



MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

Report on Water Management in the Czech Republic in 2009

As of 31 December 2009

Text

Department of State Administration of Water Management and River Basins
Ministry of Agriculture of the Czech Republic

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

Editors-in-Chief

Daniel Pokorný
Eva Rolečková
Jana Janková
Jan Rauscher

Production and Print

Tisk Horák, a.s.

Not for sale

ISBN 978-80-7084-926-2

Each chapter is introduced with a picture from the children's competition for pupils at primary school level, organized as part of the World Water Day 2009 celebration.

Published by Ministry of Agriculture of the Czech Republic
Těšnov 17, 117 05 Praha 1
internet: www.magri.cz, e-mail: info@mze.cz

Prague 2010

As of 31 December 2009



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,

You hold in hands the Report on Water Management of the Czech Republic in 2009, its 13th edition, briefly called the Blue Report.

It provides annually a comprehensive 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 is produced in cooperation of both these sectors. It contains information about the status of waters in the Czech Republic, water management activities and processes which were taking place in water management in 2009. The report also takes notice of trends indicated by last year figures.

The Ministry of Agriculture of the Czech Republic as the central water authority executes its authority in water management through watercourse administrators, the five River Boards, state enterprises, the Forests of the Czech Republic, state enterprise and the Agricultural Water Management Administration (organizational unit of the state). The text of the Blue Report brings a detailed balance of activities carried out by these institutions in 2009.

In 2009, the territory of the Czech Republic was again, similarly to the recent years, afflicted by floods, this time caused mainly by torrential rains, for which the expression „flash floods“ has caught on. The main flood event of the year became torrential floods at the turn of June and July, having particularly afflicted four areas – South Bohemia, the Nový Jičín area, the Jeseník area and the Děčín area. The responsible authorities and institutions, therefore, attended to remedying of flood damages arisen this year and also continued to run programmes to remedy the impacts of floods from the previous years. A significant part of their activities was represented also by work on programmes aiming to establish and improve flood control measures.

In 2009, the first phase of the establishment of the WATER INFORMATION SYSTEM of the Czech Republic was terminated. This information system plays a positive role as being a source of information on water stages, precipitation and quality of waters, which both the specialists community and the general public increasingly become aware of. The system is mostly used during flood situations, nevertheless, the website www.voda.gov.cz is more and more frequently visited also in less extreme situations, such as choice of tourist destinations, etc. At the end of June 2009 there started the preparation for phase 2 of the establishment of this system which is scheduled to be completed in 2015.

The management of natural water assets requires solicitude, efforts and also responsibility for expended funds. I trust that the Blue Report for 2009 will provide all who are interested in water management in the Czech Republic with sufficient information about this area and that the information will be of expected quality.



A handwritten signature in blue ink, appearing to be 'IF', written over a faint, larger version of the same signature.

Ivan Fuksa

Minister of Agriculture of the Czech Republic

Dear Readers,

We present a publication called the Report on Water Management of the Czech Republic in 2009 known rather to the general public as the Blue Report. This report provides a comprehensive 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 jointly prepared 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 control and national agricultural policy with minimum adverse impact on the individual components of the environment or implement joint geo-environmental measures.

The year 2009 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 2009, river basin district management plans were completed. 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 for the implementation of individual measures including the strategy of their funding in the first planning period, i.e. in the years 2010–2015.

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 funds to support the 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 resources 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 at reducing flood risk.

In 2009, two flood situations with reaching flood activity degree 3 were recorded. The issue of floods continues to be highly relevant and in the recent years the attention of the public has been focused in particular on flood control and remedying of flood damages. The Blue Report provides detailed information about projects and financial resources in this field. And flood control measures are exactly those that are supported under the Priority Axis 1 of the Operational Programme Environment where the sum of more than EUR 100 million has been allocated for flood risk reduction in the years 2007–2013. The ever more discussed category of flood control measures includes the so-called nature-friendly flood control measures, for which it is possible to use also financial support from the Priority Axis 6 of the Operational Programme Environment called Improving the State of Nature and Landscape and Optimization 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 2009 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 efforts to ensure them.



