This hydraulic structure comprises two small cascadereservoirs near Konstantinovy Lázně. This construction is financed on the basis of a public interest decision pursuant to Section 35 of the Forest Act. This project will also be completed in 2009.

The Forests of the Czech Republic, s.e. used its own funds for rehabilitation of the Černá řeka river bypass reservoir near the Lísková border crossing in the Domažlice district, including the 200m-long stream channel lining along the reservoir. Other non-investment schemes include, for example, the repair of the existing check dams in the Žloukovice gorge near Nižbor and renovation of check dams on the Požárský stream in the Rakovník region.

In the year 2008 the completed investment projects in the Ohře river basin district included the following construction projects: the Lesní stream project in the Teplice district, comprising the construction of longitudinal lining on banks in locations prone to erosion and the rehabilitation of retention reservoir; and the construction project the Struhařský stream stage IV – Ovčárna in the Podbořany district. Two check dams were built here to reduce gorge development of the stream channel and transport of bottom scour to the urban area downstream. Both projects were funded by subsidies under Section 35 of the Forest Act.

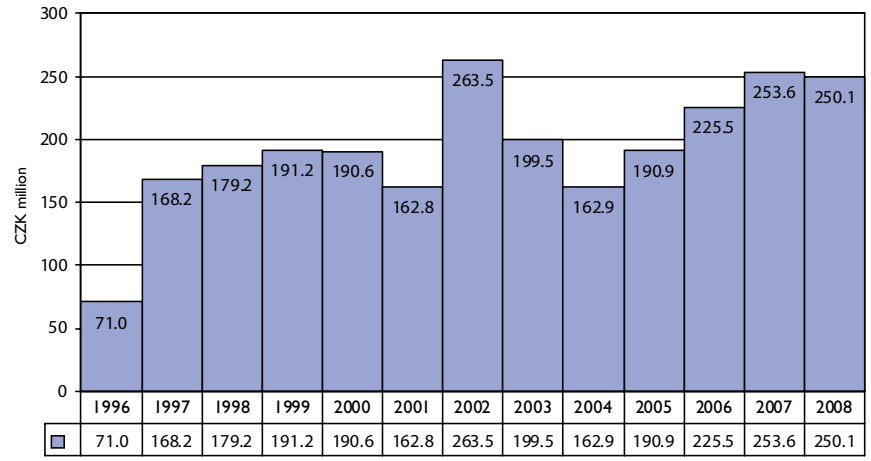
The commenced investment projects included the Starosedelský stream project in the Sokolov district (flood protection of the Staré Sedlo municipality: restoration of the collapsed lining and increasing the stream channel capacity); and the Hájský stream project in the Teplice district (construction of three check dams for floating solids trapping and increasing the stream channel capacity, which involved protection of the downstream urban area against the impacts of floods). These schemes are to some extent financed by the Flood Prevention II grant title of the Ministry of Agriculture. The subsidies under Section 35 of the Forest Act were also used for commencing the second stage of the Lesní stream – Žebrácký Roh project in the Teplice

Chart 6.4.1
Capital expenditures of the Forests of the Czech Republic, s.e. in the years 1996–2008 in millions of CZK – watercourses



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

Chart 6.4.2
Expenditure of the Forests of the Czech Republic, s.e. in the years 1996–2008 in millions of CZK – repairs and maintenance of watercourses (gross expenditure)

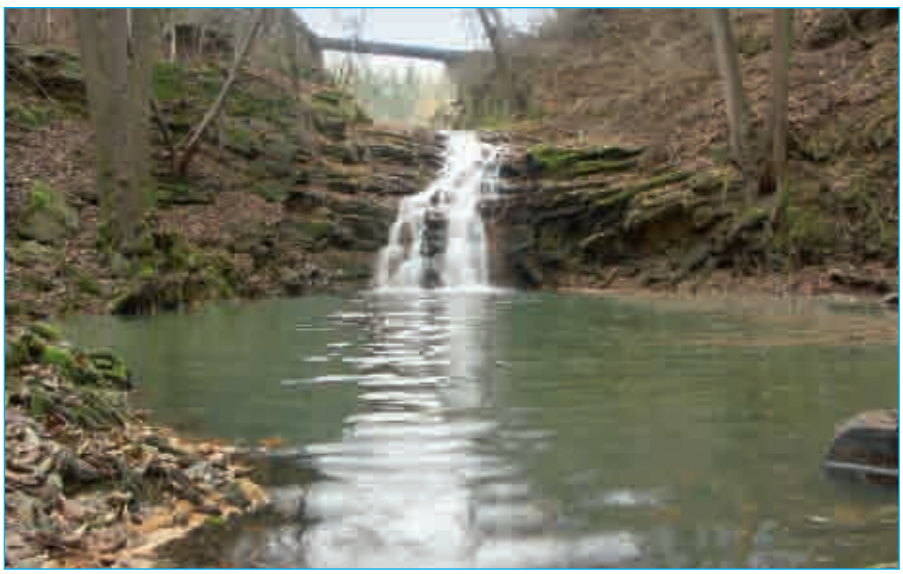


Source: Forests of the Czech Republic, s.e.

Table 6.4.2
Revenues of the Forests of the Czech Republic, s.e. from sales of surface water in the years 2002–2008 in thousands of CZK

Year	2002	2003	2004	2005	2006	2007	2008
Sales	9,790	9,390	10,530	9,483	9,581	10,010	10,380
Price per m³ *)	1.23	1.24	1.33	1.35	1.39	1.42	1.50

Source: Forests of the Czech Republic, s.e.
*Note: *) Unit price per m³ is quoted excluding VAT.*



The River Vrchlice, Velký rybník fishpond

district (this construction is tied to the above construction project and includes local reinforcement of the eroding banks and their lining, and the rehabilitation of retention reservoir) and the Struhařský stream project stage III in the Podbořany district.

Among the more significant non-investment projects we may mention the commencement of repairs to the stream lining on the Chotovický stream, in the Chotovice municipality urban area in the Česká Lípa district. Work on cleaning the retention area of the check dam was commenced on the Homolský stream to protect the Velké Březno municipality, in the Ústí nad Labem district, against the impact of floods, as well as the Bahniště project (cleaning of the watercourse and rehabilitation the longitudinal stream lining and bed plate in the Svádov municipality, in the Ústí nad Labem region). Repairs of the longitudinal stream lining in the urban areas of other municipalities were carried out, e.g. on the Kněžický stream in Kněžice in the Liberec district and on the Trojhorský stream in the Vinná municipality in the Litoměřice district. All of the above investment projects were financed from the enterprise´s own resources.

The Watercourse Administration – the Morava river basin district completed the last projects aimed at remedying flood damages from the year 2006. We can point out the River Bystřice tributary at Humenec in the Kroměříž district, where the transversal structures were repaired and the banks reinforced by rubble masonry. Other projects included the Hutiský stream and the Hajnušovský stream schemes in the Vsetín district (repair of the current lining) and the Úsobrnka project in the Boskovice district, where rubble bed drops were repaired to stabilise the riverbed situated above the Úsobrno municipality. Another project is the Brodecký stream in the Prostějov district, where two retention check dams were built for floating solids trapping.

In addition, larger scope projects financed by subsidies of the Ministry of Agriculture were completed: flood protection measures on the River Oskava continuing the previous three stages of regulation; the measures on the Kněhyně river in Prostřední Bečva; and the Hodorfský stream in Zubří.

Among the subsidised projects, the construction of a torrent control in Jasenka, a large construction project in the Vsetín municipality urban area, was commenced, as well as the measures on the Hrabovský stream in the Hrabová municipality.

The enterprise´s own funds were used to complete the repair of the existing damaged lining on the Horní Rozpitý stream. The EU funds were used to complete the project on the River Smolinka, aimed at stabilisation of the watercourse channel.

The following non-investment projects were commenced in the year 2008: the Ludina stream in Střítež was financed by EU funds. This project is aimed at repair of the existing bank reinforcement/lining in the urban area of the municipality. The Věžecký stream project includes a continuous repair along the whole length of the watercourse, involving renovation of the damaged drops, steel gabion check dams, and increasing the stream channel capacity.

In the year 2008 the Watercourse Administration - the Odra river basin district ensured the implementation of several major projects. One of them is the completion of the construction stage of the project called "the Middle Stretch of the River Opava, 0.900–1.747 km, and sediment trap", which is a part of the flood protection of the Vrbno pod

The Olešenský stream, Ledeč nad Sázavou

Pradědem municipality and the adjacent municipalities. The implementation of the watercourse regulation, co-financed by the Flood Prevention II programme, significantly increases safety of local inhabitants and their property. At present other comprehensive measures are being implemented in the whole catchment area of the middle stretch of the River Orava in connection with the regulation of its upper stretch in river km 2.040–4.900 and on its left bank tributary the Bílý stream.

Another event, which may be considered as important, is the completion of the implementation of the construction project "Ráztoka km 2.108–2.608", co-financed by the budget of the Moravskoslezský kraj region. This project consisted of the repair and restoration of the existing damaged regulation in a manner respecting the requirements of the protected aquatic animal species living in these waters, the Siberian sculpin. The transversal structures built were modified according to the strict requirements set by the Administration of the Beskydy Mountains Protected Landscape Area in a manner allowing two way migration along the watercourse, not only for this especially protected animal species. In addition, the regulation of the Kopytná watercourse in the Jablunkov district was commenced.

The Forests of the Czech Republic, in cooperation with the Moravskoslezský kraj region and other partners, joined the project "Conservation of Floodplain Habitats in the Morávka River Basin" which is in terms of funding supported by the European Union as part of the LIFE-Nature programme. Its main objective is to preserve floodplain habitats in the River Morávka basin that are endangered by the knotweed invasive plant species.

Seven constructions carried out in the public interest under Secion 35 of the Forest Act were completed and another four were commenced. Among the most significant are the measures on the River Ondřejnice.

As regards the Watercourse Administration – the River Dyje (Thaya) basin district, the projects co-financed by the subsidies of the Ministry of Agriculture in the year 2008 and completed in terms of construction included: The polder on the Leštínský stream and the measures in the Křeslický stream in the Čichov municipality and the Podhradí nad Dyjí municipality which were hit by floods in the past.

In addition, two projects with EU funding were implemented in the Českomoravská vrchovina highlands: Revitalisation of the Hostákovský stream in the Třebíč district and Revitalisation of the Bolíkovský stream near Telč. These projects consist of the renewal of a reservoir and a pool in order to retain water in the landscape and restore aquatic fauna and flora.

Five constructions co-financed by EU funds were commenced. The objective of these construction projects is to repair the existing structures and secure them against damage as well as to renew the bankfull discharge of the watercourse in urban areas of several municipalities in the Bohemian-Moravian highlands (Věcov, Věžná, Běleč, Sudice). The objective of the project in Brněnec municipality in the Svitavy district is the stream channel regulation and increasing the channel capacity.

In the year 2008 four decisions issued by the Jihomoravský kraj regional authorities were obtained in respect of carrying out construction work on stream channel regulation considered as public interest measures pursuant to Section 35 of the Forest Act. Other projects implemented in 2008 included the Pavlovický stream in the Vyškov district, the Koválovice gorge near Letovice and the Petrovka retention reservoir. The construction of retention reservoir Bítov was commenced.

The Brno district, especially the Tišnov area, suffered in the year 2008 flood damage in six localities and this damage was also remedied. The respective projects included the Boračský stream and the River Svratka tributary as well as non-investment schemes the Litavský and the Višňovský streams and the Bobrůvka River tributary. The costs for remedying these flood damages exceeded CZK 5.5 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 6.4.2 shows development of revenues of the Forests of the Czech Republic, s.e from sales of surface water abstractions and unit prices.

6.5 Waterways

Pursuant to Act No. 114/1995 on Inland Navigation, management of the development and modernisation of waterways of impor-

tance for 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.

Under the "European Agreement on Main Inland Waterways of International Importance (AGN)" the E20 main European waterway, on the Elbe and its branch E 20-06 on the Vltava River, is a waterway of international importance and remains the only navigable connection between the Czech Republic and the Western European waterway system. From the Ústí nad Labem at Střekov hydraulic structure upstream to Chvaletice on the Elbe and to Třebenice on the River Vltava, navigability is ensured by a system of hydraulic structures; navigation traffic on the regulated stretch from Střekov down the stream to the state border CR/FRG depends on water stages based on the current flows.

The funds spent in the field of management of the development and modernisation of waterways with significance for transport amounted in the year 2008 to CZK 538.4 million in total.

Programme development of waterways was funded by CZK 370.1 million allocated from the budget of the State Fund of Transport Infrastructure, CZK 130.5 million from the EU funds in the Operational Programme Transport, CZK 27.9 million from the resources of the State Fund of Transport Infrastructure for pre-financing of funds from the Operational Programme Transport and CZK 9.8 from the loan provided by the EIB.

Ćompared to the previous year, when the overall expenditures from public resources amounted to CZK 389.7 million, expenditures increased by CZK 148.7 million. These funds were almost fully spent by the state investor, the Ministry of Transport - Directorate of Waterways of the Czech Republic.

While preparing the construction of a key hydraulic structure, the Děčín navigation dam, to improve navigation conditions on the Lower Elbe, the environmental impact assessment documentation (EIA) and the assessment of the impacts of this project on the respective localities and Natura 2000 species continue to be processed. The technical solution of the navigation dam was specified with minimising measures (minimalisation of the impacts on biotopes, maximum passability of the navigation dam, allowing migration and revitalisation measures). The concept of EIA documentation including assessment of the impacts on Natura 2000 has also been developed. After the exacting optimisation of the technical solution and the identification of the relevant revitalisation measures, the impacts were considered as permissible on the condition that the respective measures will prove to be functional. Project documentation of experimental measures for verification of the functionality of revitalisation measures was produced and the implementation of test measures was commenced in the fourth quarter of the year 2008 and should continue in the year 2009. The anticipated date of the final assessment of the environmental impact of the project is 10 September 2010.

In the course of the year a significant step was to commence the actual work on extending the River Vltava waterway up to České Budějovice. The objective of the whole project is to restore navigability of this waterway for holiday navigation. This activity will, in terms of navigability connect the South Bohemian Vltava River to the Orlík reservoir, which will significantly extend the potential of tourism by the whole Orlík reservoir on the River Vltava and the River Otava. In the future the result will be the entire Vltava River waterway connected thanks to the Elbe to the whole system of European waterways.

The River Morávka, Morávka Reservoir

 JAKUB JIROUŠEK, 7 years, Basic school and Nursery school Dolákova, Prague

Public water supply and sewerage systems

7

7.1 Drinking water supply

In the year 2008 water supply systems supplied water to 9.664 million inhabitants in the Czech Republic, i.e. 92.7% of the total population.

All water supply systems produced in total 667 million m³ of drinking water. 516.5 million m³ of drinking water were supplied for payment (invoiced), including 332.4 million m³ of drinking water for households. Drinking water losses amounted to 128.8 million m³, i.e. 19.3% of water for consumption.

The data provided by the Czech Statistical Office was collected on the basis of information provided by 1,299 reporting units (i.e. 236 water supply and sewerage system operators and a selected set of 1,063 municipalities operating the water management infrastructure independently; the data was, however, provided by 98% of the municipalities). Indicator values have been corrected by expert recalculation made by the Czech Statistical Office. Primary data collected from the VH 8b-01 statements was not published by the Czech Statistical Office since 2004.

Trends and development in 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 results from the construction of new water supply systems. The 1.3% year-on-year decrease in the quantity of water produced corresponds to the simultaneous 1,6% decrease in the quantity of water invoiced. The specific quantity of water invoiced to households decreased by 4.3 litres per person and day and amounts to 94.2 litres. The specific quantity of water invoiced in total, recalculated per one inhabitant supplied by water, decreased by 7 litres. After stagnation in the year 2007 the invoiced water quantity decreased again in the year 2008. This indicates a continued decrease of consumption of households and other consumers. A year-on-year 1 litre increase in water losses per 1 inhabitant supplied (from 36 litres to 37 litres) per person and day amounts annually approximately to 0.36 m³ per person.

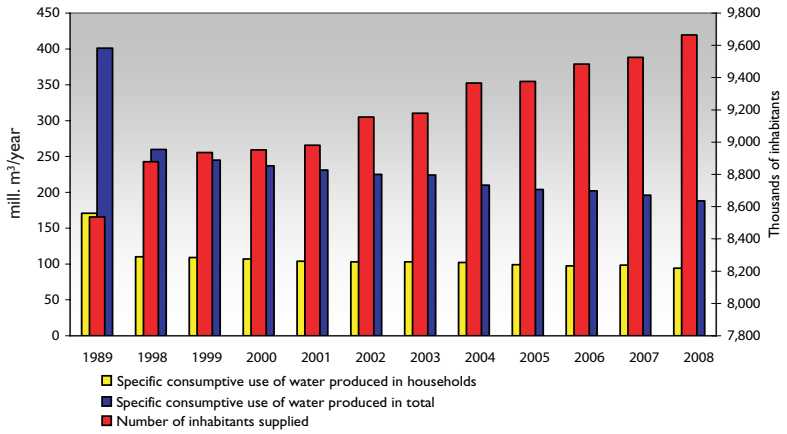
Waste water treatment plant in Mistřín

Table 7.1.1
Water supply from water supply systems in the years 1989 and 2002–2008

Indicator	Measurement unit	Year							
		1989	2002	2003	2004	2005	2006	2007	2008
Inhabitants (mean)	thousands of inhabitants	10,634	10,201	10,201	10,207	10,234	10,267	10,323	10,430
Inhabitants actually supplied by water from water supply systems	thousands of inhabitants	8,537	9,156	9,179	9,346	9,376	9,483	9,525	9,664
	%	82.4	89.8	89.8	91.6	91.6	92.4	92.3	92.7
Water produced by water supply systems	million m³/year	1,251	753	751	720	699	699	683	667
	% as at 1989	100.0	60.2	60.0	57.6	55.9	55.9	54.6	53.3
Water invoiced in total	million m³/year	929.4	545.3	547.2	543.5	531.6	528.1	531.7	516.5
	% as at 1989	100.0	58.7	58.9	58.5	57.2	56.8	57.2	55.6
Specific consumptive use of water produced	l/person day	401	225	224	211	204	202	196	188
	% as at 1989	100.0	56.1	54.7	52.6	50.9	50.4	48.9	46.9
Specific quantity of water invoiced in total	l/person day	298	163	163	159	155	153	153	146
	% as at 1989	100.0	54.7	54.7	53.4	52.0	51.3	51.3	49.0
Specific quantity of water invoiced for households	l/person day	171	103	103	102	98.9	97.5	98.5	94.2
	% as at 1989	100.0	60.2	60.2	59.6	57.8	57.0	57.6	55.1
Water losses per 1 km of water main	l/km day	16,842*)	8,358*)	7,783*)	6,113	5,770	5,673	4,893	4,889
Water losses per 1 inhabitant supplied	l/person day	90*)	53*)	52*)	45	43	42	36	37

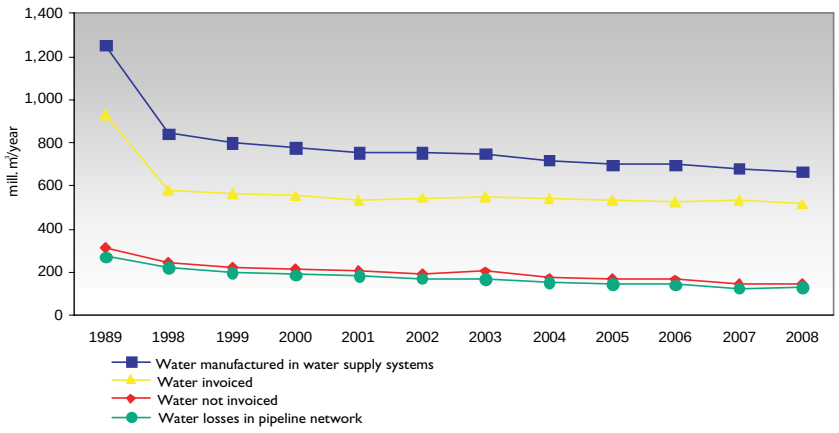
Source: Czech Statistical Office
*Note: *) Data for water supply systems of the main operators.*

Chart 7.1.1
Development in the number of inhabitants supplied and the specific consumptive use of water invoiced in the years 1989 and 1998–2008



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 1998–2008



Source: Czech Statistical Office

The highest percentage of inhabitants supplied with drinking water from water supply systems was recorded in the City of Prague (100%) and in the Moravskoslezský kraj region (97.8%), the lowest percentage of inhabitants supplied with drinking water was recorded in the Středočeský kraj region (83.1%) and the Plzeňský kraj region (83.4%).