Pavel Drobil
Minister of the Environment of the Czech Republic

Contents

1.	Hydrological balance	7
1.1	Temperature and precipitation	7
1.2	Runoff	9
1.3	Groundwater regime	10
2.	Flood situations in 2009	13
2.1	Flood courses	13
2.2	Remedying flood damages	13
3.	Quality of surface waters and groundwaters	15
3.1	Surface water quality	15
3.2	Groundwater quality	22
4.	Water use	25
4.1	Surface water abstractions	25
4.2	Groundwater abstractions	27
4.3	Waste water discharges	28
5.	Sources of pollution	31
5.1	Point sources of pollution	31
5.2	Area pollution	33
5.3	Accidental pollution	33
6.	Watercourse administration	35
6.1	Professional administration of watercourses	35
6.2	River Boards, state enterprises	37
6.3	Agricultural Water Management Administration	44
6.4	Forests of the Czech Republic, s. e.	47
6.5	Waterways	51
7.	Public water supply and sewerage systems	53
7.1	Drinking water supply	53
7.2	Discharge and treatment of municipal waste waters	55
7.3	Development of water and sewerage charges	57
8.	Fisheries and fishpond management	59
8.1	Fisheries and fishpond management in the year 2009	59
8.2	Changes in the status of the fishpond system	61
9.	State financial support for water management	63
9.1	Financial support provided by the Ministry of Agriculture of the Czech Republic	63
9.2	Financial support provided by the Ministry of the Environment of the Czech Republic	70
9.3	The State Environmental Fund	71
9.4	Financial support from international cooperation and the EU	74

10.	Legislative measures¹	77
10.1	Water Act and implementing regulations	77
10.2	Act on Public Water Supply Systems and Sewerage Systems and implementing regulation	77
10.3	Audits of the execution of state administration in the field of water management and water protection	77
11.	Priority tasks, programmes and key documents in water management	81
11.1	Planning in theof waters	81
11.2	Development plans for water supply and sewerage systems	82
11.3	Programmes and measures to reduce surface water polluion	83
11.4	WATER INFORMATION SYSTEM of the Czech Republic	87
11.5	Czech Republic's reporting to the EU	89
12.	International cooperation in the field of water protection	91
12.1	Coopertaion within UN ECE	91
12.2	International cooperation on transboundary waters	91
12.3	International cooperation in the field of water protection in the integrated Elbe River, Danube River and Oder River Basins	94
13.	Research and development in water management	97
13.1	Research and development in the competence of the Ministry of Agriculture	97
13.2	Research and development in the competence of the Ministry of the Environment	99
List of acronyms in text		101



Veronika Surkovová

9 years, Jablonec nad Nisou – Mšeno basic school, Liberecký kraj region

Hydrological balance



I.I

Temperature and precipitation

In terms of temperature, the year 2009 was above the average. The mean temperature of 8.4 °C exceeded the value of long-term average by 0.9 °C. The year 2009 was by 0.5 °C colder than the year 2008 and by 0.7 °C colder than the year 2007. Since 2000, it was the 5th warmest year on the territory of the Czech Republic.

Three calendar months of the year 2009 were colder than their respective long-term average – January was colder by 1.2 °C, June by 0.6 °C and October by 0.8 °C. On the contrary, significantly warmer than the long-term average was April, which with the mean temperature of 12.0 °C was by 4.7 °C warmer than the average. Warmer than the average were also March (the variation from the average +0.7 °C), May (+1.0 °C), July (+1.2 °C), August (+2.0 °C), September (1.9 °C) and November (+2.8 °C). The remaining months showed the temperatures comparable to the average. Absolutely the coldest month was January with the temperature of -4.0 °C; the mean temperature below the freezing point was also recorded in February (-1.0 °C) and December (-1.0 °C). The warmest month was August with the mean temperature of 18.4 °C; followed by July with the mean temperature having reached the value of 18.1 °C.

In terms of precipitation, the year 2009 was slightly above the average. The average precipitation amount of 747 mm was by 9% higher than the long-term precipitation average due to rainfall-rich period from May to July and also due to the precipitation values reached in February and March.

The highest precipitation amounts were recorded in June (133 mm) and in July (112 mm); on the contrary, the lowest precipitation amounts were recorded in September (22 mm), in April (23 mm) and in January (25 mm). Looking at the relative values, the highest precipitation amount was recorded in March, with 191% of the long-



The Fishpassing facilities on the Blanice River

term average, and with most of precipitation having occurred in the eastern part of the territory of the Czech Republic. Significantly above the average were also October with a precipitation amount of 164% of the average, February with 161% of the average, July with 142% of the average and June with 135% of the average. September, in terms of rainfall, was subnormal, with 43% of the average – mainly due to very low rainfall in the east of the Czech Republic; followed by April with 50% of the average and January with 58% of the average.

At the beginning of 2009 frontal systems were rather frequently passing over the country, bringing precipitation in maximum daily amounts of mostly between 10 and 40 mm. Convective precipitation started to occur as early as the beginning of April, having reached peak frequency and intensity in the last decade of June and the first decade of July, when a number of localities on the territory of the Czech Republic were afflicted by torrential rains. From 19 June on, intensive continuous rainfalls started to occur first – especially on windward sides of the Šumava, the Novohradské hory and the

Table I.I.1

Renewable water sources in the years 2000–2009 in millions of m³

Item	Annual values									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Precipitation	54,733	63,960	71,298	40,695	53,629	57,730	55,837	59,544	48,818	58,676
Evapotranspiration	40,353	48,537	48,533	29,319	41,473	42,872	37,617	46,194	37,394	44,090
Annual inflow ¹⁾	573	761	1,341	524	640	781	1,070	637	462	714
Annual runoff ²⁾	14,953	16,184	24,106	11,900	12,796	15,639	19,290	13,987	11,886	15,300
Surface water sources ³⁾	4,789	6,600	6,506	3,758	4,270	5,489	5,317	4,673	4,503	5,112
Usable groundwater sources ⁴⁾	1,204	1,440	1,625	1,195	1,224	1,305	1,345	1,244	1,209	1,266

Source: Czech Hydrometeorological Institute

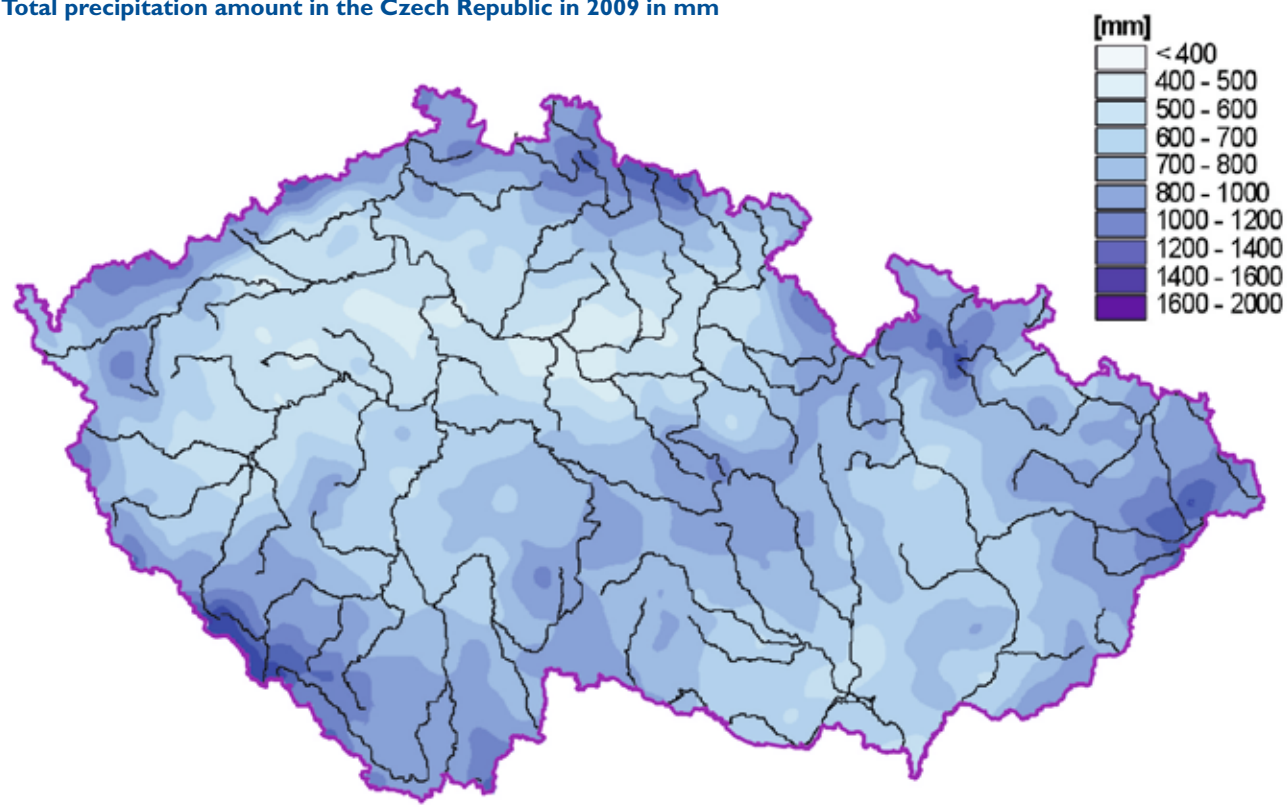
Note: ¹⁾ Annual inflow to the territory of the Czech Republic from neighbouring states