As regards Karlovarský kraj, Ústecký kraj, Královéhradecký kraj, Pardubický kraj and Vysočina regions, the percentage of inhabitants supplied with water slightly decreased in the year-on-year comparison with the total number. This decrease was caused by the higher increase in the mean number of inhabitants which did not correspond to the increase of inhabitants actually supplied with water from public water supply systems. The number of inhabitants actually supplied with water from public water supply systems increased in all regions.

In the year 2008 the length of the water supply network, with was 72,167 km long, was extended by a further 1,631 km.

The increase in length per 1 inhabitant supplied compared to the year 2007 amounts to 0.283%, which means an increase by 0.15 m per 1 inhabitant supplied. The length of the water supply network per one inhabitant thus was in the year 2008 7.47 m. New construction of new water supply systems and completion of the existing ones thus increased in the year 2008 the number of inhabitants supplied by 139,101.

The number of water supply connections increased by 37,887 and amounted to 1 880.007. The number of water meters installed increased by 32,891 and amounted to 1,889,738.

Table 7.1.2
Inhabitants supplied, production and supply of water from water supply systems in the year 2008

Region	Inhabitants		Water produced in water supply systems (thousand m³)	Water invoiced	
	actually supplied with water from water supply systems (number)	percentage of inhabitants supplied with water of the total number (%)		Total (thousand m³)	For households (thousand m³)
City of Prague	1,224,700	100.0	125,438	84,832	54,523
Středočeský kraj	1,011,440	83.1	48,727	49,511	33,314
Jihočeský kraj	585,174	92.2	37,018	28,824	18,822
Plzeňský kraj	471,978	83.4	33,322	27,159	16,556
Karlovarský kraj	300,974	97.5	22,399	16,638	10,497
Ústecký kraj	791,077	94.8	59,212	42,374	25,259
Liberecký kraj	384,727	88.3	30,664	21,198	12,546
Královéhradecký kraj	505,389	91.3	33,461	25,337	16,238
Pardubický kraj	490,511	95.5	31,110	24,659	15,203
Kraj Vysočina	477,352	92.8	26,207	23,156	14,537
Jihomoravský kraj	1,099,282	96.1	69,171	55,425	37,403
Olomoucký kraj	567,306	88.4	30,396	26,289	17,917
Zlínský kraj	531,719	90.0	32,190	25,524	15,845
Moravskoslezský kraj	1,222,550	97.8	87,799	65,553	43,779
Czech Republic	**9,664,179**	**92.7**	**667,114**	**516,479**	**332,439**

Source: Czech Statistical Office

7.2 Discharge and treatment of municipal waste waters

In 2008 8.459 million inhabitants in the Czech Republic lived in buildings connected to sewerage systems, which is 81.1% of the total population. Five hundred and eight point nine million m³ of waste waters discharged into sewerage systems amounted to 508.9. Of this quantity, 95.3% of waste waters were treated (excluding rain water) which amounts to 485.0 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.

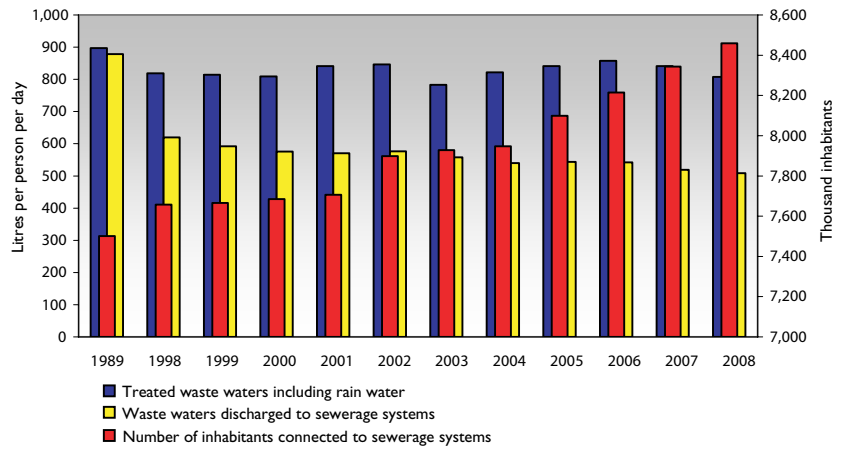
Table 7.2.1
Discharge and treatment of waste waters from sewerage systems in the years 1989 and 2002–2008

Indicator	Measurement unit	Year							
		1989	2002	2003	2004	2005	2006	2007	2008
Inhabitants (mean)	thousands of inhabitants	10,364	10,201	10,201	10,207	10,234	10,267	10,323	10,430
Inhabitants living in buildings connected to sewerage system	thousands of inhabitants	7,501	7,899	7,928	7,947	8,099	8,215	8,344	8,459
	%	72.4	77.4	77.7	77.9	79.1	80.0	80.8	81.1
Waste waters discharged to sewerage systems (excluding rain water) in total	million m³	877.8	576.3	558.1	539.7	543.4	542.0	519.3	508.8
	% as at 1989	100.0	65.7	63.6	61.5	61.9	61.7	59.2	58.0
Treated waste waters including rain water [1]	million m³	897.4	846.2	782.7	821.5	841.5	857.4	841.2	807.5
Treated waste waters in total excluding rain water	million m³	627.6	533.6	527.4	509.7	513.9	510.6	497.6	485.0
	% as at 1989	100.0	85.0	84.0	81.3	82.0	81.4	79.4	77.3
Percentage of treated waste waters excluding rain water [2]	%	71.5	92.6	94.5	94.4	94.6	94.2	95.8	95.3

Source: Czech Statistical Office
Note: [1] In the years 1989 and 2002–2003 the data relates to sewerage systems of the main operators.
[2] This percentage relates to waters discharged to sewerage systems.

The number of inhabitants connected to sewerage systems increased in the year-on-year comparison by 114,992. The quantity of waste waters discharged to sewerage systems without rain water decreased in the year-on-year comparison by 10.48 million m³ but the decrease in water supplied amounted to 15.22 million m³. Through a deeper analysis it was established that the methodology for determining the value of "Waste waters discharged to the sewerage systems" is not perceived in the same way because in case of 6 regions these values exceed the reported quantity of water supplied while 8 regions reported, on the contrary, lower values. This fact is neither affected by the percentage of inhabitants supplied nor by the percentage of inhabitants connected to sewerage systems. The result is that the indicator of the percentage of the treated waste waters may, contrary to logic, decrease in the year 2008 by 0.5%. The analysis was made precisely with regard to this decrease.

Chart 7.2.1
Development in the number of inhabitants living in buildings connected to sewerage system and the quantity of discharged and treated waste waters in the years 1989 and 1998–2008



Source: Czech Statistical Office

The highest percentage of inhabitants connected to sewerage systems in 2008 was recorded in the City of Prague (99.0%) and the Karlovarský kraj region (90.4%), the lowest percentage was recorded in the Středočeský kraj region (67.3%) and the Liberecký kraj region (68.2%).

The decrease in the percentage of inhabitants living in buildings connected to sewerage systems that was observed in Prague, the Plzeňský kraj, Karlovarský kraj, Ústecký kraj and Liberecký kraj regions is caused by a higher increase in the mean number of inhabitants which did not correspond to the increase in inhabitants actually connected to public sewerage systems. The number of inhabitants living in buildings connected to public sewerage systems increased in all regions.

In the year 2008 the length of the sewerage network was extended by 1,015 km and amounted to 38,704 km.

Table 7.2.2
Number of inhabitants living in buildings connected to sewerage systems and quantity of discharged and treated waste waters in the year 2008 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	1,213,630	99.0	74,770	74,770	100.0
Středočeský kraj	818,988	67.3	52,566	52,209	99.3
Jihočeský kraj	540,718	85.2	35,098	33,538	95.6
Plzeňský kraj	434,610	76.8	33,155	31,542	95.1
Karlovarský kraj	278,931	90.4	15,933	15,869	99.6
Ústecký kraj	679,924	81.5	33,601	31,633	94.1
Liberecký kraj	296,993	68.2	15,505	14,989	96.7
Královéhradecký kraj	404,511	73.1	24,874	23,123	93.0
Pardubický kraj	358,069	69.7	22,790	21,335	93.6
Kraj Vysočina	430,844	83.8	22,293	18,884	84.7
Jihomoravský kraj	996,851	87.2	54,005	51,181	94.8
Olomoucký kraj	490,855	76.5	28,247	27,097	95.9
Zlínský kraj	502,165	85.0	25,975	24,349	93.7
Moravskoslezský kraj	1,012,126	81.0	70,040	64,510	92.1
Czech Republic	**8,459,215**	**81.1**	**508,852**	**485,029**	**95.3**

Source: Czech Statistical Office

Table 7.3.1
Strike prices of water and sewerages charge in the years 2007 and 2008

Indicator	Unit	2007	2008	Index 2008/2007
Water rates in total	CZK million	13,084	13,520	1.03
Water invoiced in total	million m³/year	532	516	0.97
Average price of water rate	CZK/m³	24.60	26.20	1.07
Sewerage charges in total	CZK million	11,142	11,712	1.05
Waste waters discharged to sewerage systems	million m³/year	519	509	0.98
Average price of sewerage charges	CZK/m³	21.50	23.0	1.07

Source: Czech Statistical Office

Table 7.3.2
Water consumption, average prices of water and sewerage charges without VAT in the year 2008

Region	pecific 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	189.8	122.0	26.3	27.0
Středočeský	134.1	90.2	29.5	21.2
Jihočeský	135.0	88.1	29.4	21.7
Plzeňský	157.7	96.1	23.6	18.6
Karlovarský	151.5	95.6	28.9	24.5
Ústecký	146.8	87.5	29.5	28.7
Liberecký	151.0	89.3	27.6	28.9
Královéhradecký	137.4	88.0	24.8	23.9
Pardubický	137.7	84.9	23.7	24.1
Vysočina	132.9	83.4	25.6	18.4
Jihomoravský	138.1	93.2	24.1	26.4
Olomoucký	127.0	86.5	25.4	23.1
Zlínský	131.5	81.6	26.6	23.3
Moravskoslezský	146.9	98.1	23.4	16.5
Czech Republic	**146.4**	**94.2**	**26.2**	**23.0**

Source: Czech Statistical Office

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 2007 by 87 waste water treatment plants to 2,091 waste water treatment plants in total.

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 2008 amounted to 26.20 CZK/m³ and the average price of sewerage charge to 23.00 CZK/m³. The price of water rate thus increased compared to the year 2007 by 7.0% and the price of sewerage charge by 7.0%.

Prior to Act No. 76/2006 coming into force, in other words prior to the year 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 authorised by the owner, pursuant to the regulation in Section 36, Subsection 5 of the Act No. 274/2001 on Public Water Supply and Sewerage Systems, were under 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 and sewerage charges in the previous year. The data on prices collected by the Ministry of the Agriculture is obtained through a weighted average. With regard to the deadline for submitting the accounts this data cannot be evaluated and processed before the copy deadline 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. The aggregate data of the Czech Statistical Office is not collected as a weighted average and thus cannot be compared to the source documentation of 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 Středočeský kraj and Ústecký kraj regions where it amounted to CZK 29.50/m³. Compared to the national average this price was thus higher by 12.6%. The highest average price was established in the Liberecký kraj region and with CZK 28.90 /m³ exceeded the national average by 25.6%. On the contrary, the lowest average price of water (CZK 23.40/m³) and sewerage charges (CZK 16.50/m³) was established in the Moravskoslezský kraj region. Average prices in the respective regions are shown in Table 7.3.2.

Waste water treahment plant in Most

 MARTINA BEINLICHOVÁ, 11 years, Dolní Dobrouč basic school, Pardubický kraj region

Fisheries and fishpond management

8

8.1 Fisheries and fishpond management in the year 2008

Fishery in the Czech Republic is divided in two basic areas. One of them includes production fishery and the other includes management in fishing districts.

The main part of production fishery is fishpond management which is based on man-made water bodies showing stable performance. In addition to fish production, the fishponds have other non-productive functions in the landscape that may not be omitted such as water retention, flood protection and biological treatment of water. Fishponds provide nesting shelters for birds and protection for wildlife. They are used for recreation, have ecostabilising functions and help to maintain biodiversity. Except for fishponds, fish is also produced in special facilities where the main focus is on salmonid farming or trout farming.

There are more than 24 thousand fishponds and water reservoirs in the Czech Republic which represents approximately 52 thousand hectares including 42 thousand hectares used for fish farming. The fishponds show annual average fish population growth amounting to approximately 460 kg fish/hectares. Representation of market fish species is fairly stable and has not changed compared to the previous years. Carp constituted 87.8% of the total quantity of fish produced by fish farming while herbivorous fish (silver carp, grass carp) constituted 3.7%, salmonids (in particular rainbow trout and brown trout) 3.8%, tench 1.3% and predatory fish and other fish species 3.4%.

The fish production in the Czech Republic in the year 2008 was approximately 20.4 thousand tonnes. This production has not significantly changed in the course of the last three years. Fish production from special facilities amounted to 803 tonnes. Based on the estimate of the Czech Fish Farmers Association, the consumption of freshwater fish decreased to approximately 1.32 kg/person/year.

Live fish export amounted in the year 2008 to almost 50% of the total production. 10.121 tonnes of live weight of living fish were exported. The main export commodity was traditionally carp with the export increasing to 8.77 thousand tonnes of live weight at the price amounting to CZK 49.99/kg of live weight. The import of live freshwater fish to the Czech Republic was with its 463 tonnes compared to the export quite insignificant.

The actual fish production is connected to fish processing. Every year 9 to 11% of the market freshwater fish production is processed in the Czech Republic. In the year 2008, 1,716 tonnes of live weight fish were processed which represented 8.4% of market freshwater fish production.

This branch also includes recreational fishing and angling on water bodies designated by the state as fisheries or fishing districts. There are more than 2,000 fishing districts in the Czech Republic with the total area about 42 thousand hectares. Recreational fishing is a hobby for 350 thousand registered members of all fishing associations who caught in the year 2008 approximately 4.16 thousand tonnes of fish.

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

1) National sectoral support measures relating to aquaculture and freshwater fishing: Efficiency control, Special animal production advice School production facilities, Support of non-productive fishpond functions and genetic resources.
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 develoment of new markets, promotion campaigns and pilot projects.

On 27 November 2008 the Ministry of Agriculture terminated the process of controlling and evaluating projects with regard to the eligibility for subsidies within Priority Axis 2 and issued the decision to grant subsidies in the first round of accepting applications for subsidies from the Operational Programme Fisheries 2007–2013.

In measure 2.1 Measure for productive investments into aquaculture the decisions were issued to grant subsidies for 12 business plan projects a) with the aggregate subsidy amounting to CZK 10,836,652; 3 business plan projects b) with the aggregate subsidy amounting to CZK 7,446,777; 14 business plan projects c) with the aggregate subsidy amounting to CZK 24,133,597; 2 business plan projects d) with the aggregate subsidy amounting to CZK 125,866 and 2 business plan projects e) with the aggregate subsidy amounting to CZK 3,464,584.

In measure 2.4 Investments in processing and marketing the decisions were issued to grant subsidies for 1 business plan project a) with the aggregate subsidy amounting to CZK 6,598,500 and 1 business plan project b) with the aggregate subsidy amounting to CZK 1,170,000.