²⁾ Annual runoff from the territory of the Czech Republic

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

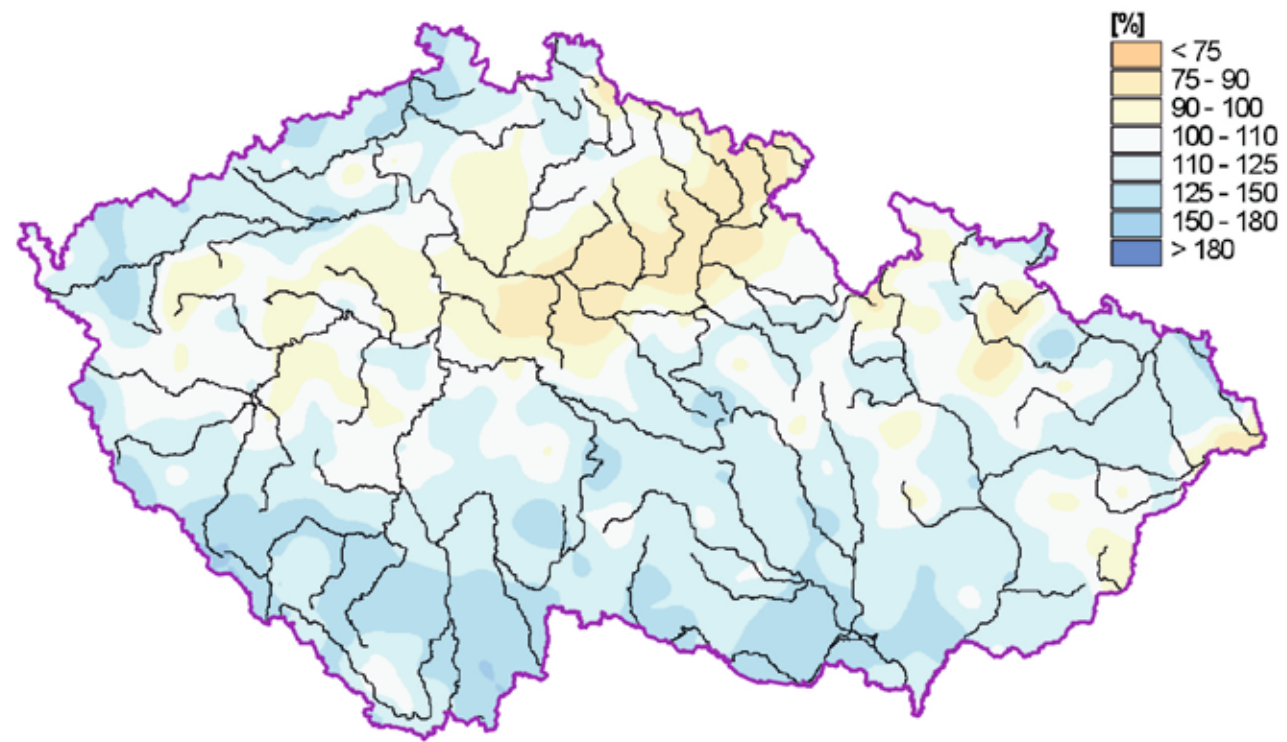
⁴⁾ A qualified estimate, specification in more detail is published by Czech Hydrometeorological Institute not sooner than the second half of 2010

Figure I.1.1
Total precipitation amount in the Czech Republic in 2009 in mm



Source: Czech Hydrometeorological Institute

Figure I.1.1
Total precipitation amount in the Czech Republic in 2009 in mm



Source: Czech Hydrometeorological Institute

Jeseníky Mountains (on 22 June, in the Novohradské hory in Stará Huť, the rainfall amount of as much as 96.7 mm was recorded). Then the character of rainfall changed to convective precipitation – most significant was the situation which occurred on 24 June in Nový Jičín area, where individual storm centres were passing along the convergence line from the northeast to the southwest, having repeatedly afflicted the same territory for several hours. This resulted in extreme precipitation amounts (123.8 mm in Bělátn and 120.2 mm in Hodslavice). Torrential rains then were occurring daily until 4 July – at places sporadically until 18 July, later also during August. In October, there were incidences of intense precipitation, particularly at the end of the first half of October, in the form of intense snowfall (on 14 October, at Lysá hora, a snowfall amount of 99.8 mm was recorded). Till the end of the year, precipitation amounts were reaching the daily maximum again of around 40 mm.

1.2

Runoff

In terms of runoff, the year 2009 reached values between the average and below the average, with a significant flood situation having occurred at the turn of June and July. Average annual flows mainly ranged from 70 to 110% of long-term annual averages. This level was only exceeded by average annual flows on the lower stretches of the River Lužnice and the River Otava.

As regards flow rates, the first two months of 2009 due to relatively cold weather were steady, with flows significantly below long-term averages for the respective month. At the beginning of January, river affluxes occurred frequently due to incidences of ice phenomena. Later, temporary water level increases occurred, due to snow thawing and rainfalls – in particular, at the end of the second decade in January, at the turn of the first and the second decade in February, and especially at the turn of February and March, when the most significant spring runoff episode occurred (mainly on the middle stretch of the River Labe tributaries, on the River Sázava, River Nežárka, River Lužnice, on lower River Morava, on the River Jihlava and the River Dyje, and in upper Berounka catchment area, with flows of max. Q_5). Mean flows in the first two months ranged mainly between 30 and 90% Q_M . The flows at the end of the first quarter of the year were above the average with maximums (200 to 300% Q_M) reached in Moravia. Below the average were only flows in smaller watercourses in higher laying catchment areas. In contrast, the highest flows were recorded in watercourses in middle and lower laying areas, that were affected by snow thawing.

As regards runoff, the beginning of the second quarter of the year was mostly around the average, with higher flow rates (up to 200% Q_M) in the Malše River; the Otava River; the Olše River and the Ostravice River catchment areas. Slight declines occurred only on mountain watercourses – in catchment areas with higher snow cover higher daily fluctuations were observed. At the end of the second decade in April, after precipitation, increases in flow rates were recorded on the Šumava Mountains watercourses. This was followed by fluctuation in flow rates, largely due to the incidence of storms, flow rates mostly below the average were recorded during May and the first half of June. At the end of June, torrential floods occurred in a number of locations in the Czech Republic. Flow rates increased mainly in South Bohemia and the Jeseníky Mountains, but also elsewhere – flow rates markedly above the average were recorded particularly in the River Otava (405% Q_M), the River Lužnice (373% Q_M), the River Jihlava (348% Q_M), the River Dyje (315% Q_M) and the River Svatka (255% Q_M).

In the third quarter of the year, flow rates mostly declined, with



The Svatka River and the Jihlava River inflow

fluctuation due to the incidence of storms. Mean flow rates in July in comparison with the long-term averages were above the average (up to 400% Q_M). Later, flow rates were declining – in August they mostly reached the values of up to 130% Q_M , in maximums then up to 180% Q_M (the River Blanice, the River Svatka, the River Oslava). In September, mean flow rates declined to the values of between 35 and 80% Q_M .

In the last quarter of the year, due to thawing of early snow cover (in combination with precipitation in the second half of October) increased flow rates were recorded, mainly in the River Orlice, the River Jizera, the River Olše, the River Bečva and the lower River Morava catchment areas – later also on the upper Elbe, the River Lužická Nisa and the River Smědá. Then, until the end of the year, the overall trends were steady (only with sporadic fluctuation due to the incidence of precipitation). Initially, mean flow rates were around the average to slightly above the average, ranging from 80 to 140% Q_M ; having gradually declined in November to the average to slightly below the average values of between 50 and 120% Q_M . The exceptions were the River Oder and the River Bečva catchment areas with 150 to 250% Q_M and watercourses in the Šumava Mountains and the Giant Mountains areas (due to snow cover thawing). During December, mean flow rates again slightly declined mostly to the values of between 50 and 100% Q_M .

1.3

Groundwater regime

From the long-term viewpoint, groundwater regime in 2009 showed average to slightly below average values. Satisfactory and fast recharges of shallow aquifers occurred, while conditions for deeper horizons represented by spring outflows were not sufficient. Unquestionably the driest area was north-west Bohemia, on the contrary, the highest groundwater values were recorded in north-east Moravia. The situation in the River Berounka catchment area has significantly improved, with year-to-year rises of groundwater levels and yields for all observed reporting network wells – 75% of wells and 25% of springs exceeded the long-term average (in 2008, none of these wells and springs reached the average).

At the beginning of 2009 groundwater levels in shallow wells in most parts of the Czech Republic were more or less below long-term monthly mean values. While in Moravia and Silesia mean long-term characteristics were reached or exceeded by some 30% of the monitored wells, in Bohemia only by 5%. This was corresponded to also by the range of classification of the individual catchment areas in the long-term monthly cumulative frequency curve from 58% to 79%. Also groundwater yields of the monitored springs were largely below the average of the long-term monthly cumulative frequency curve classification, ranging from 52% to 89%.