Table 8.1.1
Overview of production of fish for direct consumption in the years 2004–2008

Indicator of production and consumption of fish	2004	2005	2006	2007	2008
Production in thousands of tonnes	19.40	20.50	20.40	20.40	20.40
Of which export in thousands of tonnes	9.90	9.30	10.00	10.45	10.12
Catch in fishing districts in thousands of tonnes	4.70	4.20	4.60	4.30	4.16
Consumption per person in kg.year $^{-1}$	1.46	1.40	1.40	1.40	1.32

Source: MoA and the Czech Fish Farmers Association

Table 8.1.2
Operational Programme Fisheries 2007–2013

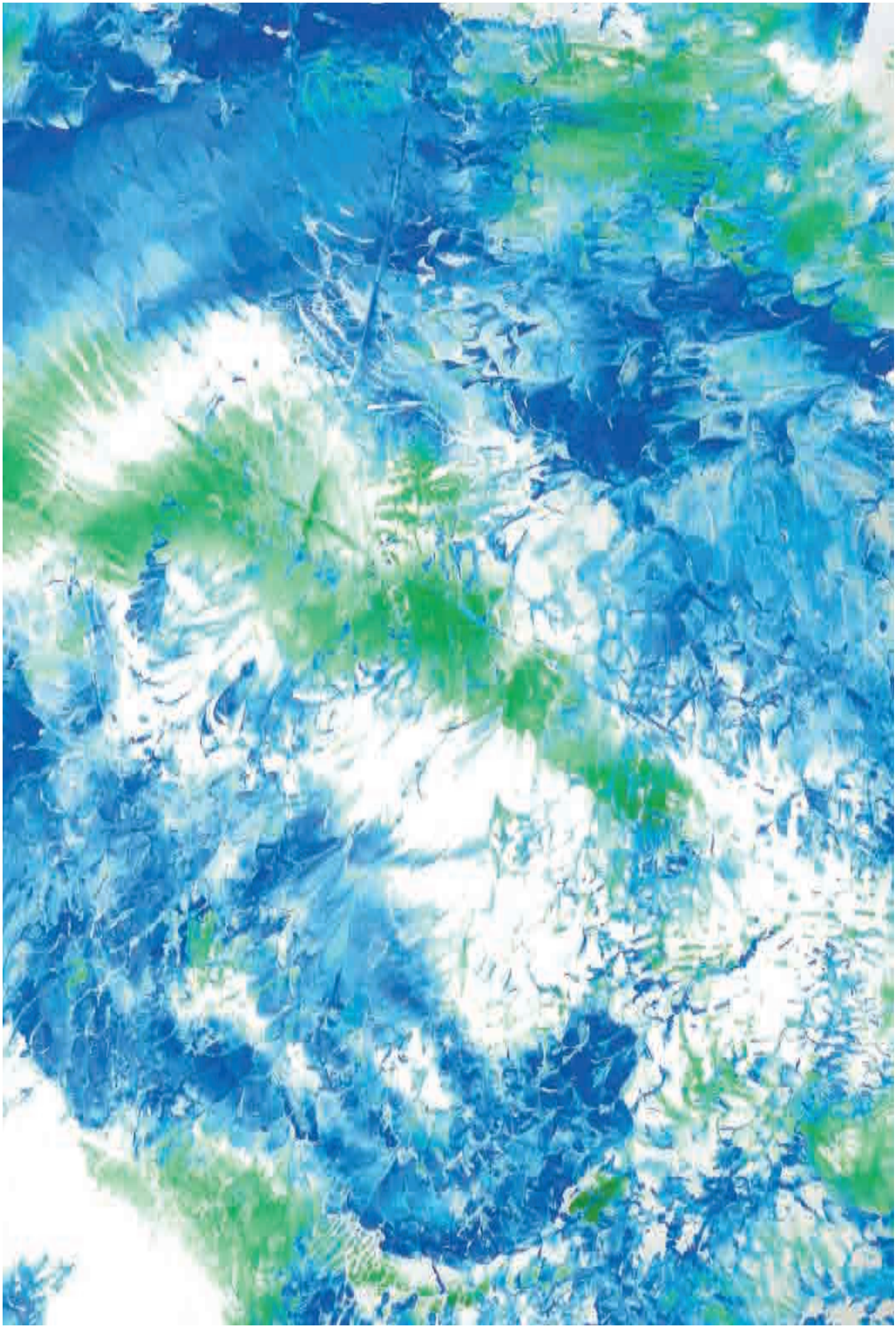
Priority axis 2 – Aquaculture	
Number of measure	**Name of measure**
Measure 2.1	Investments into aquaculture production
Measure 2.2	Equalization payments aimed at improving the aquatic environment
Measure 2.3	measures in the field of fish health
Measure 2.4	Investments into processing and marketing
Priority axis 3 – Measures in common interest	
Number of measure	**Name of measure**
Measure 3.1	Measures in the common interest
Measure 3.2	Measures to create conditions suitable for life of aquatic animals
Measure 3.3	Support and development of new markets and promotion campaigns
Measure 3.4	Pilot projects

Source: MoA

8.2 Changes in the status of the fishpond system

The programme of the Ministry of Agriculture 229 210 – "Renewal, Dredging and Rehabilitation of Fishponds and Reservoirs" aimed at the overall improvement of the technical status of the fishpond system and the strengthening of water management and non-productive functions of fishponds with regard to their flood protection and landscaping importance has already ended.

Sub-programme 229 218 – "Remedying of Damages on Fishponds and Reservoirs after Floods in August 2002" was followed in the year 2007 by sub-programme 129 130 – "Support for Renewal, Dredging and Rehabilitation of Fishponds and Construction of Reservoirs" which is implemented in a similar manner. Renewal and rehabilitation of fishponds and water reservoirs is 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 the safety of fishpond operation 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 for flood protection and protection against drought.



 MARTINA HURTOVÁ, preparatory stage at the Special basic school of the Diaconia of the Evangelical Church of Czech Brethren in Merklín near Přeštice, Plzeňský kraj region

State financial support of water management

9

9.1 Financial supports of the Ministry of Agriculture of the Czech Republic

In the year 2008 the Ministry of Agriculture provided support amounting to the total of CZK 1.95 billion under its programme 229 310 – "Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure" aimed at implementation of measures to meet the directives of the EU in the field of water supply and sewerage systems and to develop the sector of water supply and sewerage systems in its own right. The programme 229 310 was based on the approved documentation scheduled for the years 2006–2010. With regard to the fact that in the years 2009–2010 this programme will deal with the co-financing of multi-annual projects, the Ministry of Agriculture prepared a new subsidy programme – the programme 129 180 – "Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II". This programme is scheduled for the years 2009–2013.

The above support was granted to the investors both in the form of subsidies and in the form of interest-free loans from the resources of the credit instruments of the EIB and CEB. In the year 2008 162 projects received support from the state budget amounting to approximately CZK 783 million under the sub-programme 229 312 of the Ministry of Agriculture (measures aimed at water supply systems) and 147 projects were in the year 2008 granted support amounting to CZK 1.164 million under the sub-programme 229 313 of the Ministry of Agriculture (measures aimed at sewerage systems).

At the same time, in the year 2008 the last funds were drawn from the loan granted to the Czech Republic by the EIB based on the loan contract called "the Czech Republic – framework loan for water management intended for rehabilitations, improvements, modernizations and extensions of water management systems in the Czech Republic", implemented on the basis of the Czech Government Resolution No. 1179 of the year 1999, and simultaneously from the loan granted by the CEB. The above loans were used to provide support for 6 projects amounting to CZK 31 million. In the year 2009 these loans will be replaced, based on the agreement with the Ministry of Finance, by compensation of payments for a part of interest rates for commercial loans in case of projects requiring larger investments.

The Ministry of Agriculture implemented in the year 2008 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 protection measures, the renewal, dredging and rehabilitation of fishponds and water reservoirs and the management of state-owned property on minor watercourses and main drainage facilities. Remedying flood damages from the year 2006 incurred to legal and natural persons on fishpond dams and structures was also financed in the year 2008.

Table 9.1.1
State budget funds provided in the year 2008 under the programme 229 310 of the Ministry of Agriculture in millions of CZK

Form of support	Water supply systems and water treatment plants	Sewerage systems and waste water treatment plants	Ministry of Agriculture in total
Refundable assistance	0.000	0.000	**0.000**
Subsidy	783.412	1,164.019	**1,947.431**
Total	**783.412**	**1,164.019**	**1,947.431**

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 2004–2008, provided by the Ministry of Agriculture in millions of CZK

Financial resource	2004	2005	2006	2007	2008
Refundable assistance	4	0	0	0	0
State budget subsidy	1,563	1,746	925	1,620	1,947
Support from the state budget	**1,567**	**1,746**	**925**	**1,620**	**1,947**
Advantage loan	653	754	486	161	31
Support in total	**2,220**	**2,500**	**1,411**	**1,781**	**1,978**

Source: MoA

Table 9.1.3
State funds provided by the Ministry of Agriculture in the year 2008 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 the state-owned water management property	460.976

Source: MoA

Table 9.1.4
State funds provided by the Ministry of Agriculture in the year 2008 for capital and current expenditures under programme financing in programmes 129 120, 129 130 and 129 150 in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
129 120	Flood prevention II	789.361
129 130	Renewal, dredging and rehabilitation of fishponds and water reservoirs	418.477
129 150	Support of the planning process in the field of water	54.000

Source: MoA

Table 9.1.5
Non-investment support provided by the Ministry of Agriculture in the year 2008 for other measures in water management in millions of CZK

Name of support	Amount of funds provided	Beneficiary
Minor watercourse administration *)	178.601	Agricultural Water Management Administration
Administration of main drainage facilities *)	51.242	Agricultural Water Management Administration

Source: MoA
*Note: *) Including operation and maintenance.*

The use of state funds for capital and current expenditures is shown in the following tables.

In the year 2008 the Ministry of Agriculture continued in the administration of programme 129 120 – "Flood Prevention II" which includes four sub-programmes thematically focusing on support for flood protection measures with retention, support for flood protection measures along watercourses, support for increasing the safety of hydraulic structures and support for delimitation of flood areas and studies of runoff conditions. 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 Prevention 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.

Sub-programme 129 123 – "Support for Flood Protection 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 protection 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-programme includes also the delimitation of areas exposed to threat of special floods caused by a failure on a hydraulic structure or a dam break on reservoirs impounding surface water. The outputs of the proposed flooded areas approved by the water authority become one of the land use limits and are used by the public administration authorities in particular when permitting constructions. The studies of runoff conditions are sources of information about flooded areas prior to and after the implementation of the proposed flood protection measures, quantification of the extent of flood damages and evaluation of the effectiveness of the proposed technical and non-technical measures.

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., the Agricultural Water Management Administration and the minor watercourse administrators appointed by the Ministry of Agriculture pursuant to Section 48, Subsection 2 of the Act No. 254/2001 on Water and the amendment to certain laws (the Water Act) as amended, and based on the exemption from the Binding Rules granted by the Minister of Agriculture under reference no. 29305/2007-10000 of 1 August 2007, also the City of Prague which is, as an in investor, responsible for implementation of flood protection measures built on the territory of the capital.

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

In the year 2008 the total number of projects in progress under the programme 129 120 – "Flood Prevention II" – included 13 investment construction projects of flood protection measures with retention, 88 capital construction projects of flood protection measures along watercourses, 488 capital construction projects aimed at increasing the safety of hydraulic structures and 32 projects for delimitation of flooded areas and studies of runoff conditions. The following Table 9.1.6 shows some of the major projects under the programme 129 120.

Table 9.1.6
Use of funds for selected major projects under the programme 129 120 – "Flood Prevention II" in millions of CZK

Watercourse administrators	Name of project	Implementation period	Total costs	Subsidies in 2008
Forests of the Czech Republic, s.e.	The Hrabovský stream, Hrabová near Dubicko	August 2007-June 2010	13.514	7.581
Elbe River Board, s.e.	The River Třebovka, Dlouhá Třebová – Hylváty, stream channel regulation in municipalities	March 2008-December 2010	196.853	97.638
Morava River Board, s.e.	Bystřička reservoir, reconstruction of spillway	February 2008-March 2010	84.254	38.000
Odra River Board, s.e.	The River Odra, Ostrava – Hrušov, levee km 12.700–14.950	July 2007-April 2010	70.451	35.601
Ohře River Board, s.e.	Janov reservoir, securing stability and safety of the dam	October 2007-April 2010	42.827	20.000
Vltava River Board, s.e.	The River Vltava, České Budějovice, stream channel regulation km 234.1–239.5	August 2008-December 2009	162.082	48.397
City of Prague	Construction project 0012 Flood protection measures for protection of the City of Prague, stage 0006 Zbraslav, Radotín, part 21 U školy and Výpadová streets	June 2008-December 2009	172.022	3.600

Source: MoA

Table 9.1.7
Use of state budget funds in the year 2008 under the programme 129 120 by the individual watercourse administrators in millions of CZK

Owners and administrators	Use in the year 2008	
	Investment	Non-investment
Elbe River Board, s.e.	222.835	0
Vltava River Board, s.e.	216.605	0
Ohře River Board, s.e.	53.095	0
Odra River Board, s.e.	101.087	0
Morava River Board, s.e.	51.997	0
Forests of the Czech Republic, s.e.	63.803	0
Agricultural Water Management Administration	61.058	2.881
Minor watercourse administrators - municipalities	11.400	0
The City of Prague	4.600	
Total	**786.48**	**2.881**

Source: MoA

In addition to programmes aimed at flood prevention, in the year 2008 it was necessary to remedy flood damages caused by floods in the year 2006 on the state-owned property by implementation of the sub-programme 229 114 – "Remedying of the impacts of floods in the year 2006", which is a part of the programme 229 110 – "Remedying of Flood Damages on State-owned Water Management Property".

Under the sub-programme 229 114, financial support was in the year 2008 granted to 255 projects. Most of them – 97 projects – were implemented by the Agricultural Water Management Administration, the second largest number – 62 projects – were implemented by the Elbe River Board, s.e. Table 9.1.8 shows some of the major projects in this sub-programme.

The River Odra, Polanka

Table 9.1.8
Summary of costs of selected major projects under the sub-programme 229 114 – "Remedying of the Impacts of Floods in the Year 2006" in millions of CZK

ISPROFIN 229 114	Name of project	Implementation	Total costs of the project	Investor
1006	River Bílina, river km 17.5–20.4 (Sezemice) – rehabilitation	09/07–01/08	3.681	Ohře River Board, s.e.
1009	The Fojtovický stream, river km 2.200–2.700 (Heřmanov) – rehabilitation	10/07–09/08	3.981	Ohře River Board, s.e.
1015	The Bílý stream, river km 1.4–2.2 (Skorotice) – repair	08/07–08/08	2.006	Ohře River Board, s.e.
2203	Torrent control, Ubušínský stream in Unčín	10/07–09/08	4.421	Forests of the Czech Republic, s.e.
2302	Flood damages in March 2006 right-bank tributary of the River Doubrava No. 2 - Chuchel	06/08–06/09	2.919	Forests of the Czech Republic, s.e.
2306	Flood damages in March 2006 right-bank tributary of the River Tichá Orlice - Perná	05/08–06/09	5.131	Forests of the Czech Republic, s.e.
2308	Flood damages in March 2006 Knapovecký stream – Horní Houžovec	03/08–06/09	3.639	Forests of the Czech Republic, s.e.
2765	Remedying of flood damages, torrent control, Dinotice	10/07–12/08	2.116	Forests of the Czech Republic, s.e.
3032	Main drainage facilities Lipovka – Litohrady	09/08–12/08	2.672	Agricultural Water Management Administration
3122	River Svodnice Blatnička – Flood damages2006	06/08–11/08	1.691	Agricultural Water Management Administration
3199	Radečka	03/08–07/08	1.147	Agricultural Water Management Administration
3248	Skalecký stream – Flood damages 2006	09/08–12/08	3.849	Agricultural Water Management Administration
3262	Zákraví water reservoir	09/08–12/08	1.326	Agricultural Water Management Administration
3251	Hruškovice – Flood damages 2006	04/08–07/08	1.684	Agricultural Water Management Administration
4350	Flood damages The Dobrovodský potok stream, river km 6.33–9.51 – repair and regulation	06/07–02/08	5.272	Vltava River Board, s.e.
4440	Košínský stream, Tábor, river km 0.137–0.200 – retaining wall	01/08–06/08	2.270	Vltava River Board, s.e.
4441	River Smutná, Jistebnice, river km 43.730–43.775 – retaining wall	12/07–06/08	0.885	Vltava River Board, s.e.
5003	River Odra, Hošťálkovice km 16.380–16.450	09/08–12/08	3.428	Odra River Board, s.e.
5004	River Bílovka – Bílovec km 9.849–10.300	09/09–11/09	33.203	Odra River Board, s.e.
6031	Elbe, Štětí dam, rehabilitation of stream channel	05/08–12/08	11.035	Elbe River Board, s.e.
6038	Elbe, Střekov – Lovosice, repair of stream channel	05/08–12/08	17.124	Elbe River Board, s.e.
6061	Elbe, Špindlerův Mlýn, Hromovka, repair of stream channel	09/07–06/09	12.161	Elbe River Board, s.e.
6096	River Bílá Desná, Desná, repair of the stream channel	06/08–12/08	6.015	Elbe River Board, s.e.
6098	Elbe, Střekov dam, rehabilitation of hydraulic structure	05/08–12/08	20.857	Elbe River Board, s.e.
9111	River Jihlava, km 23.900–24.355, Malešovice, Kupařovice, repair of stream channel	07/08–11/08	2.397	Morava River Board, s.e.
9126	River Morava, Mohelnice km 276.000–277.700, repair of stream channel	09/08–02/09	1.429	Morava River Board, s.e.
9201	Vranov reservoir, Vranov nad Dyjí – refurbishment of structures below dam	01/08–11/08	6.066	Morava River Board, s.e.
9205	Vranov reservoir, Vranov nad Dyjí – refurbishment of structures below dam	08/08–11/08	4.824	Morava River Board, s.e.
9204	River Jevišovka, km 31.5–54.7, Tvořihráz, Plaveč, repair of stream channel	06/08–11/08	3.171	Morava River Board, s.e.
9232	River Morava, Rybárny – Staré Město km 159.450–165.300, sediments, bank scours	06/08–11/08	4.824	Morava River Board, s.e.

Source: MoA

In the year 2008 the Ministry of Agriculture implemented 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. Due to 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 protection system, in dry periods used for controlled increase of discharge and at the same time also 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.

68 projects were financed in the year 2008 by non-capital funds of the state budget amounting to CZK 315.332 million and capital resource of the state budget amounting to CZK 103.145 million.

Table 9.1.9
Use of state budget funds in the year 2008 under the programme 229 114 – "Remedying of the Impacts of Floods in the Year 2006" in millions of CZK

Owners and administrators	Use in the year 2008	
	Investment	Non-investment
Elbe River Board, s.e.	28.157	167.929
Vltava River Board, s.e.	2.994	2.906
Ohře River Board, s.e.	34.529	14.084
Odra River Board, s.e.	0.099	1.770
Morava River Board, s.e..	8.112	62.267
Forests of the Czech Republic, s.e.	39.589	7.269
Agricultural Water Management Administration	48.633	42.638
Total	**162.113**	**298.863**

Source: MoA

Tabulka 9.1.10
Use of funds for selected major projects in 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 2008
Dvůr Lnáře, spol. s r.o.	Rehabilitation of the main and lateral dam of Radov fishpond in Tchořovice cadastral area	02/08–03/08	0.650	0.500
Rybářství Rychvald s.r.o.	Dredging of Záblatský fishpond	11/08–09/09	29.620	23.374
Rybářství Kardašova Řečice s.r.o.	Reconstruction of emergency spillway on Fejrar fishpond	04/08–10/08	3.047	2.424
Rybníkářství Pohořelice a.s.	Troskotovický dolní fishpond – dredging and rehabilitation of spillway	10/07–05/08	20.648	16.612
Wastech a. s.	Rehabilitation and dredging of Bezděkov fishpond	12/07–12/08	26.998	21.217

Source: MoA

"Binding Rules" governing the submitting of applications to include the respective project in the programme 129 130 – "Support for the Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs" stipulate detailed terms including the most important ones such as:

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

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

In case of construction of a new water reservoir (or a system of reservoirs) which must be larger than 1 hectare the main objective of this hydraulic structure will be flood and drought protection, i.e. only extensive fish farming will be permitted. Table 9.1.10 shows some of the more significant projects included in the programme 129 130.

The Ministry of Agriculture launched in the year 2008 the programme 129 150 – "Support for the Process of Planning in the Field of Water".