In the first half of January, particularly in Bohemia, a decline of groundwater levels in wells as well as of spring yields was observed. At the end of January the conditions for groundwater recharge improved; first, water levels in shallow aquifers began to rise in North Moravia and North Bohemia. Above-average precipitation during February and March caused rising of groundwater levels in shallow aquifers in the whole of the country. Annual maximum values were reached at the end of March – in the long-term monthly cumulative frequency curve classification ranging from 11% (the River Oder catchment area) to 57% (catchment areas of the lower Elbe tributaries). The spring yields remained at low levels for the whole of February, when, except for North Moravia, they reached annual minimum values (between 55% and 92% of the long-term monthly cumulative frequency curve); on the contrary, after rises in March, annual maximum values were reached in the northern part of Bohemia (the upper Elbe – 47% of the long-term monthly cumulative frequency curve). In Moravia and South Bohemia, the spring yields reached their maximum values as late as the end of April (from 40 to 54% of the long-term monthly cumulative frequency curve). These were not significant maximum values (they are comparable with the values reached in spring 2008). Long-term monthly average values were reached or exceeded by 50% of shallow wells and 40% of springs of the monitoring network. The highest groundwater levels were reached in Moravia, where the above-average groundwater level stages were reached by the majority of wells and springs. The lowest groundwater levels and spring yields were reached in northwest Bohemia with 30% of above-average structures.

From April there began a slow and steady decline of groundwater levels and yields in most of the monitored structures. The monitored





values were falling or were at standstill at the beginning of July. A significant precipitation period accompanied by flood events in the last decade of June began to be fully observable in groundwaters only in the second week of July. First, groundwater levels in shallow aquifers began to rise, more markedly in the south of the country and in North Moravia (the River Vltava, the River Dyje, the River Oder catchment areas). In these areas, long-term mean values were exceeded by more than 90% of shallow wells. In the Elbe catchment area, on the contrary, positive changes were insignificant – long-term mean values of groundwater levels were reached or exceeded by less than 50% of the monitored wells. At the end of July, in the south of the country, also spring yields began to rise more markedly (similarly to wells), while in the Elbe catchment area they were rather at standstill. This was also corresponded to by the long-term monthly cumulative frequency curve classification – for wells ranging from 15% (the River Dyje, the River Vltava, the River Oder catchment areas) to 60% (the upper Elbe), for springs ranging from 32% to 73%.

Local and episodic rainfalls during the next period showed only locally in the short-term, having not contributed to an overall improvement of groundwater recharge. On the whole territory of the country there began a period of slight decline, lasting till the end of September, possibly the beginning of October. For shallow aquifer water levels, the process of emptying was faster, while for spring yields very slow. For shallow aquifers, these autumn low levels represented the annual minimum values, while the October yields were not lower than the February minimums. From the viewpoint of classification in the long-term monthly cumulative exceedance

curve, especially south parts of the country were comparable with the long-term characteristics of groundwater levels. The lowest groundwater levels were in the north and the northwest of Bohemia in the entire River Elbe catchment area (77% of the long-term monthly cumulative frequency curve). The lowest yields were recorded in Central and West Bohemia in the lower River Berounka (78% of the long-term monthly cumulative frequency curve) and the River Ohře catchment areas.

Above-average precipitation in the second decade of October (also with regard to the ending vegetation period) again caused groundwater recharge to begin in the whole of the country. After that, groundwater levels and yields more or less rose until the end of the year. Groundwater deficit was gradually compensated in the north of the country in the River Elbe catchment area, where groundwater levels rose more markedly. On the contrary, in south regions of Bohemia and Moravia, groundwater recharge was lower, with the water levels rising more slowly.

At the end of the year, shallow aquifer water levels were generally comparable with long-term mean values, in the long-term monthly cumulative frequency curve ranging from 34% (the River Dyje catchment area) to 65% (catchment area of the lower River Elbe right-bank tributaries). On the contrary, the spring yields were largely below the average (ranging from 58 to 68% of the long-term monthly cumulative frequency curve). Only in the northeast of the country in the River Oder catchment area, the spring yields were slightly above the long-term monthly characteristics (45% of the long-term monthly cumulative frequency curve).



Jan Bartoníček

12 | 9 years, Nábřeží Závodu míru basic school, Pardubice, Pardubický kraj region

Flood situations in 2009

2.

2.1

Flood courses

In 2009, two flood situations were recorded, having reached Flood Activity Degree (FAD) II and III, respectively. The main flood event of the year became torrential floods at the turn of June and July, having predominantly afflicted four areas – South Bohemia, the Nový Jičín area, the Jeseník area and the Děčín area.

The main spring runoff episode began on 27 February 2009, when increased water levels afflicted catchment areas of the Dyje River; the upper Berounka River (the Radbuza and Úhlava Rivers) and catchment areas of certain Elbe River tributaries (the Cidlina River; the Mrlina River; the Výrovka River). Increased water levels reached mostly FAD I, only on the Moravská Dyje River in Janov the increased water level reached FAD II (at a flow Q_2).

The described situation continued in March, when after rainfall from 5 and 6 March increased water levels occurred mainly in the Českomoravská Upland, having reached FAD II (for example, the Chrudimka River; the Jihlava River; the Lužnice River), sporadically also FAD III (the upper Sázava River; the Oslava River; the Svratka River; the Dyje River) and flows corresponding to the level of Q_2 to Q_5 .

Flood situation in June began by rainfalls occurring from 19 June in the Jeseníky Mountains, the Šumava Mountains, the Novohradské hory Mountains and partly also in the Krkonoše Mountains, with gradually rising water levels that on 22 and 23 June reached FAD III on the Černá River (at a flow of Q_{I1}), the Stěnáva River and on the uppermost stretch of the Elbe River. Significant for the next development was also the factor of saturation of catchment areas. In the evening on 24 June, a series of storms passing over the Moravská brána first afflicted the Olšava River catchment area, later the territory between the Oderské vrchy and the Beskydy Mountains. A successive series of storms caused to form a chain effect, so that extreme rainfalls (approx. 120 mm/3h) were locally recorded. This situation resulted in a torrential flood on the Jičínka River; Luha River and other minor watercourses, with a significantly exceeded level of FAD III as well as of the flow with a return period of 100 years. The flood also occurred in the Bečva River catchment area, where the Rožnovská Bečva River reached FAD III and the Bečva River in Dluhonice reached FAD II and the flow with a return period of 2 to 5 years. On 26 June, rainfalls of stormy character with daily fluctuations further afflicted the Jeseníky Mountains area, where water levels rose rapidly in saturated catchment areas, particularly on the Bělá River; the Vidnávká River; the upper Opava River and also on other minor watercourses in the area concerned. FAD III was reached there and the flows corresponded to flows with a return period of between 10 and 100 years. On 27 June, storms afflicted again South Bohemia and rainfalls in a highly saturated catchment area caused to raise water levels of all watercourses in the Šumava Mountains area, this time including the Úhlava River (FAD III, flow with a return period of 10 years). Nevertheless, the highest impacts were experienced by the Blanice River and the Volyňka River catchment areas, where FAD III was markedly exceeded and, furthermore, on both the Blanice and the Volyňka Rivers themselves even flows with a return period of 100 years were reached. The individual rainfall episodes continued



Torrential flood in the Bělá River Basin in the Jeseník area

and despite their local character they led to an upward trend and reaching FAD I also on the lower stretches of the Vltava River; the Elbe River; the Dyje River and the Morava River.

On 1 July, the Děčín area was first afflicted by torrential rains (the Kamenice River exceeded the level of FAD III and the flow with a return period of 100 years), on 2 July, the upper Oslava River was afflicted (above the hydraulic structure Mostišť FAD III and the flow with a return period of 100 years were reached), similarly to the Husí stream in Fulnek area. The series of torrential floods culminated in the situation on 4 July, when the Děčín area was repeatedly afflicted, with the peak discharge on the Kamenice River and the Bystrá River having exceeded the flow with a return period of 100 years. A continuous rhythm of torrential rains then gradually declined, nevertheless, particularly in the Dyje River catchment area, water levels still continued to be recorded to rise and exceed FAD II and FAD III levels.

2.2

Remedying flood damages

In 2009, the implementation of sub-programme 229 I 14 “Remedying of the impacts of floods in the year 200” and sub-programme 229 I 15 “Remedying of the impacts of floods in the year 2007” continued. A new sub-programme 229 I 16 “Remedying of the impacts of floods in the year 2009” was established, to be directed and coordinated by the Ministry of Agriculture. All these sub-programmes form part of the programme 229 I 10 “Remedying flood damage to state-owned water management property”.

The objective of sub-programme 229 I 16 is to renew watercourse channels and hydraulic structures damaged by extreme stress during floods in the year 2009, build efficient stabilizing structures, implement changes in the respective structures ensuring the permanent functionality of watercourse channels in places of observed failures, and drain water from the adjacent area without causing damage. Sub-programme 229 I 16 is assumed to be implemented between the years 2009 and 2011. Responsible for the implementation will be watercourse administrators, i. e. the River Boards, s. e., the Forests of the Czech Republic, s. e. and the Agricultural Water Management Authority.

The financial performance of all these sub-programmes and programme 229 I 10 is included in Chapter 9.1 of this report.



Veronika Studená

14 | 8 years, A, Jiráskova basic school, Lanškroun, Pardubický 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 periods

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 2008–2009 period, under CSN 75 7221 standard Water Quality – Classification of Surface Water Quality.

Every year the Report on Water Management in the Czech Republic compares the current status of water quality to the status of water quality in the 1991–1992 two-year periods. 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.