The objective of this programme is to support entities participating in the development of river basin district plans or authorised professional entities directly participating in preparing documents for river basin district plans. This support is purpose bound and is provided for capital expenditures.

In the year 2008 five projects received financial backing under the sub-programme 129 151 – "Support for Information Process of Planning in the Field of Water", and ten projects under the sub-programme 129 152 – "Support for Source Documents Processing for Planning in the Field of Water".

Sub-programme 229 013 – "Minor Watercourses Administered by the Agricultural Water Management Administration"

Under the sub-programme 229 013 the Agricultural Water Management Administration in the year 2008 started and completed construction in 24 capital construction projects (rehabilitation of 2 water reservoirs and 22 regulations of minor watercourses). In addition, 46 project documentations for regulation of minor watercourses, water reservoirs and polders were produced.

Within this sub-programme the Agricultural Water Management Administration made in the year 2008 land acquisitions for 83 projects (including land acquisitions pursuant to Sections §§ 50 and 56 of the Water Act) amounting to CZK 11.366 million with an area larger than 49 hectares.

The total capital funds of the state budget spent under this sub-programme in the year 2008 amounted to CZK 73.194 million.

The following summary shows some of the major completed projects included in the sub-programme 229 013 which was terminated in the year 2008:

Regulation of the River Luha
Total costs: CZK 17.286 million, investments spent until the year 2008: CZK 17.286 million.

Reconstruction of the Anenský stream
Total costs: CZK 10.780 million, investments spent until the year 2008: CZK 10.780 million.

The Leska stream
Total costs: CZK 12.643 million, investments spent until the year 2008: CZK 12.643 million.

The Ludina stream
Total costs: CZK 27.838 million, investments spent until the year 2008: CZK 27.838 million.

The Hejtmánkovický stream, stage I
Total costs: CZK 10.888 million, investments spent until the year 2008: CZK 10.888 million.

Reconstruction of Hať construction 2
Total costs: CZK 12.103 million, funds spent till the year 2008: 12.103 million.

State funds are also provided for other measures in water management pursuant to Section 102, Subsection 1 letters b), i), k) of the Water Act. This support is of non-investment nature and is provided for running expenses 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.

Maintenance of minor watercourses, water reservoirs and polders

The non-capital funds of the state budget spent in the framework of this support, i.e. for maintenance, repairs, management of the state-owned property on minor watercourses, water reservoirs and polders and related structures and for management of unregulated minor watercourses administered by the Agricultural Water Management Administration, amounted in the year 2008 to CZK 156.819 million. In total 1,266 non-capital projects were implemented and completed (including 126 immediate interventions) and maintenance was carried out on 1,072 km of minor watercourses, i.e. on 3 % of the total length of minor watercourses administered by the Agricultural Water Management Administration.

Operation of minor watercourses, water reservoirs and polders and related structures

The non-capital funds of the state budget spent in the framework of this support in the year 2008 amounted to CZK 21.782 million. The Agricultural Water Management Administration implemented and completed 303 operational measures.

Table 9.1.11
Use of funds in the year 2008 under the programme 129 150 – "Support for the Process of Planning in the Field of Water" in millions of CZK

Owners and administrators	Use in the year 2008	
	Sub-programme 129 151	Sub-programme 129 152
Elbe River Board, s.e.	3.150	6.100
Vltava River Board, s.e.	0	16.867
Ohře River Board, s.e.	1.452	8.475
Ohře River Board, s.e.	1.350	2.300
Morava River Board, s.e.	5.580	6.226
Karlovarský kraj region	0	2.500
Total	**11.532**	**42.468**

Source: MoA

Confluence of the River Malá Stanovnice and the River Velká Stanovnice, Karolinka Reservoir

Maintenance of main drainage facilities

The non-capital funds of the state budget spent in the framework of this support, i.e. for maintenance, repairs, management of the state-owned property administered by the Agricultural Water Management Administration on main drainage facilities and related structures amounted in the year 2008 to CZK 37.538 million. In total 457 non-capital projects were implemented and completed (including 19 immediate interventions) and maintenence was carried out on 528 km of main drainage facilities, i.e. over 3% of the total length of main drainage facilities administered by the Agricultural Water Management Administration.

Operation of main drainage facilities

The non-capital funds of the state budget spent in the framework of this support in the year 2008 amounted to CZK 13.075 million. The Agricultural Water Management Administration implemented and completed 119 operational measures.

9.2 Financial supports provided by the Ministry of the Environment of the Czech Republic

One of the main financial supports provided by the Ministry of the Environment is the Programme of Revitalisation of River Systems. This programme presumes successive steps to meet the objectives to maintain and support biodiversity, favourable pattern of water regime in the landscape, increase water quality and purity and make use of the land in the areas in question in a functional manner. The support from this programme is in particular aimed at revitalisation of the natural functions of watercourses, at establishing the components ensuring the spatial stability of ecosystems dependent on water regime, at removing the unnatural transverse obstacles in watercourses, at the renewal of retention capacity of the landscape and at dealing with problems regarding waste water drainage and treatment.

Water regime belongs to the most sensitive and also most important components of the landscape. Human activity interferes with the natural hydrological cycle, impairs the quality of both surface waters and groundwaters – and thus threatens the status of the environment. The Programme of Revitalisation of River Systems includes since the year 2003 also the issues of waste water drainage and treatment.

Acceptance of new applications was terminated in the year 2008 and only the projects from the "stock book" (i.e. the projects which are registered, under construction and those in the designing stage) are being completed. This programme will be progressively replaced by a new successive programme.

The funds for implementation of revitalisation measures were in the year 2008 granted under the following sub-programmes:

a) Revitalisation of the natural function of watercourses (sub-programme 215 112),
b) Establishment and revitalisation of the components of ecological stability system dependent on water regime (sub-programme 215 113),
c) Removal of transverse obstacles in watercourses and support of technical solutions without these obstacles (integration and construction of fish ladders and fishways (sub-programme 215 114),
d) Revitalisation of the retention capacity of the landscape (sub-programme 215 115),
e) Rehabilitation of technical components and dredging of fish production ponds (sub-programme 215 116 – this programme has been terminated),
f) Construction and renewal of the waste water treatment plants and sewerage systems including establishment of artificial wetlands (sub-programme 215 117),
g) Revitalisation of the natural function of watercourses with revitalisation of the retention capacity of the landscape (sub-programme 215 118).

The Programme of Revitalisation of River Systems is a subsidy programme of the Ministry of the Environment. The funds for this programme are every year allocated from the stage budget. Provision of these funds is stipulated by the Rules of the Ministry of the Environment (Directive of the Ministry of the Environment No. 5/2006 of 10 March 2006 on the issue of the Rules for provision of funds under the Programme of Revitalisation of River Systems – programme 215 110). This programme is administered by the Ministry of the Environment through the Department of landscape management and organized by the Agency for Nature Conservation and Landscape Protection of the Czech Republic. At the regional level the projects are assessed by the locally competent regional advisory boards at the centres of the Agency for Nature Conservation and Landscape Protection of the Czech Republic. The applicant may be the owner of the land or the hydraulic structure where the revitalisation measures are to be implemented, the watercourse administrator, the lessee of land, the state organisations or non-profit organizations (in every instance with the written consent of the owner) or municipalities, associations of municipalities and water supply public companies.

Dominant position among revitalisation measures in terms of the number of projects was in the year 2008 occupied by the sub-programme 215 117 – "Construction and Renewal of Waste Water Treatment Plants and Sewerage Systems". The following summary shows that most of the funds from the Programme of Revitalisation of River Systems were spent on these projects.

The total sum of funds allocated in the year 2008 for financing of 44 projects under the Programme of Revitalisation of River Systems amounted to CZK 193,056 thousand of which CZK 167,751 thousand were spent, including the means from the reserve fund amounting to CZK 1,114 thousand.

Table 9.2.1
Use of subsidies by the type of measures supported in the year 2008

Type revitalisation measure (sub-programme)	Number	Number of projects	thousand CZK
Revitalisation of the natural function of watercourses	215 112	4	4,564
Establishment and revitalisation of the components of ecological stability system dependent on water regime	215 113	1	289
Removal of transverse obstacles in watercourses and support of technical solutions without these obstacles (integration and construction of fish ladders and fish-ways)	215 114	1	1,200
Revitalisation of the retention capacity of the landscape	215 115	1	2,656
Construction and renewal of the waste water treatment plants and sewerage systems including establishment of artificial wetlands	215 117	36	156,986
Revitalisation of the natural function of watercourses with revitalisation of the retention capacity of the landscape	215 118	1	2,056
Total		**44**	**167,751**

Source: The Agency for Nature Conservation and Landscape Protection of the Czech Republic

9.3 The State Environmental Fund

The State Environmental Fund of the Czech Republic is a specifically oriented institution which is an important resource for support of implementation of measures to protect and improve the status of the environment in its respective components. It is one of the basic economic instruments to meet the obligations resulting from international conventions on the protection of the environment and the EU membership, and to implement the State Environmental Policy.

The State Environmental Fund of the Czech Republic was established and its activity is governed by the Act No. 388/1991 on the State Environmental Fund of the Czech Republic, which is followed by implementing regulations – the constitution of the fund, the rules of the Board of the fund, the Directive of the Ministry of the Environment on provision of financial resources from the fund and annexes to this Directive regulating the terms for provision of support for the respective period. The fund is administered by the Ministry of the Environment.

The revenues of the State Environmental Fund primarily comprise payments for pollution or damage to the respective components of the environment, instalments of loans provided by the fund as well as the respective interest and the yield of time deposits of available funds.

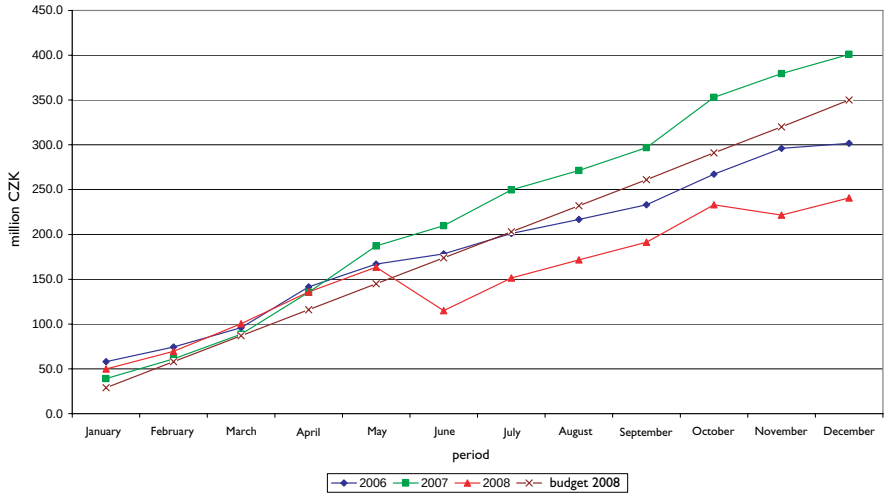
In compliance with the obligations resulting from international conventions and the State Environmental Policy, the support provided by the State Environmental Fund is directed especially at water protection, air protection, waste disposal and management and the field of nature conservation and landscape management. The support of the individual environmental projects is based on the decisions of the minister on provision of the support from the Fund. The State Environmental Fund provides direct and indirect financial support under Sections 3 and 4 of the Act No. 388/1991 in form of grants, loans and contribution to partial settlement of interest.

The State Environmental Fund was appointed as the implementation body for the Cohesion Fund and a mediation body for the Operational Programme Infrastructure and the Operational Programme Environment. The State Environmental Fund established a payment unit for the above programmes.

The structure of revenues and expenditures arranged by the individual components of the environment shows that the total revenues of the Fund as to 31 December 2008 amounting to CZK 2,387.3 million (excluding subsidy for compensation of exchange rate losses amounting to CZK 500 million) comprised revenues from charges for waste water discharge amounting to CZK 240.7 million (a considerable year-on-year decline compared to the year 2007 – CZK 401.0 million) and revenues from charges for groundwater abstractions amounting to CZK 382.0 million (the revenues in the year 2007 were only CZK 355.6 million). Specific development of the revenues from charges is shown in Charts 9.3.1 and 9.3.2.

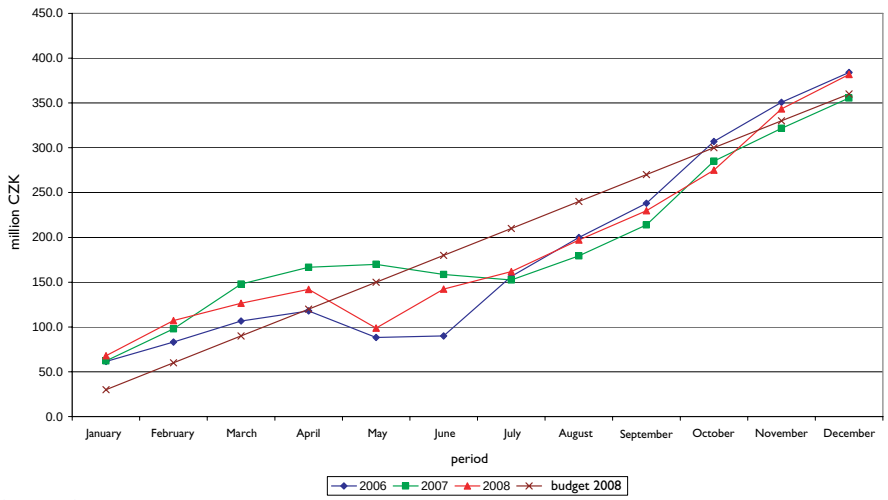
The total financial expenditures of the Fund as to 31 December 2008 amounted to CZK 2,041.9 million (including subsidy for compensation of exchange rate losses amounting to CZK 500 million). Expenditures excluding the costs for the Office of the Fund and the municipal financial public

Chart 9.3.1
Development of revenues from charges in the waste water component in the years 2006–2008 in millions of CZK



Source: The State Environmental Fund

Chart 9.3.2
Development of revenues from charges in the groundwater component in the years 2006–2008 in millions of CZK



Source: The State Environmental Fund

Table 9.3
Financial expenditures incurred in the year 2008 in the water component in thousand CZK

	Subsidy	Percentage (%)	Loan	Percentage (%)	Expenditures in total	Percentage (%)
Water in total	**1,145.8**	**69.0**	**88.8**	**90.0**	**1,234.6**	**70.2**
of which national programmes	528.7	31.9	32.4	32.8	561.1	31.9
of which Cohesion Fund	583.9	35.2	36.5	37.0	620.4	35.3
of which Operational Programme Infrastructure	30.5	1.8	19.9	20.2	50.4	2.9
of which Operational Programme Environment	2.7	0.2	0.0	0.0	2.7	0.2

Source: The State Environmental Fund

company – MUFIS including interest and repayments by MUFIS amounted in total to CZK 1.758,1 million where water component amounted to CZK 1,234.6 million which represents 70.2% – in total including the national programmes, the Cohesion Fund, the ISPA, the Operational Programme Infrastructure and the Operational Programme Environment. The overall structure of financial expenditures in the water component is shown in Table 9.3. The subsidies in this Table include the contribution to the compensation of interest of the commercial loan amounting in the water component to CZK 1.4 million.

As regards the field of water in the national programmes, the minister of the environment issued during this period three decisions on provision of support for the construction of waste water treatment plants and sewerage systems. The sum of total costs for implementation of the individual projects (expressed as the basis for calculation of the support) amounted to CZK 105.68 million where the total support provided will amount to CZK 74.81 million including the subsidy amounting to CZK 59.20 million. The provision of funds will allow to eliminate pollution amounting to 61.64 tonnes of COD and 29.14 tonnes of suspended solids per year.

As regards the field of water in the Operational Programme Infrastructure, final project evaluation was completed for 17 projects from the start of the programme until the end of the year 2008. The

proportion of the co-financing of projects by the funds of the European Regional Development Fund, in the instances where the final evaluation of the project was completed before the end of the year 2008, amounted to CZK 469.8 million including the subsidy provided by the State Environmental Fund amounting to CZK 63.1 million. The loan provided by the Fund amounted to CZK 9.8 million. The sum of the costs for project documentation paid by the Fund from its own resources amounted to CZK 2.9 million.

As regards the Operational Programme Environment, the Ministry of the Environment issued in the year 2008 234 decisions with all projects falling into the Area of intervention 1.1 – Reduction of water pollution.

9.4 Financial supports from international cooperation and the EU

Water management projects received also in the year 2008 financial support under a number of programmes. One of them is for instance the Interreg IIIA programme comprising individual measures including constructions for the protection of the environment and flood prevention. The programme documentation including the provided and used support from international resources is administered by the Centre for Regional Development in Prague.

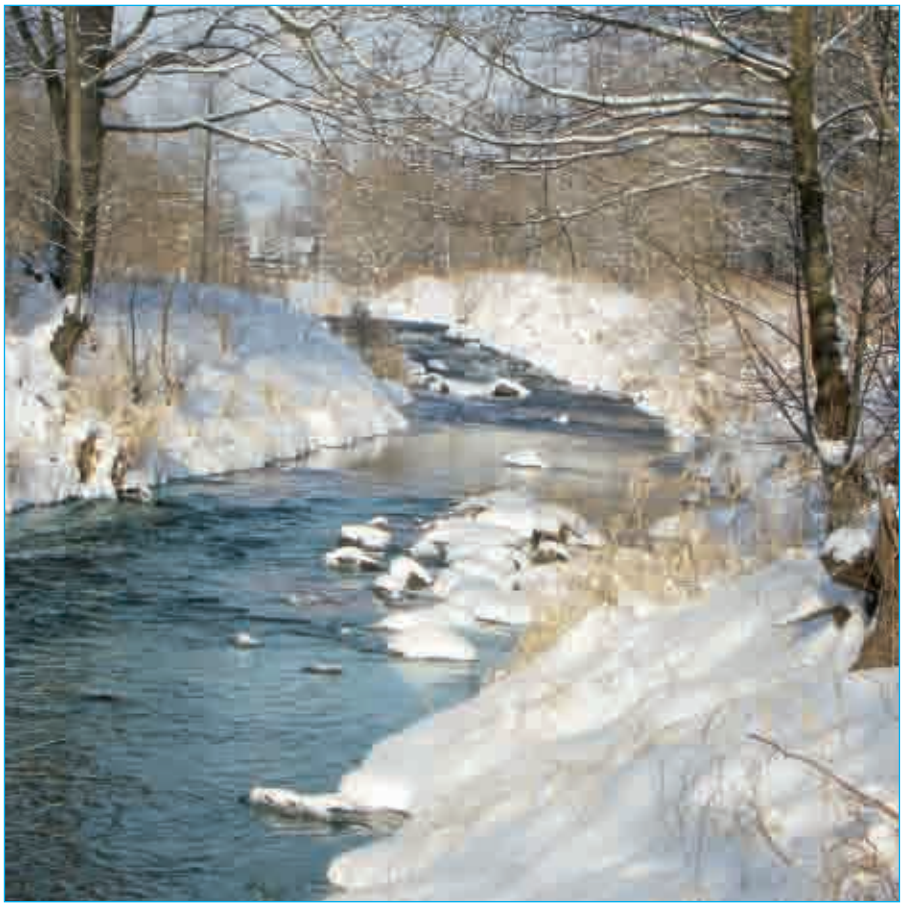
In the year 2008 the following projects were completed under the Interreg IIIA programme – cross-border cooperation:

1. The bilateral project Dyje–Thaya on the evaluation of the environmental status and the development of proposals for protection and improvement of the ecological status of waters was completed under the Czech Republic-Austria programme (EU support: CZK 819,350.27).

2. Two projects of water management nature were implemented also within the Czech Republic-Saxony cross-border cooperation programme as a part of measure 3.1 Environment. The completed projects included the construction of waste water treatment plant and sewerage system in Horní Podluží (CZK 15,702,017.16) and the project for the Elimination of invasive plants in the Nisa river basin (CZK 5,469,857.64).

At present the programmes of the new period 2007–2013 are being launched. These programmes include water management issues as well especially as regards the programmes for European territorial cooperation (cross-border, supranational and interregional cooperation). The operational programme for supranational cooperation comprises projects LABEL – Adaptation to flood risk in the LABE-ELbe river basin and REURIS – Revitalisation of Urban RIver Spaces. The operational programme for cross-border cooperation is at present in the stage of approving the first projects and concluding contracts.

The Ministry of Agriculture is the Managing Body of the Operational Programme "Rural Development and Multifunctional Agriculture" for the period 2004–2006 where drawing of the allocated available funds was terminated by 31 December 2008.



The River Stěnava, Hynčice

Under this programme the Czech Republic could draw financial resources from the EAGGF fund – Guidance section for the co-financing of projects in the field of water management, in particular under two sub-measures within measure 2.1. – "Rural Development", i.e. sub-measure 2.1.2 – "Restoring the Potential of the Agricultural Landscape and its Conservation" – and 2.1.3 – "Management and Functionality of Water Resources".

In the year 2008 these sub-measures offered available financial resources which could be used for implementation of projects that were recommended earlier (i.e. projects that complied with the conditions for approval but could not be implemented in the respective round of accepting applications due to the lack of available funds). These supported objectives were not identical with the objectives of the new Rural Development for the period 2007–2013.

Projects for restoring the agricultural production potential and flood prevention were submitted within sub-measure 2.1.2. – "Restoring the Potential of the Agricultural Landscape and its Conservation". In the year 2008 22 projects were reimbursed with the total sum of CZK 48.747 million. In the beginning of the year 2008 one more decision was issued for a project worth CZK 1.636 million. Projects for rehabilitation of fishponds and agricultural water reservoirs, rehabilitation of emergency spillways and outlet facilities including accessories of these structures and also projects aimed at purchase and reconstruction of structures for water management land improvement and ameliorations were co-financed within sub-measure 2.1.3 – "Management of Agricultural Water Resources and Providing for their Functioning". In the beginning of the year 2008 it was possible to issue additional 29 decisions for projects worth more than CZK 87 million. In the year 2008 66 projects worth CZK 280 million were reimbursed.

The Ministry of Agriculture is also the Managing Body of the Rural Development Programme for the years 2007–2013. Under this programme the Czech Republic can draw financial resources from the EAFRD fund to co-finance projects in the field of water management, in particular within sub-measures III.2.1.1 Renovation and development of villages where the municipalities with less than 2,000 inhabitants can in the Objective b) receive subsidies for public water supply and sewerage systems. With regard to the fact that the first 80 projects were approved in the year 2008, no project has been reimbursed as yet.

Table 9.4.1
Use of public funds (the EU and the Czech Republic) over the whole reimbursement period as to 31 December 2008 under the Operational Programme Rural Development and Multifunctional Agriculture in sub-measures 2.1.2 and 2.1.3 in millions of CZK

Sub-measure	Number of reimbursed projects	Sum for reimbursed projects
2.1.2	59	121
2.1.3	158	706
Total	**217**	**827**

Source: MoA

 DANIEL BUI DANH TIEP, 8 years, Vlašim basic school, Středočeský kraj region

Legislative measures

10

10.1 Water Act and implementing regulations

Three laws affecting the Water Act were published in the Collection of Laws of the Czech Republic and became effective in the year 2008.

Act No. 25/2008 of 16 January 2008 on the integrated register of pollution of the environment, integrated system for meeting of reporting obligations and amendment to certain laws.

Passage of this act was caused by the need to adapt European requirements embedded in a directly applicable Regulation of the European Parliament and the Council No. 166/2006. The third part of this act amended the Water Act by adding a new provision in Section 126 (stipulation of the duty to notify).

Transitional provisions of this act allow the obligated parties – applicants to accommodate during a certain time period to the new legal regulation.

Act No. 167/2008 of 22 April 2008 on the prevention and remedying of environmental damage and on amendment to certain laws

The purpose of this legal regulation was to transpose into the Czech legal order the Directive of the European Parliament and the Council No.2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage. This directive relates to damages on three natural resources, i.e. on biodiversity (qualified by the protected wild animal species and wild-growing plants and natural habitats), surface water and groundwater and on land, including agricultural and forest land.

The act on the prevention and remedying of environmental damage is a special legal regulation to laws used for imposing preventive and remedial (correctional) measures for prevention and remedying of the detrimental condition regarding the individual components of the environment enumerated in this act (e.g. the Water Act, the Act on Nature Conservation and Landscape Protection) and contains also the amendments of these acts. The third part contains the amendment of the Water Act which allows in case of an environmental damage on water to use special accounts of regional authorities opened pursuant to provision in Section 42 of the Water Act for financing those remedial measures which are not paid for by the operator.

Act No. 181/2008 of 24 April 2008 amending the Act No. 254/2001 on water and on amendment to certain laws (Water Act) as amended

This small but in terms of content significant amendment of the Water Act facilitates the implementation of flood protection measures and their enforcement in the public interest especially by:

- introducing a new purpose of expropriation for public constructions providing flood protection,
- introducing the institution of areas protected for storage of surface waters,
- stipulating the new obligation of the river basin administrators (as a part of flood protection implementation) to register in the respective river basin district every decrease of retention capacity of flood areas resulting from changes in the respective area, in particular due construction of structures for flood protection,
- replacing the provision of Section 68 of the Water Act - areas designated for controlled flooding (inundation areas) - in practice unused, by a new wording which defines the areas designated for controlled flooding and at the same time stipulates the right of the injured party to claim damages incurred due to the controlled flooding. The procedure for the assessment of damages and the method for calculation of the compensation for damages is stipulated by the Government Order. The articulated Government Order was prepared by the end of the year 2008 and is presumed to be effective in the first half of the year 2009.

The River Pstruhovec, Landštejn Reservoir

The amendment regulates certain vagueness in respect of authority and attention should also be paid to the transitional provisions of this amendment, allowing inter alia staggering the entry of qualified hydraulic structures in the Land Register.

Several implementing legal regulations to the Water Act were published in the Collection of Laws of the Czech Republic and became effective in the year 2008:

Public Notice No. 40/2008 amending the Public Notice of the Ministry of Agriculture No. 432/2001 on documents for the application for decision or statement (opinion) and on the particulars of the permits, consents and statements of water authority as amended, and the Public Notice No. 7/2007 amending the Public Notice No. 7/2003 on water management records, as amended by the Public Notice No. 619/2004 prepared by the Ministry of Agriculture in cooperation with the Ministry of the Environment.

The Government Order No. 108/2008 amending the Government Order No. 103/2003 on fragile areas, storage of barnyard manure, crop rotation and carrying out anti-erosion measures in these areas as amended by the Government Order No. 219/2007.

Public Notice No. 152/2008 amending the Public Notice No. 159/2003 designating surface waters used for bathing, as amended by the Public Notice No. 168/2006, prepared by the Ministry of Health in cooperation with the Ministry of the Environment.

Interpretation Committee for the Water Act and related legal regulations under the authority of the Ministry of Agriculture adopted during its four sessions five interpretations. The interpretations are published on the web site of the Ministry of the Agriculture.

The River Porubka, Vřesina

10.2 Water Supply and Sewerage Systems Act and implementing regulations

In the year 2008 there was no amendment of the Act No. 274/2001 on Public Water Supply and Sewerage Systems, which would by published in the Collection of Laws of the Czech Republic. This means that there was no change through other legal regulations. No amendment affected the Public Notice No. 428/2001 which implements the Water Supply and Sewerage Systems Act.

The interpretation committee for the Act No. 274/2001 on public water supply and sewerage systems held in the year 2008 three sessions. During these meetings the committee approved 13 revisions of interpretations which were affected by the amendments of the above act and public notice, implemented in the years 2006 and 2007. Five new interpretations and one opinion were approved.

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

Ministry of Agriculture of the Czech Republic

Auditing and supervision of the execution of the delegated authority in water management sector were carried out by the Ministry of Agriculture, through the Department of state administration in the water management sector and the river basin administration as the central water authority, at the regional level 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 2008 a 2009, prepared by the Ministry of the Interior.

At the level of water authorities of municipalities with extended authority the audits were carried out at random in the period from July to September 2008. Since the year 2004 the audits of water authorities of municipalities with extended authority are carried out annually and the number of the audited authorities is increasing every year. For comparison, in the year 2004 the staff of the Department of state administration in the water management sector and the river basin administration audited 4 water authorities of municipalities with extended authority while in the year 2008 these audits were carried out in 23 water authorities.

The objective of all of these audits is primarily to contribute, especially by methodological assistance, to the constant increase of the quality of execution of state administration in water management sector. The emphasis is placed also on due application of legal regulations, in particular the Act No. 254/2001 on Water and on amendment to certain laws (the Water Act) as amended, the Act No.274/2001 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 administrative proceedings is also connected to other fields of Administrative Law and therefore the audits were also always examining the execution of the provisions of the Act No. 500/2004, Code of Administrative Procedure as amended, and with regard to the fact that water authorities carry out the agenda of special building offices, the audits examine also the procedure according to the Act No. 183/2006 on Land-Use Planning and Building Code (the Building Act) as amended and its implementing legal regulations.

The audits have also a positive effect on deepening the communication between the central water authority and water authorities at lower levels. An important positive aspect is also getting acquainted with the regional water management issues and with information about the application of legal regulations within the authority of the Ministry of Agriculture since their examination in practice is essential for the relevant successive steps to remedy potential inaccuracies.

The audit results are used for potential legislative or methodological activities. The Water Management Section also holds working meetings with water authorities twice a year. The purpose of these activities is the education and training of water authorities´ personnel and briefing on the current water management issues. The approach in preparing the methodological presentations is based inter alia on these audit findings. This ensures almost immediate utilization of audit information for methodological guidance to the subordinated water authorities.

The audits examining the execution of the delegated authority monitor the legality of this activity. This also reflects in the scope of the audits of the individual components guaranteeing legality in the activity 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 periods, provision of source documents for decisions in compliance with the Administrative Law, the possibility to review the content of a decision, carrying out the technical and safety supervision of hydraulic structures etc.

Based on the audits that were carried out we may say that the execution of the delegated authority by regional authorities in the water management sector maintains its high level and a positive aspect may be seen in the developing effort of the regional authorities to provide more extensive methodological guidance of water authorities in their jurisdiction. This statement is also confirmed by the fact that no measures to remedy the situation were imposed in any of the audits. The most frequent shortcomings were identified in the application of the new Administrative Law. The lapses which were identified do not make the issued decisions unlawful and after a matter-of-fact discussion the responsible personnel accepted the interpretations and procedures guaranteeing that the identified shortcomings will not recur.

The audits of water authorities of municipalities with extended authority confirmed the traditionally good and increasing quality of the execution of the state administration in water management sector also at this level although in comparison with the regional authorities some larger differences in the quality of the management of the agenda could be seen here. However, in spite of this most of the identified lapses were altogether of formal and procedural nature and repeatedly occurred to a larger or smaller extent practically in all of the authorities. The shortcomings were, like in the case of regional authorities, identified in the application of the new Administrative Law and also in redundant inclusion of the duty to observe legal regulations in the conditions of the decision and, on the contrary, the insufficient reference to the statements and opinions of the participants in the proceedings and the affected bodies. The quality of work of the water authorities of municipalities with extended authority is often limited by personnel and material equipment. In smaller municipalities the delegated authority is sometimes executed only by one person responsible for several fields of the administration, in some cases even including the separate authority. However, it needs to be emphasized that no audit revealed insufficient execution of the state administration.

The River Moravice, Slezská Harta Reservoir

The execution of the state administration in the water management sector in the Czech Republic in the year 2008 by all levels of water authorities may be considered as very good and fully corresponding with the requirement to observe the main principles of public administration.

Ministry of the Environment of the Czech Republic

The departments executing state administration at the Ministry of the Environment in compliance with the organizational rules, like in the past, dealt only with individual appeals against first instance decisions of the Czech Environmental Inspectorate, the Metropolitan Authority of the City of Prague (City council) and the regional authorities.

The Water Protection Department arranged in the year 2008, as several times in the past, a working meeting with water authorities and the Czech Environmental Inspectorate. The purpose of this activity was to brief the personnel of water authorities on the current issues of water protection and the activities of the Water Protection Department. The personnel of the Water Protection Department of the Ministry of the Environment participated, whenever possible, also in other training seminars and meetings organized by the individual regional authorities.

The River Olše, Karviná – Darkov

Table 10.3.1
Audit of the execution of state administration, carried out by the Ministry of Agriculture in the year 2008

Region	Audit date
Ústecký kraj	26 February2008
Olomoucký kraj	27 March 2008
Královéhradecký kraj	13 May 2008
Plzeňský kraj	29 September 2008
Jihomoravský kraj	21 October 2008
Středočeský kraj	8 December 2008

Source: MoA

Table 10.3.2
Audit of the execution of state administration, carried out by the Ministry of Agriculture in the year 2008

Municipality	Audit date
Nový Bydžov	10 July 2008
Hořice	10 July 2008
Strakonice	22 July 2008
Vodňany	22 July 2008
Tábor	23 July 2008
Milevsko	23 July 2008
Kralovice	24 July 2008
Podbořany	24 July 2008
Plzeň	29 July 2008
Domažlice	5 August 2008
Klatovy	5 August 2008
Mariánské Lázně	6 August 2008
Tachov	6 August 2008
Přeštice	12 August 2008
Stod	12 August 2008
Ústí nad Labem	14 August 2008
Roudnice nad Labem	14 August 2008
Moravský Krumlov	25 August 2008
Pohořelice	25 August 2008
Mikulov	26 August 2008
Hustopeče	26 August 2008
Lysá nad Labem	2 September 2008
MČ Praha 22	2 September 2008

Source: MoA

 ADÉLA PUSTĚJOVSKÁ, 9 years, Kopřivnice basic school, Moravskoslezský kraj region

Priority tasks, programmes and key documents in water management

11

11.1 Planning in the field of waters

In the year 2008 the focus was aimed at finalising the work on preparing draft river basin district plans. These arrangements are based on the provision in Section 25, Sub-section 2, Letter b of the Act No. 254/2001 on water and on amendment to certain laws (the Water Act), as amended, and on the provision in Section 12 of the Public Notice No. 142/2005 on planning in the field of water and the European regulation, the Water Framework Directive 2000/60/EC.

The authorities in the Czech Republic delimited in total eight river basin districts constituting the basis on which the river basin administrators in cooperation with the regional authorities produced the respective draft plans, i.e. the draft plan of the Upper and Middle Elbe River basin district, the draft plan of the Upper Vltava River basin district, the draft plan of the Berounka River basin district, the draft plan of the Lower Vltava River basin district, the draft plan of the Ohře and Lower Elbe River basin district, the draft plan of the Odra River basin district, the draft plan of the Morava River basin district and the draft plan of the Dyje/Thaya River basin district.

These draft plans were submitted for approval to the respective regional authorities based on the local jurisdiction and then made accessible to the public for comments in the period from 1 July 2008 to 31 December 2008 at the offices of the regional authorities, the respective River Boards, state enterprises and in electronic form on the public administration portal in the section for mandatory publication of information.

The content of the draft river basin district plans is governed by the scope of Annex No. 2 to the Public Notice No. 142/2005 on planning in the field of waters. The draft river basin district plans are divided into the following chapters:

- Description of the river basin district
- Water use and its influence on the status of waters
- Status and protection of water bodies
- Flood protection and water regime of the landscape
- Estimate of the impacts of measures on the status of waters
- Economic analysis
- Assessment of cost-effectiveness of the individual measures including economic impacts

The key parts of these plans and the instruments to meet the objectives defined in the individual river basin district plans and the Plan of Main River Basins of the Czech Republic which was approved by the Government of the Czech Republic in the year 2007, are the programmes of measures. The programmes of measures in the individual river basin district plans also specify the time schedule for the implementation of individual measures and the strategy for their financing in the first planning cycle in the years 2009–2015. The measures may have a start-up time or continue even over a longer time period if the projected effect of the respective measure manifests itself due to a slow start-up as late as in the next planning cycle or if the preparation of the respective measure is too exacting.

The River Ohře, Nechranice Reservoir

With regard to the obligations of the Czech Republic the most important are the measures to achieve good water status. In the Czech Republic the methodology used for assessment of water status in this first round of planning in the field of waters is very strict. Due to this reason and also due to the uncertainty in estimating of the impacts of individual measures it is presumed, in spite of a large number of measures, that the good water status will not be achieved in more than 89.2% of surface water bodies and more than 78.6% of groundwater bodies before the end of the planning period (year 2015) and that it will be necessary to extend the deadline for achieving the good water status to the year 2021 or, as the case may be, 2027. The assessment of water bodies by the individual river basin districts is shown in the following tables.

River basin district plans are subject to the Strategic Environmental Assessment (SEA) under the Act No. 244/1992 on environmental impact assessment. Pursuant to Section 10e of the Act No. 93/2004 the submitting entity was therefore in the year 2008 given the task to provide the assessment of the environmental impacts of these plans.