To produce the above presented map of quality of water in watercourses of the Czech Republic for the period 2008–2009, the Czech Hydrometeorological Institute received from the river basin administrators the data from 307 profiles of the former national water quality monitoring network. The respective monitored hydrometric profiles are classified in the following water contamination classes under the CSN 75 7221 standard:

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

Water quality in water supply reservoirs and other reservoirs

Slightly above-average temperature values were reached in the vegetation period in the year 2009. The quality of water in reservoirs was affected by



The Divoká Orlice River – Pastviny Reservoir

two spring aspects – typical increased flow rates and early occurrence of higher water temperatures. 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 waters).

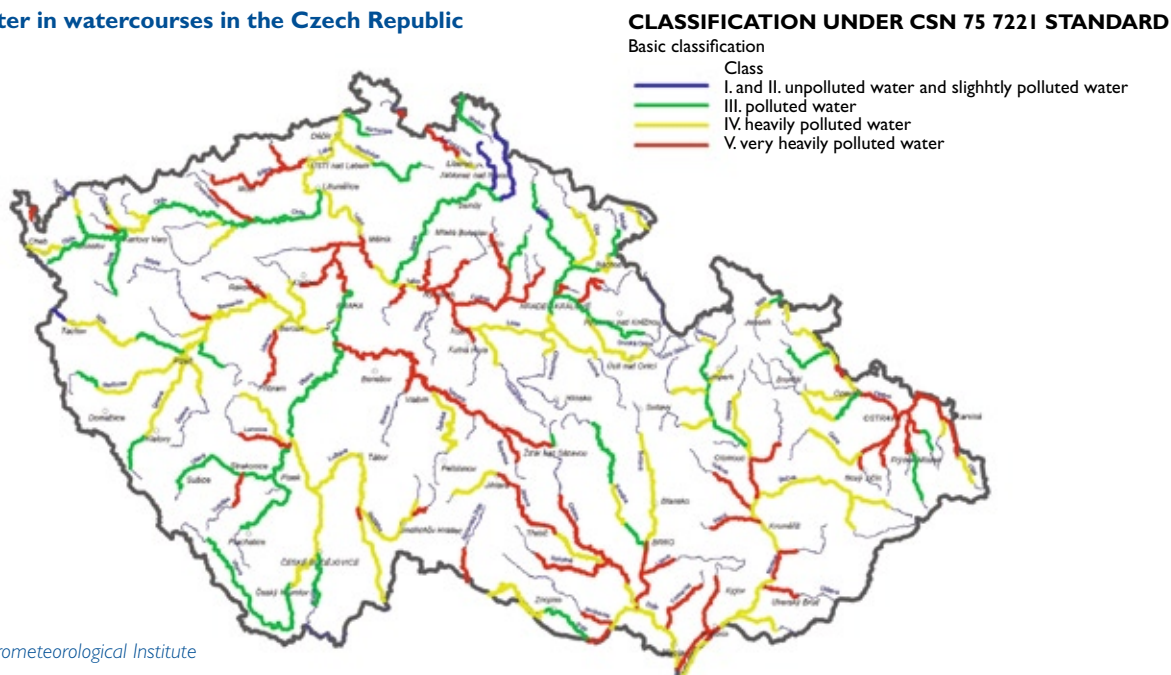
During the year, problems with water quality occurred in water supply reservoirs and reservoirs used for drinking water supply purposes: Křižanovice, Vrchlice, Seč, Lučina, Římov, Karhov, Pílská, Láz, Obecnice, Klíčava, Vír, Fryšták, Mostišť, Znojmo, Boskovice, Ludkovice, and in reservoirs used for purposes other than drinking water supply: Les Království, Pařížov, Rozkoš, Skalka, České Údolí, Lipno, Orlík, Slapy, Brněnská přehrada, Horní Bečva, Bystřička, Novomlýnské nádrže reservoirs, Luhačovice, Vranov, Křetinka, Moravská Třebová, Jevišovice, Oleksovice, Plumlov, Žermanice, Těrlícko and Olešná. In the overall assessment it can be stated that the impaired water quality in the year 2009 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 (particularly in the period of snow thawing) with a low alkalinity and low pH, which has already been used for several years, had a positive effect on the quality of water in the Souš reservoir. Water in some of the reservoirs not used for drinking water supply (such as České Údolí, Seč, Rozkoš, Skalka, Brněnská přehrada, Žermanice, Baška, Těrlícko and Olešná) was in summer months categorized as less suitable or unsuitable for recreation.

Minor watercourses and small reservoirs monitored by the Agricultural Water Management Authority in 2009

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