Planning in the field of waters in the Czech Republic as is quite time-consuming and in terms of funding demanding process, and therefore it was for the second year also supported by funds from the state budget under the grant title 129 150 – "Support for the Process of Planning in the Field of Waters". The objective of the above programme was to ensure elaboration of source studies and documents which were used for the development of river basin district plans, discussion about these plans with the public and other institutions and finally to support the

Table 11.1.1
Assessment of the status of surface water bodies until the year 2015

River basin district	Satisfactory	Potentionally unsatisfactory	Unsatisfactory	Total
Upper and Middle Elbe River basin district	22	19	173	**214**
Upper Vltava River basin district	25	6	124	**155**
Lower Vltava River basin district	2	6	75	**83**
Berounka River basin district	20	10	69	**99**
Ohře and Lower Elbe River basin district	24	44	80	**148**
Morava River basin district	18	85	81	**184**
Dyje River basin district	2	26	102	**130**
Odra River basin district	52	22	46	**120**
Total	**165**	**218**	**750**	**1,133**

Source: MoA (draft river basin district plans)

Table 11.1.2
Assessment of the status of groundwater bodies until the year 2015

River basin district	Satisfactory	Potentionally unsatisfactory	Unsatisfactory	Total
Upper and Middle Elbe River basin district	7	12	27	**46**
Upper Vltava River basin district	3	2	8	**13**
Lower Vltava River basin district	1	0	2	**3**
Berounka River basin district	6	4	6	**16**
Ohře and Lower Elbe River basin district	8	7	14	**29**
Morava River basin district	8	5	15	**28**
Dyje River basin district	4	5	15	**24**
Odra River basin district	5	0	9	**14**
Total	**42**	**35**	**96**	**173**

Source: MoA (draft river basin district plans)

decision-making process. The support in form of subsidies distributed among the individual applicants in the year 2008 amounted in total to CZK 54 million.

In the second half of the year the Ministry of the Environment began to prepare "National Plans" which will be sent to the European Commission as the national parts in the plans of international basins of the River Elbe, the River Danube and the River Odra. These national plans are based on the prepared draft river basin district plans and structured in accordance with the respective international river basin plans.

In addition to the assembly of the river basin district plans itself, also other source documents and information were collected in the year 2008. The most important activities in this field include the evaluation of the impacts of climate change on water resources in the individual river basin districts. Although these outputs will not be directly used in the draft plans in this planning round, they will be used for drawing up the master plan for development of areas protected for the sake of surface water storage and thus fulfil the task 2.3.9 of the mandatory part of the Plan of Main River Basins of the Czech Republic and for the second round of planning.

11.2 Development Plans for Water Supply and Sewerage Systems

The work on drawing up the National Development Plan for Water Supply and Sewerage Systems in the Czech Republic pursuant to Section 29, Subsection 1, Letter c) of the Act No. 274/2001 on public water supply and sewerage systems and on amendment to certain laws, as amended, was completed in the year 2008. The Ministry of Agriculture and the Ministry of the Environment continued to issue opinions (statements) on the proposed changes in the technical solution of drinking water supply and waste water drainage and treatment.

The National Development Plan for Water Supply and Sewerage Systems will be a strategic document of the state policy in the sector of water supply and sewerage systems, exceeding the measures of departmental policies of the central water authorities in sharing the powers.

This first National Development Plan for Water Supply and Sewerage Systems is a medium-term concept of the sector of water supply and sewerage systems for the period until the year 2015. It ties up to other strategic documents and departmental policy documents, in particular to the Concept of Water Management Policy of the Ministry of Agriculture for the period after the entry into the EU for the years 2004–2010. It also respects the requirements resulting from the relevant EC regulations.

In its general part the National Development Plan for Water Supply and Sewerage Systems defines the framework objectives, main principles and principles of the state policy ensuring long-term public interest in the sector of water supply and sewerage systems in the Czech Republic, i.e. sustainable use of water resources and water management while meeting the requirements for water services – drinking water supply and waste water drainage and treatment.

The National Development Plan for Water Supply and Sewerage Systems is constituted by the bottom-up system and is therefore based on the fusion of fourteen already drawn up and discussed Regional Development Plans for Water Supply and Sewerage Systems which were approved by the councils of the individual regional authorities. It is a summary of data from the individual regions with emphasis on supra-regional objectives. All usable source data and documents from the Regional Development Plans for Water Supply and Sewerage Systems were taken over except for those that were in some of the Regional Development Plans for Water Supply and Sewerage Systems produced and processed in the extent exceeding the specified scope and may be described as being above the standard.

The National Development Plan for Water Supply and Sewerage Systems provides framework for building up the state administration information system in the sector of water supply and sewerage systems of all levels, which will be constituted by the programme and the database of the National Development Plan for Water Supply and Sewerage Systems. The information system of the National Development Plan for Water Supply and Sewerage Systems will become one of the tools for registration of the basic demographic, balance, technical and economic data in the sector of water supply and sewerage systems.

The National Development Plan for Water Supply and Sewerage Systems is classified as a concept which is a subject to the environmental impact assessment pursuant to the Act No. 100/2001 on environmental impacts assessment and on amendment to certain laws, as amended, and also to the assessment of the impacts on Sites of Community Importance (SCI) and Special Protected Areas (SPA) pursuant to the Act No. 114/1992 on protection of nature and landscape, as amended. This plan therefore makes provisions for the requirements resulting from these laws.

In the process of the draft concept assessment the opinions were presented by the Ministry of the Environment including nine territorial departments responsible for the execution of state administration, the Ministry of Health, the Ministry of Culture, the Czech Environmental Inspectorate, the Czech Mining Authority, the State Authority for Nuclear Safety, the Agency for Nature Conservation and Landscape Protection of the Czech Republic, 4 National Park Administrations, 24 Administrations of Protected Landscape Areas, 5 military district authorities, 14 regional administrative authorities and territorial self-governing units as well as professional and unprofessional public.

Based on the draft concept, the opinions (statements) of the affected administrative authorities, the affected territorial self-governing units and the public, the assessment and the results of the public discussions, the Ministry of the Environment as the competent authority pursuant to the Environmental Impact Assessment Act issued a positive opinion on the draft concept with reference no. 32953/ENV/08 of 24 April 2008. In the SEA information system of the Ministry of the Environment the National Development Plan for Water Supply and Sewerage Systems is registered with the code number MZP049K.

The National Development Plan for Water Supply and Sewerage Systems and the above mentioned discussions and proceedings resulted in conclusions and objectives specified for this plan and their fulfilment was a condition for a positive assessment and positive opinions.

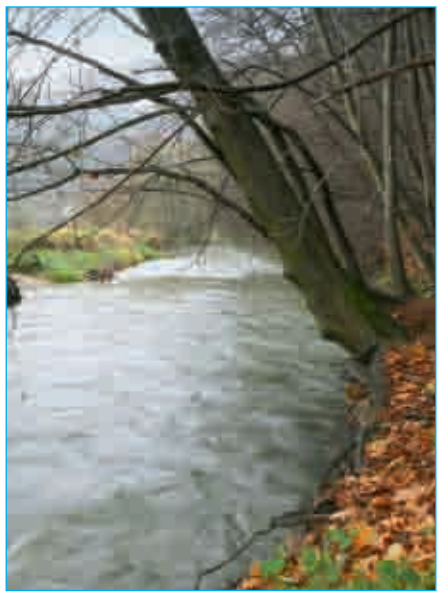
Based on Section 29, Subsection 1, Letter d) of the Act No. 274/2001 on public water supply and sewerage systems and on amendment to certain laws, as amended, the Ministry of Agriculture in cooperation with the Ministry of the Environment deals with and registers the proposed changes and updates of the Regional Development Plans for Water Supply and Sewerage Systems which are the basic component of planning in the field of water supply and sewerage systems.

The Regional Development Plans for Water Supply and Sewerage Systems are the basis for utilisation of the European Community funds and national financial resources for construction and renewal of water supply and sewerage system infrastructure. One of the obligations of each applicant requesting the provision of 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.

The Regional Development Plans for Water Supply and Sewerage Systems (as will be the National Development Plan for Water Supply and Sewerage Systems) are the basis for producing land use documentation, specified in the next paragraph, pursuant the Act No. 183/2006 on land use planning and building code, as amended, with regard to the activities of the municipal offices in municipalities with extended authority (water authorities), the building authorities and the activities of municipalities in the field of separate authority as well as delegated authority.

The Regional Development Plans for Water Supply and Sewerage Systems are the basis for establishing the principles of land use development and in the event they have already been established, the respective Regional Development Plan for Water Supply and Sewerage Systems is based on these principles. This plan is based neither on the land use plan of the municipality nor on the settlement plan.

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, the owners and operators of water supply and sewerage systems as well as by both professional and non–professional public.



The River Tichá Orlice, Bezpráví

Also in the year 2008 the Ministry of Agriculture and the Ministry of the Environment continued to issue their opinions (statements) on the proposed changes in the technical solution of drinking water supply, waste water drainage and waste water treatment with regard to the Regional Development Plans for Water Supply and Sewerage Systems. The number of issued opinions and the increase in the last three years is as follows. The Ministry of Agriculture issued 302 opinions in the year 2006, 423 in the year 2007 and 597 in the year 2008.

11.3 Programmes and measures to reduce surface water pollution

The programme for reduction of surface water pollution suitable for the life and reproduction of fish and other aquatic fauna

The Government Order No. 71/2003 establishing surface waters suitable for the life and reproduction of indigenous fish species and other aquatic fauna and on the evaluation of the quality status of these waters, as amended by the Government Order No. 169/2006, establishes surface waters suitable for the life and reproduction of indigenous fish species and other aquatic fauna, divided to salmonid waters and carp waters, with the aim to protect these waters against pollution and to improve their quality in a manner which makes them permanently suitable for the support of the life of indigenous fish species ensuring natural biodiversity or the fish species the presence of which is desirable.

To meet the values of permissible pollution of salmonid and carp waters until the year 2009, the relevant bodies developed the Programme for Reduction of Pollution of Surface Waters which are or shall become suitable permanently suitable for the life and reproduction of indigenous fish species and other aquatic fauna. This programme was included in the Government Order No. 169/2006 amending the Government Order No. 71/2003 in form of a list of salmonid and carp waters which do not meet the limit indicator values. The implementation of the above mentioned programme was ensured by a guideline (Journal of the Ministry of the Environment, Chapter 11, Volume 16) containing an account of the individual investment measures, measures to assess the status of selected surface waters and control measures for the individual waters which do not meet the limits (327 measures in total).

The standard monitoring of these surface waters continued in the year 2008 in monitoring networks of six entities: the River Boards, state enterprises and the Agricultural Water Management Administration. This monitoring was carried out in outfall hydrometric profiles of the respective selected waters and in complementary hydrometric profiles used for evaluation of the cause of contamination in the respective stretch. At the same time these 638 hydrometric profiles were evaluated for the two year period 2007–2008 in 13 indicators, i.e. in 9 permissible and 4 target limit values.

Construction projects for water quality protection implemented in the year 2008

As regards the most important projects relating to the sources of pollution with more than 2000 population equivalents, the following waste water treatment plants were completed in the year 2008.

The River Ostravice, Ostravice

New municipal waste water treatment plants (in total 16,355 PE): Kravaře (7,500 PE, N, DN, chemical removal of phosphorus), Tišice (2,700 PE, N, DN), Třebichovice (2,100 PE, N, DN, chemical removal of phosphorus), Ostrožská Lhota (2,055 PE, N, DN, chemical removal of phosphorus), Libice (2,000 PE, N, DN).

New neutralisation station: Rossignol Galvanic CZ, s. r. o. (120.0 m^3/d).

Waste water treatment plants reconstructed or extended in the year 2008:

Existing municipal waste water treatment plants: Opava (149,000 PE, N, DN, chemical removal of phosphorus); Rakovník (45,000 PE, N, DN, chemical removal of phosphorus); Mladá Boleslav – ČOV I (40,000 PE, N, DN, chemical removal of phosphorus); Polička (28,550 PE, chemical removal of phosphorus); Lipník nad Bečvou (13,733 PE, N, DN, chemical removal of phosphorus); Horšovský Týn (11,818 PE, N, DN, chemical removal of phosphorus); Bučovice (9,860 PE, N, DN, chemical removal of phosphorus); Vimperk (9,500 PE, N, DN, chemical removal of phosphorus); Slavkov u Brna (9,451 PE, N, DN, chemical removal of phosphorus); Holýšov (7,000 PE, N, DN, chemical removal of phosphorus); Rousínov (6,500 PE, N, DN, chemical removal of phosphorus); Lutín (6,200 PE, N, DN, chemical removal of phosphorus); Moravský Krumlov (5,370 PE, N, DN, chemical removal of phosphorus); Sadská (5,000 PE, N, DN); Stod (5,000 PE, N, DN, chemical removal of phosphorus); Hlubočky-Mariánské údolí (4,800 PE, N, DN, chemical removal of phosphorus); Albrechtice (4,600 PE, N, DN, chemical removal of phosphorus); Jinočany (4,000 PE, chemical removal of phosphorus); Čeladná (4,000 PE, N, DN); Mirošov (2,500 PE, N, DN); Hrušky (2,490 PE, N, DN, chemical removal of phosphorus); Poběžovice (2,200 PE, N, DN, chemical removal of phosphorus); Šumvald (2,095 PE); Příbor (1,860 PE, N, DN, chemical removal of phosphorus).

Existing industrial waste water treatment plants: Unipetrol RPA, s. r. o. (330,000 PE), Paper factory Lukavice (21,900 PE, N, DN, chemical removal of phosphorus), Polička – meat packing plant (18,400 PE, N, DN, chemical removal of phosphorus), Vimperk butchery (6,670 PE, N, DN).

Existing neutralisation stations Vodňany – A. Pöttinger, s. r. o. (55.0 m^3/d).

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

The Action Programme adopted under Article 5 of the Nitrate Directive is the most effective and at the same time in terms of funding the most demanding system of measures in the implementation of the Nitrate Directive. The Action Programme includes a system of mandatory measures in vulnerable areas (Section 33 of the Water Act No. 254/2001, as amended) which are aimed at reducing the risk of nitrogen leaching to surface waters and groundwaters.

This Action Programme is promulgated in the Government Order No. 103/2003, each time for the period of four years. Action Programme I was promulgated for the period from 1 January 2004 to 3 April 2008. The amendment of the Government Order No. 108/2008 promulgated the revision of the Action Programme effective as of 4 April 2008, the so called Action Programme II. Revision of the Action Programme was made on the basis of monitoring and assessment of the effectiveness of Action Programme I, the new research knowledge and the analysis of the opinion the European Commission of 16 May 2006 (ENV/B1/JC/sml/D(2006)/11292) with regard to the lawsuits against member countries of the European Union in the case of non-compliance with the requirements 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:

a) Period when the use of certain types of fertilisers and barnyard manure is prohibited.
b) Specification of minimum capacity of barnyard manure storage facilities allowing to store barnyard manure during the period when fertilising is prohibited (in the Czech Republic this is based on general legal regulations; since the year 2014 the required capacity of storage facilities for barnyard manure will have to be large enough for six-month production).
c) Reduction of the application of fertilisers and barnyard manure corresponding to the correct principles of farming with regard to the soil and climate conditions (soil class and type, land slope,

temperatures, precipitation). Introduction of fertilisation maximum limits with regard to the individual crops).

d) Methods of land use and management (on sloping, waterlogged, frozen land and in the vicinity of waters).

The measures included in the Action Programme must guarantee that the quantity of barnyard manure together with organic and organic-mineral fertilisers applied in any establishment in a vulnerable area will not in the average exceed the limit of 170 kg nitrogen per hectares per year.

11.4 WATER INFORMATION SYSTEM of the Czech Republic

The Ministry of Agriculture and the Ministry of the Environment continued in the year 2008 in the implementation of the interdepartmental project called the Public administration information system – WATER which was officially launched in the year 2005. The main objective of this interdepartmental project remains the effort to provide to the professional and the general public sufficient volume of credible and relevant information about waters for decision-making, education and general awareness, if possible in a unified and effective way and in one place. In this respect the systematic development of the Central Register of Watercourses remains the main component of work even in the year 2008.

The project implementation was originally scheduled under the authority of the Ministry of Agriculture for the years 2005–2010. In the year 2008 the timely provided inputs for technical implementation above the scope of the scheduled assignments allowed shortening the total implementation period of the project and the project will thus be completed in mid 2009 without any change of the price for the project.

Similar to the last year, the Water Management Information Portal web site maintains the main structure with three main bookmarks:

- Current information
- Public Administration Information System Records
- Project Public Administration Information System - WATER

The general idea behind this website design is based on the fact that the system is decentralised (distributed) and the individual applications (records) are operated by the entities that have produced the data. These applications are basically sub-applications using the central services of the access portal which serves as a signpost to the respective databases.

As regards the "Current Information" bookmark no substantial changes were made in the individual applications. During the last year only a few small design changes were made to improve the presentation and make the search of the required information easier, not only during flood situations. The most noticeable work within this bookmark was done on the application called "Technical records of watercourse features and properties" where the data was partly integrated with the registries of the Public Administration Information System containing registered records linked to the selected

The River Svratka, Brno – Bystrc

effects in Central Technical Effect Register and to the function performing localisation using the 1:10000 map and orthophoto map.

As regards the bookmark called "Public Administration Information System Records", the Ministry of Agriculture, in cooperation with river basin administrators participated in the year 2008 in the implementation of the following project tasks which were planned and subsequently successfully and duly carried out within the scheduled deadlines. The key part of work was again primarily concerned with building up the Central Watercourse Register. The watercourse layer of the Central Watercourse Register, available in the scale 1:50000 and 1:10000, is the basic structural and linking register of the Public Administration Information System – WATER and will be used for other territorial links of the effects in other registries and for the subsequent update of watercourse layers in the related public administration information systems. The integration of data relating to the respective stretches of boundary and trans-boundary watercourses into the territorial and descriptive part of the Central Watercourse Register (CEVT 10) was also completed in the course of the year 2008. At the same time the work on building up the Central Watercourse Register continued under the authority of the Agricultural Water Management Administration and the Forests of the Czech Republic, s.e. in respect of determining the administration of watercourses which these administrators were appointed to administer (i.e. on the basis of the respective letter of appointment) and also in respect of correcting the apparent (crucial) errors in the trajectory of watercourses which are important for determining the administration of the individual watercourses.

As regards the Central Register of Water Reservoirs, the work which began in the year 2008 was aimed at making a survey (list) of all water reservoirs, based on the status in the General Geographic Database (ZABAGED) 2008 with the aim to ensure the link between the identification of water bodies and the Central Register of Water Reservoirs (CEVN).

In the application called the Register of Hydraulic Structures for Water Management Land Improvements the work was focused on integrating the descriptive part to the territorially linked effects of the hydraulic structures for water management land improvements and on upgrading the user interface with regard to search function.

As regards the Central Register of Water Management Decisions, the work in the year 2008 was focused on establishing communication between the individual River Boards, s.e. and the Central Register of Water Management Decisions as well as on the possibility to present the data from the Central Register of Water Management Decisions also by the local jurisdiction of the individual River Boards, s.e. At the same time the new Editor of Water Management Records (eVPE) was presented including the launching of the new communication environment in the XML format, which allows, based on the client certificate, to store selected data from water management decisions and the whole documents directly in the Central Register of Water Management Decisions at the Ministry of Agriculture.

The Ministry of the Environment is in the framework of the interdepartmental project of the Public Administration Information System – WATER authorised to keep 11 registers informing about the status of surface waters and groundwaters in the Czech Republic (the work is carried out by the T. G. Masaryk Water Management Research Institute, public research institution) and to keep 4 registers relating to the quantity and quality of surface waters and groundwaters (the work is carried out the Czech Hydrometeorological Institute in cooperation with the River Boards, s.e. and the Agricultural Water Management Administration).

As regards the registers "Surface Water Quantity" and "Groundwater Quantity", the data for these registers were in the year 2008 stored in the routine practice in the database of the Czech Hydrometeorological Institute (the data of the natural water flow). The work relating to the registers "Surface Water Quality" and "Groundwater Quality" consisted of the implementation of an automated update of these registers from the IS ARROW (the data collected by the surveillance monitoring and operational monitoring).

The "Register of Vulnerable Areas" was updated in January 2008 and in October, based on the Public Notice No. 152/2008, also the "Register of surface

water areas used for bathing". Other registers kept by the Ministry of the Environment are up-to-date for the year 2008.

The work in the year 2009 will consist of completing the implementation of the automated update of the surface water quality and groundwater quality registers from the ISARROW. With regard to the fact that in accordance with the Public Notice No. 391/2004 the register "Status of Water Bodies" and the "Register of the Ecological Potential of Heavily Modified and Man-made Water Bodies" will be kept as of 1 January 2010; the data for these registers must be collected already in the year 2009. There will also be a mid-year update of the "Flood Plain Areas" register.

In the event the Government Order No. 71/2003 is amended, an update is planned for the content of the register "Surface Waters Suitable for the Life and Reproduction of Indigenous Fish Species and Other Aquatic Fauna". If the legislative context is resolved, also the "Hydrological Zones" register will be updated.

The respective applications are still published on the Water Management Portal – WATER on the website www.voda.gov.cz which has a logo (symbol of drops upside down) in the national colours.

www.voda.gov.cz
www.water.gov.cz
www.voda.gov.cz/wap

11.5 Activity of the Czech Republic in respect of reporting to the EU

The reports relating to the individual EU directives submitted to the European Commission were prepared and processed also in the year 2008 in accordance with meeting the tasks resulting from the implementation plan for the field of the environment and from the requirements of the Framework Directive.

In the year 2008 the Ministry of Health (in cooperation with the Ministry of the Environment) submitted to the European Commission two reports on bathing waters. The report on all waters designated as bathing waters pursuant to Article 13.2 of the Directive of the European Parliament and the Council 2006/7/EC on bathing water quality control was prepared in May. This report contains a list of all bathing sites, the quality of which shall be monitored in the respective season and the justification of changes in comparison with the previous year. In accordance with Article 13 of the Council Directive 76/160/EEC on bathing water quality, the annual report on bathing water quality in the respective bathing season was submitted by the end of the year. In total 188 areas were reported for the Czech Republic. The most frequent problem of our bathing waters is the presence of cyanobacteria. Due to excessive presence of cyanobacteria bathing was prohibited in the year 2008 in 15 bathing sites in the Czech Republic reported to the European Commission. Both reports are available at http://cdr.eionet.europa.eu/cz/eu/bathing.

The Ministry of Health produced and submitted to the European Commission the report on the quality of drinking water in the Czech Republic for the period 2005–2007 under the Directive 98/83/EC in the format of Council Decision 95/337/EC. This report contains information about legislation in the field of drinking water in the Czech Republic, supply zones and especially on the quality of water supplied to consumers.

The Council Directive 91/676/EEC on protection of water against pollution caused by nitrates from agricultural sources (the so-called Nitrate Directive) stipulates that by the end of each four-year implementation cycle the member state submits a reporting report describing the situation and the development of water pollution by nitrates from agricultural sources in the past period.

The report which the Czech Republic submitted to the European Commission in October 2008 was the first reporting report on fulfilment of this directive and included the period 2004–2007.

The reporting report of the Czech Republic contains the results of the evaluation of surface water and groundwater quality, the extent of eutrophication of surface waters, the review of vulnerable areas, the development, support and execution of the principles of good agricultural practice, main measures implemented in action programme, evaluation of the implementation and the impact of measures of the action programme and forecast of the future development of water quality. It also includes data sets submitted only in electronic form to the internet portal of the European Environmental Agency.

 KAROLÍNA ŠIRMEROVÁ, 11 years, Máj II basic school, České Budějovice, Jihočeský kraj region

International cooperation in the field of waters

12

12.1 Cooperation within UN ECE

The Czech Republic develops the principles of water protection and water management on the basis of hydrological catchment areas and hydrogeological zones crossing the state borders according to the UN ECE Convention on Protection and Use of Trans-boundary Watercourses and International Lakes and in compliance with the Water Framework Directive.

Convention on Protection and Use of Trans-boundary Watercourses and International Lakes

The Czech Republic has been a party to the UN ECE Convention on Protection and Use of Trans-boundary Watercourses and International Lakes since May 2000 and the Czech experts participate in activities relating to the fields of integrated management of water resources and water ecosystems, monitoring and evaluation of water status, flood protection and preparation for climatic changes, protection against accidental pollution from industrial sources, support of international cooperation on trans-boundary waters and in integrated international basins as well as to the subject of water and human health.

At present a document called Guide to Implementing the Convention on the Protection of Trans-boundary Waters and International Lakes is being produced within the UN ECE Convention. The final document will provide the parties to the UN ECE Convention and the signatories with a detailed guide for the implementing the individual articles of the UN ECE Convention. It will become an important tool for those countries which are interested in acceding to the UN ECE Convention and are not sure what advantages and duties this step brings. In the context of adapting to climate changes a document called Guidance for Water and Climate Adaptation is being produced. This document is designed for decision-making of politicians and managers in the field of preparedness for climate change in the context of water scarcity issues.

Protocol on water and health

Within the UN ECE Convention, a new convention document was produced with focus on the connection between water and human health – the Protocol on water and health. The first session of parties to the Protocol took place in January 2007 in Geneva. Following the session of the convention parties, preparation of the Protocol objectives in the individual countries was completed and at the international level and a joint control mechanism for their implementation was prepared. Within the Protocol the work also focused on adaptation to climate changes. The prepared Guidelines on Water Supply and Sanitation in Extreme Weather Events will provide the operators of water supply and sewerage systems with a detailed guide explaining how to prepare for crisis situations, how to act during these situations and how to put the respective facility back in operation after the event. Another activity of the Protocol, with participation of experts from the Czech Republic, is the prepared Guide for surveillance of diseases transmitted by water, which should be published by the WHO. More information about the UN ECE Convention can by found at www.unece.org/env/water.

The Křímovský stream, Křímov Reservoir

12.2 International cooperation on trans-boundary waters

Thirty percent of the state border of the Czech Republic consists of watercourses. Cooperation in trans-boundary waters comprising not only watercourses constituting the national borders but also watercourses crossing these borders is regulated by bilateral international or intergovernmental agreements. The fulfilment of these agreements is being ensured by bilateral committees for water management issues on trans-boundary waters or, as the case may be, directly by the authorised government representatives (government agents) appointed for cooperation in trans-boundary waters.

Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Trans-boundary Waters

The 8th session of the Czech-Slovak Commission for Trans-boundary Waters, set up on the basis of the Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Trans-boundary Waters that was signed and became simultaneously effective on 16 December 1999, was held in Prague from 23 April to 25 April 2008. During its 8th session the Czech-Slovak Commission for Trans-boundary

The River Svratka, Brno – Pisárky

Waters discussed the matters relating to regulation and conservation of trans-boundary waters, international approvals of construction work and accounting of work on trans-boundary waters, maintaining the purity of trans-boundary waters, hydrology, navigation issues, border issues, water management studies and planning. In its session the Czech-Slovak Commission for Trans-boundary Waters approved the reports on working groups´ activities for the year 2007 and the plans of work for the year 2008.

Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues of Trans-boundary Waters

The 16th session of the Czech-Austrian Commission for Trans-boundary Waters took place in Kroměříž in the Czech Republic from 13 May to16 May 2008. The purpose of this session of the Czech-Austrian Commission for Trans-boundary Waters was to discuss the individual areas of mutual cooperation in water management on trans-boundary waters in accordance with the Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues of Trans-boundary Waters of 7 December 1967 and effective as of 18 March 1970. During its 16th session the Czech-Austrian Commission for Trans-Boundary waters discussed the matters relating to regulation and conservation of trans-boundary waters, international approvals of construction work and accounting of work on trans-boundary waters, maintaining the purity of trans-boundary waters, hydrology, navigation issues, border issues, water management studies and planning. The Czech-Austrian commission for trans-boundary waters also updated the Directive for Warning Service on Czech-Austrian Trans-boundary Waters.

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

The 11th session of the Czech-German Commission for Trans-boundary Waters was held in Boží Dar in the Czech Republic from 22 September to 23 September 2008. The purpose of this session was to discuss and approve the results of the 10th session of the Standing Committee Bavaria and the 10th session of the Standing Committee Saxony. The Czech-German commission for trans-boundary waters also discussed the current issues of cooperation on trans-boundary waters, in particular the principles relating to the individual fields of cooperation, the lists of trans-boundary waters and urgent issues regarding the cooperation with the Standing Czech-German Border Commission.

The Czech-German Commission for Trans-boundary Waters inter alia discussed under Point 2, Lists of Trans-boundary Waters, an update of this list in the border section with the Free State of Bavaria and under Point 3, Cooperation with the Standing Czech-German Border Commission, the request to return the boundary watercourse S 121 Slatina/Mordgrundbach to the position according to the documentary border description. Under Point 4, Implementation of the EC Framework Directive on trans-boundary waters, the Commission acquainted itself with the progress of work in this field within the Standing Committee Saxony as well as the Standing Committee Bavaria and under Point 6.1 again dealt with the objective of financing and building a stationary emergency profile in the boundary cross-section at the border with the Federal Republic of Germany. This facility should prevent spreading of accidental pollution caused by oil and oil products to the FRG.

Convention between the Czechoslovak Republic and the Government of the Republic of Poland on Water Management in Trans-boundary Waters

The 11th meeting of the agents of the Czech Government and the Polish Government for cooperation in the field of water management on trans-boundary waters, where the results of the activities of the individual joint working groups for the period from the 9th meeting of the government agents were discussed and approved, took place in Szczyrk in Poland from 4 November to 6 November 2008. The work was focused on planning of water management on trans-boundary waters, cooperation in the field of hydrology, hydrogeology and flood protection, regulation of boundary and trans-boundary watercourses, water supply and land improvements in border areas, protection of trans-boundary waters against pollution, the issues of the implementation of Water Framework Directive on the Czech-Polish trans-boundary waters and measures implemented to stabilise the state border. The individual working groups were assigned tasks in the respective fields of cooperation and plans for the next period were approved. The matters discussed included inter alia the issues relating to flood protection of the town of Bohumín and the trans-boundary stretches of the Rivers Petrůvka and Opava, the concept of reducing flood risks by the construction of the Nové Heřmínovy water reservoir, mutual exchange of hydro-meteorological and hydrogeological data and cooperation of warning services, the work carried out and projects aimed at regulation of trans-boundary watercourses and maintenance and conservation of water management measures on trans-boundary waters, evaluation of water quality monitoring, establishing the Czech-Polish trans-boundary water bodies, defining major water management problems and the issues of the impact of Turów mine operation on surface waters and groundwaters.

Concrete results of the individual commissions´ meetings are presented in protocols which were always signed by the two government agents, discussed at the interdepartmental level and

approved by the Minister of the Environment. All of these protocols were approved and are available at the website www.mzp.cz/cz/voda.

12.3 International cooperation in the field of water protection in the integrated basins of the Rivers Elbe, Danube and Odra

International cooperation of the Czech Republic in the field of water protection is carried out primarily within international commissions for protection of the integrated basins of the Rivers Elbe, Danube and Odra, based on the Agreement on the International Commission for Protection of the Elbe, the Convention on Cooperation for Protection and Sustainable Use of the Danube and the Agreement on the International Commission for Protection of the Odra River against Pollution. These activities of the Czech Republic also contribute to the necessary protection of the North Sea, the Black Sea and the Baltic Sea and the Czech Republic participates in the coordinated implementation of Water Framework Directive in these international river basins.

In accordance with Article 13 of the Water Framework Directive, all commissions prepared in the year 2008 draft plans for the respective international river basins, which will be made available for the public to comment.

Agreement on the International Commission for Protection of the Elbe

The International Commission for Protection of the Elbe is the most important board of the Czech-German cooperation in the field of water protection in the Elbe river basin. Its activity is focused on reducing the pollution of the Elbe and its tributaries, improving the status of ecosystems relating to water, the programmes of measuring and monitoring water quality, the prevention of accidental pollution and in the recent years especially on the coordinated approach to fulfilling the requirements of the Water Framework Directive and on improving flood protection. The 2nd International Elbe Forum supporting the involvement of the public in the implementation process of the Water Framework Directive was held in Dresden in April 2008. The International Commission for Protection of the Elbe participates since the year 1988 in preparing and arranging the Magdeburg Seminar on protection of waters which is the most important international professional and scientific event in the field of the protection of waters in the Elbe river basin. This seminar has become a platform for the exchange of the most up-to-date knowledge and experience among the representatives of science, research, water management practice and administration and is held as a rule every second year alternately in the Czech Republic and in the Federal Republic of Germany. The main organizers are the River Boards, s.e. on the Czech part and the H. Helmholtz Centre for Environmental Research (UFZ) on the German part. The 13th Magdeburg Seminar was held in October 2008.

The International Commission for Protection of the Elbe on its 21st session which was held in Magdeburg from 6 September to 7 September 2008 discussed the next course of action in implementing the Water Framework Directive in the international basin of the River Elbe and agreed that the draft International Elbe River District plan will be made available for the comments by the public in digital form on the internet website of the International Commission for Protection of the Elbe by 22 December 2008 at the latest. The 2009 Elbe International Monitoring Programme was approved. The Commission continued to discuss the issues relating to the measures to reduce the concentration of haloethers in the Elbe and dealt with the issues of financing the stationary emergency profile on the Elbe in the Hřensko border profile. More information about the International Commission for Protection of the Elbe is available at www.ikse-mkol.org.

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

The Agreement on the International Commission for Protection of the Odra River against Pollution is implemented by the International Commission for Protection of the Odra River against Pollution. Its activity in the year 2008 was discussed at the 11th meeting of the International Commission for Protection of the Odra River against Pollution held from 3 December to 4 December 2008 in Vratislav. The reports presented at the session included the reports on the activities of the individual working groups aimed primarily at drawing up the draft Plan for the International Odra River Basin District which was published on 22 December 2008 and thus made available for the public to comment. The activities of the working groups also focused on the amendment of the Rules of Order of the International Commission for Protection of the Odra River against Pollution, on the optimisation of data administration tasks in the field of implementing Water Framework Directive in the international basin of the River Odra, on the development of the GIS-WFD-RBD Odra and the Oder – Flood and Data Management projects, on the development of the professional concept International Monitoring Sites – the River Odra (IMS Odra) on the Geoportal of the International Commission for Protection of the Odra River against Pollution, on drawing up the list of pollutants relevant for the River Odra, on permanent monitoring of the implementation of the Action Programme for flood protection in the River Odra basin, on work on the booklet on flood protection and nature conservation, which will be jointly published by the International Commission for Protection of the Odra River against Pollution and the World Wildlife Fund, on the tasks resulting from implementation of the EU Flood Directive, on the update and completion of the International Warning and Alert Plan for the River Odra, on international accident exercises in the field and the work on the special Czech-German-Polish dictionary.

Convention on Cooperation for Protection and Sustainable Use of the Danube

The general public in all Danube countries celebrated in the year 2008 already for the fifth time the Danube Day which is on 29 June – the day of signing the Convention on Cooperation for Protection and Sustainable Use of the Danube. These festivities included celebrations in the Czech part of the Morava River basin organised by the Union of the River Morava in cooperation with the Ministry of the Environment, the Ministry of Agriculture and the Morava River Board, s.e. Children living in the Morava River basin participated in the international school competition organised by the International Commission for Protection of the Danube, called Young artists for the River Danube. A joint trip to Vienna was arranged for the winners and the main winner received an international prize.

The 11th session of the International Commission for Protection of the Danube was held in Vienna from 9 December to 10 December 2008 under the presidency of Serbia. This session was attended by all parties to the Convention including Montenegro which ratified the Convention in the course of the year 2008, the chairmen of the individual expert groups, representatives from 19 observer organisations and the personnel of the secretariat of the Commission. The International Commission for Protection of the Danube approved the auditors´ report for the previous period, the budget and the membership subscriptions for the next period. The Commission discussed the work of the individual expert groups aimed especially at the fulfilment of Water Framework Directive requirements, received information about the implementation of Water Framework Directive in the Sava and Tisa River basin districts. The implementation work in the Prut River basin and the Danube delta is difficult because countries in this river basin are not EU member states and thus are not obliged to implement Water Framework Directive. In addition, the Commission received information on the progress in the intercalibration exercises within the East European Intercalibration Group (EC GIG) which is since the year 2008 coordinated by the Czech Republic in cooperation with Hungary on rivers and by Romania on lakes. The International Commission for Protection of the Danube heard the information on the completion of the publication dealing with the second Joint Danube Survey (JDS 2) and that several press conferences to the JDS 2, one of them in the Czech Republic, took place in the Danube River basin in the course of the year. The participants of the 11th session of the International Commission for Protection of the Danube were informed about the progress in cooperation with the navigation sector and other commissions for protection of large rivers, in particular in the South Africa and China. In this context a Chinese delegation also visited the Czech Republic and heard a number of interesting presentations at the Ministry of the Environment and the Ministry of Agriculture. More information can be found on the website of the International Commission for Protection of the Danube at www.icpdr.org.

In connection with the entry of the Czech Republic and the Republic of Poland into the EU and the withdrawal of the EC from the Agreement on the International Commission for Protection of the Odra River against Pollution resulting from the entry, all parties completed the negotiations concerning changes in this agreement in the year 2008 and signed the Agreement on the amendment of the Agreement on the International Commission for Protection of the Odra River against Pollution. Detailed information about the activity of the International Commission for Protection of the Odra River against Pollution can by found on the internet website at www.mkoo.pl.

The River Lomná, Beskydy

 MONIKA HATLAPATKOVÁ, 12 years, Rožnov pod Radhoštěm basic school, Zlínský kraj region

Research and development in water management

13

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

The Ministry of Agriculture financed under the research projects the special-purpose research and development in the field of water management by more than CZK 38 million.

Compared to the year 2007, the amount of special-purpose funds increased by CZK 21,052 thousand. The funds to support water management R&D under the departmental Programme of Research in Agricultural Sector and the National Research Programme amounted in total to CZK 38,470 thousand. The R&D projects launched in the year 2004 were funded by CZK 1,420 thousand, the projects launched in the year 2005 were granted support amounting to CZK 4,655 thousand and in the year 2006 no new projects were launched. The funds provided for projects which started in the year 2007 amounted to CZK 5,256 thousand. In the year 2008, CZK 27,139 thousand were allocated for 20 new R&D projects launched in 2008 and dealing with the issues of water management. R&D projects are primarily aimed at soil and water protection in sustainable development of the agricultural sector, landscaping, revitalisation and protection of cultural landscape, forests and water bodies, rationalisation of water management and dealing with climate change impacts.

An overview of the individual R&D projects is shown in a summarised form in Table 13.1.1. Public records of these projects are available on the internet website of the Council for Research and Development at www.vyzkum.cz in the Central Register of R&D Projects (CEP). The information about the results of the R&D projects is available on the same website in the Information Register of R&D Results (RIP). Other information about the research and development in the field of water management can be also found on the website of the National Agency for Agricultural Research with the Ministry of Agriculture at www.nazv.cz in the Infobanka section.

Water management R&D projects resulted from public tenders called under the above mentioned research programmes which include sub-programmes, thematic scopes or priorities relating to water management issues.

The National Research Programme (provided by the Ministry of Agriculture) includes a thematic programme called Competitiveness in "Sustainable Development" and a partial programme called "Utilization of Natural Sources". The priorities of this partial programme include the development of water treatment and waste water treatment technologies and improvement of the effectiveness of water management in the landscape with the aim to ensure purity and high quality of drinking water as well as the prevention and mitigation of the impacts of hydrological extremes (floods and drought).

One of the sub-programmes of the Programme of Research in Agricultural Sector 2007–2012 is the sub-programme Protective and Environmentally Friendly Methods of Management which includes the research direction Interaction of Water, Soil and the Environment. The objectives of this research direction are inter alia to determine the possibilities of increasing retention and storage of water in the landscape, to propose optimum methods of management in protected zones of water resources etc.

By the end of the year 2008 the Research Institute for Soil and Water Reclamation completed the research scheme called the Mitigation of the unfavourable natural and anthropogenic effects on soil and water.

In the years 2004–2008 the Research Institute for Soil and Water Reclamation dealt with the research and development in the field of protection, conservation and utilisation of the basic natural resources – soil and water in agriculture and for development of rural areas. This research scheme no. MZE0002704901 was in the year 2008 supported by financial resources amounting to CZK 34,511 thousand. The institutional support for this research scheme over the whole project period amounted to CZK 152,534 thousand. Its objective was to gain knowledge in using the remote survey of the Earth for evaluation of the effects of extreme natural phenomena and the consequences of the long-term impacts of human activity on soil, water and landscape. It also dealt with utilisation of waste waters for irrigation of field crops in the context of the forecast of successive increase of water consumption and reduction of water yields, the quantification of the influence of drainage in extreme conditions such as floods, drought, accidental pollution, the assessment of the impacts of water and wind erosion on the change of structure and content of substances in soils including the content of substances in waters, the measures to reduce these harmful effects within land consolidation, the influence of extending unused grassland areas on hydrothermal regime of soils and water quality and with the use of peat bogs as indicators of the environmental load together with the development of the relevant geographic information system. The knowledge gained was used in particular in outputs such as applied research and in methodologies which are in most cases already used.

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 the year 2008

Project no.	Name of the project	From – to	Coordinator	Funds (thousands of CZK)	Programme
1G46036	Innovation of water treatment process and ensuring high quality of drinking water in water distribution systems	1 April 2004 31 December 2008	Czech Technical University in Prague, Faculty of Civil Engineering	1,080	National Research Programme
1G46040	Monitoring and evaluation of extreme runoff conditions in catchment areas of minor watercourses with regard to prevention and mitigation of flood damages	1 April 2004 31 December 2008	Research Institute for Soil and Water Reclamation, public research institution	340	National Research Programme
1G57016	Precipitation-runoff process in mountain forests and its possibilities in mitigating extreme situations – floods and drought	1 February 2005 31 December 2008	Mendel University of Agriculture and Forestry in Brno	957	National Research Programme
1G57040	Methodology of the design and construction of optimum alternative of flood protection and erosion control measures to mitigate extreme hydrological phenomena - floods and drought	1 February 2005 31 December 2008	Czech University of Life Sciences in Prague	1,424	National Research Programme
1G57071	Integrated approach to dealing with utilisation of rain water in urban areas	1 February 2005 31 January 2008	Brno University of Technology	100	National Research Programme
1G58052	Research of degradation of drinking water quality during its storage	1 December 2005 31 December 2008	T. G. Masaryk Water Management Research Institute, public research institution	1,249	National Research Programme
1G58095	Prediction soil-agro-hydrological models of water retention in soils in the Czech Republic and their integration into to databases of the European Union countries	1 December 2005 30 November 2009	Czech University of Life Sciences in Prague	925	National Research Programme
QH71015	Minimisation of risks of the occurrence of cyanobacteria metabolites in technological processes in fishing sector	1 May 2007 31 December 2011	Mendel University of Agriculture and Forestry in Brno	1,636	Ministry of Agriculture
QH71201	Reliability and safety of water management structures in changing climate conditions	1 May 2007 31 December 2011	Czech Technical University in Prague	1,433	Ministry of Agriculture
QH72085	Differentiation of erosion control measures according to soil erodibility and rain erosivity	1 May 2007 31 December 2011	Czech Technical University in Prague	1,036	Ministry of Agriculture
QH72203	Proposals for support of good agricultural practices and proposals of new indicators for improvement of soil and landscape retention capability	1 May 2007 10 December2010	Research Institute of Agricultural Economics	1,151	Ministry of Agriculture
QH81012	The use of aeration technologies in the reduction of cyanobacteria resting stages and nutrient bioavailability in reservoir sediments	1 January 2008 31 December 2011	Institute of Botany of the Academy of Sciences of the Czech Republic, public research institution	1,537	Ministry of Agriculture
QH81046	Optimisation of the bio-manipulative 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	1,461	Ministry of Agriculture
QH81170	Multidisciplinary evaluation of impacts of special territorial protection for hydrologically important areas	1 January 2008 31 December .2012	Czech University of Life Sciences in Prague	1,368	Ministry of Agriculture
QH81200	Optimisation of water regime in landscape and increasing its retention ability 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	1,710	Ministry of Agriculture
QH81223	Proposals for the increase of safety and reliability of river levees under changed climate conditions	1 January 2008 31 December 2010	Brno University of Technology	826	Ministry of Agriculture
QH81326	New growing technologies in potatoe production aimed at higher efficiency of fertilisation and water conservation	1 January 2008 31 December 2012	Potato Research Institute Havlíčkův Brod	1,206	Ministry of Agriculture
QH81331	Research on adaptation measures for elimination of climate change impacts in regions of the Czech Republic	1 January 2008 31 December 2012	T. G. Masaryk Water Management Research Institute, public research institution	1,140	Ministry of Agriculture
QH82078	Water retention in floodplains and possibilities of its increase	1 January 2008 31 December 2011	Institute of Systems Biology and Ecology of the Academy of Sciences of the Czech Republic, public research institution	2,950	Ministry of Agriculture
QH82083	Potential and limits of the use of river and fishpond sediments in agriculture	1 January 2008 31 December 2011	Research Institute for Soil and Water Reclamation, public research institution	1,213	Ministry of Agriculture
QH82089	Non-production functions 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	570	Ministry of Agriculture
QH82090	Changes of soil properties due to grassing, afforestation or in the long-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	Ministry of Agriculture
QH82095	The impact of land use 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	1,628	Ministry of Agriculture
QH82096	Development of conceptual model for generation of groundwater vulnerability synthetic maps and its comparison to model DRASTIC	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	2,614	Ministry of Agriculture
QH82098	Land use change analysis in recharge zones of agricultural area pollution using remote sensing data	1 January 2008 31 December 2011	Research Institute for Soil and Water Reclamation, public research institution	416	Ministry of Agriculture
QH82106	Recultivation as a tool for landscape water regime functionality regeneration after opencast brown coal mining	1 January 2008 31 December 2012	University of South Bohemia in České Budějovice	850	Ministry of Agriculture
QH82117	Environment friendly and effective pond management with maximum utilisation of current trophic potential and sustainable good water quality and fish production	01.01.2008 31 December 2012	University of South Bohemia in České Budějovice	1,955	Ministry of Agriculture
QH82126	Establishment of landscape, hydrological and productional harmonisation of hedgerows and terraces for diversification of activities in countryside	1 January 2008 31 December 2011	Jan Evangelista Purkyně University in Ústí nad Labem	1,767	Ministry of Agriculture
QH82191	Optimisation of batching and placement of organic matter into soil with aim to limit the surface water runoff during intensive rainfall	1 January 2008 31 December 2012	Research Institute of Agricultural Engieering, public research institution	897	Ministry of Agriculture
QH82281	Innovative control of phosphorus status in agricultural soils from ecological aspects of nature-friendly use of natural resources	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	765	Ministry of Agriculture
QH82283	Study on interaction of water, soil and environment from the point of view of barnyard manure management in sustainable agriculture	1 January 2008 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	1,696	Ministry of Agriculture
Total				**38,470**	

Source: MoA

13.2 Research and development in the competence of the Ministry of the Environment of the Czech Republic

The main research entity in the competence of the Ministry of the Environment, dealing with the issues of water protection, was in the year 2008 the T. G. Masaryk Water Management Research Institute, public research institution. Another research entity dealing with other important research projects or participating in these projects to a large extent was the Czech Hydrological Institute.

The year 2008 was the fourth year of the implementation period of research scheme no. MŽP0002071101 – "Research and Protection of the Hydrosphere – research of relations and processes in the aquatic component of the environment, with particular focus on the impact of anthropogenic pressures and on the sustainable use and protection, including legislative tools". The subsidy is granted by the Czech Republic through the Ministry of the Environment, the beneficiary was the T. G. Masaryk Water Management Research Institute, public research institution. The Ministry of the Environment was in the year 2008 responsible for implementation of scientific and research projects in the field of water management (including related areas) under the programme of the Council for Research and Development. These projects are shown in Table 13.2.1.

In the year 2008 the Ministry of the Environment continued to fund research project no. SP/1c2/121/07 – "Maps of flood risk in the Czech Republic" which is based on elaboration of partial issues to complete the so far used or proposed methods of risk analysis of flood plain areas and the proposal for effective fulfilment of the obligations of the Czech Republic resulting from Directive 2007/60 EC on flood risk evaluation and management. The method of expressing flood threat based on the flood risk matrix was applied on the stretches of the Rivers Svratka, Svitava, Jihlava and Dyje/Thaya. Completed risk matrix methods were tested in the pilot basins of the River Lužnice and the River Nežárka.

Project no. SP/1c4/16/07 – "Research and implementation of new flood and runoff forecasting tools in the framework of ensuring flood forecasting and warning service in the Czech Republic", launched in the year 2007, still continued and primarily dealt with the studies of the influence of inputs using probabilistic weather forecast on hydrological modelling by establishing a methodology for long-term hydrological predictions and evaluation of their usability potential in water management practice.

Project no. SP/2e7/229/07 – "Anthropogenic pressures on the status of soils, water resources and water ecosystems in the Czech part of the international basin of the River Elbe". Work on this project launched in the year 2007, continued also the year 2008. The general objective of this project is to identify the influences caused primarily by human activity on the quality of water resources, soils and water ecosystems, including the description of the changes in habitats and their subsequent impact on aquatic life. With regard to the scope of the issues dealt with this project is divided into nine separate special clusters. Other research entities participating in this project are the Research Institute of Fish Culture and Hydrobiology of the University of South Bohemia (USB RIFCH), the Czech Geological Survey and the Czech Technical University in Prague, the Faculty of Civil Engineering. This project is scheduled until the year 2011.

Project no. SP/2e7/73/08 – "Identification of anthropogenic pressures on the quality status of water and water ecosystems in the Morava and the Dyje River basins districts", was launched in the year 2008 and is scheduled until the year 2010. The general objective of this project is to identify the anthropogenic pressures on soils, the status of the quality of water resources and on the change in the habitat of water ecosystems with the possibility to predict or prove specific impacts on biological components of the water ecosystem in question. This research project is carried out by the T. G. Masaryk Water Management Research Institute, public research institution in Brno and the subsidy is provided by the Ministry of the Environment of the Czech Republic. With regard to the wide scope of the scientific tasks this project is divided into eight objectives.

Project no. SP2e7/67/08 – "Identification of anthropogenic pressures in the Czech part of the international Odra River basin". The objective of this project scheduled for the years 2008–2010 is to identify anthropogenic pressures on the status of soils, water quality and the change in the habit of water ecosystems on the basis of the evaluation of the results of both the basic and applied research. The main research entity of this project is the T. G. Masaryk Water Management Research Institute, public research institution in Ostrava. With regard to the interdisciplinary nature of this research project, four more scientific and research institutions in the field of environmental sciences are involved. Identification of main anthropogenic pressures is the point of departure for defining priorities in the proposed measures to reduce the main adverse impacts on the quality of soils, waters and natural sites (habitats) in the Czech part of the international Odra River basin.

Project no. SP/1b7/124/08 – "Negative anthropogenic impacts on the Bílina River basin (Czech Republic)" was launched in the year 2008. The general objective of this project is to contribute to the knowledge, protection and improvement of the environment of the River Bílina. This project is aimed at the evaluation of contamination of ecosystem components in the Bílina River basin by foreign substances and their interaction. The contribution of this project primarily consists of particular specification of the main resources of risks in the area of interest, the definition of their influence on the environment and the assessment of the current tools for protection of the ecosystem of the River Bílina together with proposals for their modification.

Project no. SP/1a6/125/08 – "Temporal and spatial variability of hydrological drought in climate change conditions on the territory of the Czech Republic" is a project scheduled until the year 2010. In the year 2008 the work was focused on the identification of drought types, globally as well as locally used drought indicators and analysis of historical data. This project will continue in the year 2009 with analysis of hydrological data, specification of indicators such as scarcity volumes or minimum residual flows, analysis of the causes of hydrological drought and assessment of the possibility to indicate its onset.

Project no. SP/2e7/50 – "Assessment of the indicative power and ecological characteristics of benthic macro-invertebrates for the implementation of WFD-EC in the Czech Republic", deals with the identification of valence characteristics of taxons in the conditions of watercourses minimally affected by anthropogenic pressures and the shift of these characteristics in contaminated environment, including specification of their indication power which is a prerequisite for evaluation of ecological status of waters. In the year 2008 a pilot study was carried out to determine a set of methods suitable for analysis of valance characteristics of individual biological components.

Project no. SP/2e7/58 – "Identification of reliable parameters for bathing water profiles with respect to the environment", focuses on dealing with the issues of implementing one of the parts of Directive 2006/7/EC on bathing water quality control and is aimed at introducing the flow of data and information about bathing waters and at its evaluation. In the year 2008 field observations were carried out in selected bathing waters sites and a publication called General method for establishing bathing water profiles.

The River Metuje, Běloves

Table 13.2.1
Research and development projects in the field of water management financed from the budget chapter of the Ministry of the Environment in the year 2008

Project no.	Name of the project	From – to	Coordinator	Funds (thousands of CZK)
SP/1c2/121/07	Maps of flood risk in the Czech Republic	2007–2011	T. G. Masaryk Water Management Research Institute, public research institution	15,184.4
SP/1c4/16/07	Research and implementation of new flood and runoff forecasting tools in the framework of ensuring flood forecasting and warning service in the Czech Republic	2007–2011	Czech Hydrometeorological Institute	10,844.10
SP/2e7/229/07	Anthropogenic pressures on the status of soils, water resources and water ecosystems in the Czech part of the international basin of the River Elbe	2007–2011	T. G. Masaryk Water Management Research Institute, public research institution	78,015.75
VZ-MZP0002071101	Research and Protection of the Hydrosphere – research of relations and processes in the aquatic component of the environment, with particular focus on the impact of anthropogenic pressures and on the sustainable use and protection, including legislative tools	2005–2011	T. G. Masaryk Water Management Research Institute, public research institution	434,779.3
SP/2e7/67/08	Identification of anthropogenic pressures in the Czech part of the international Odra River basin	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	18,958
SP/2e7/73/08	Identification of anthropogenic pressures on the quality status of water and water ecosystems in the Morava and the Dyje River basins districts	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	32,691
SP/1b7/124/08	Negative anthropogenic impacts on the Bílina River basin (Czech Republic)	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	8,158
SP/1a6/125/08	Temporal and spatial variability of hydrological drought in climate change conditions on the territory of the Czech Republic	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	11,046
SP/2e7/50/08	Assessment of the indicative power and ecological characteristics of benthic macro-invertebrates for the implementation of WFD-EC in the Czech Republic	2008 –2009	Masaryk University in Brno	2,735
SP/2e7/58/08	Identification of reliable parameters for bathing water profiles with respect to the environment	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	7,441
Total				**619,852.55**

Source: Ministry of the Environment

List of acronyms

AOX	absorbable organically bounded halogens
BOD_5	biochemical five-day oxygen demand
CEB	Council of Europe Development Bank
COD_{Cr}	chemical oxygen demand by dichromate method
DDD	1,1,dichloro-2,2-bis(p-chlorophenyl) ethane
DDE	2,2-bis(p-chlorophenyl)1,1-dichloroethylen
DDT	1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane
DEHP	di(2-ethylhexyl) phthalate
DIS	dissolved inorganic salts
DN	denitrification
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
EC	European Community
ECE	Economic Commission for Europe
EDTA	ethylenediaminetetraaecetic acid
EEC	European Economic Community
EIB	European Investment Bank
EQS	environment quality standards
EROD	ethoxyresorufin-O-deethylase
EU	European Union
FAD	Flood Activity Degree
ISPA	Instruments for Structural Policies for Pre-Accession
MCPA	2-methyl-4chlorophenoxyacetic acid
MCPP	butylglycoester (herbicide)
MoA	Ministry of Agriculture of the Czech Republic
N	nitrification
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (branch classification of economic activities)
$N_{\text{-inorganic}}$	total inorganic nitrogen expressed as a sum of ammonia nitrogen, nitrite and nitrate nitogen ($N\text{-}NH_4+ + N\text{-}NO_2- + N\text{-}NO_3-$)
OECD	Organisation for Economic Co-operation and Development
Q_A	long-term annual average flow
Q_M	long-term monthly average flow
OCP	organochlorinated pesticides
OPE	Operational Programme Environment
PAH	polycyclic aromatic hydrocarbons
PBDE	polybromated diphenylethers
PCB	polychlorinated biphenyls
PE	population equivalent
R&D	research and development
SCEA	Sector Classification of Economic Activities
SEA	Strategic Environmental Assessment
SPA	Special Protected Areas
SPMD	semi-permeable membrane devices
SS	solid substances
TOC	total organic carbon
VTG	vitellogenin
WFD	Water Framework Directive
WHO	World Health Organisation
WWF	World Wildlife Fund
ZABAGED	Basic Database of Geographic Data

The River Lužnice, Dobronice u Bechyně

Notes:

MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC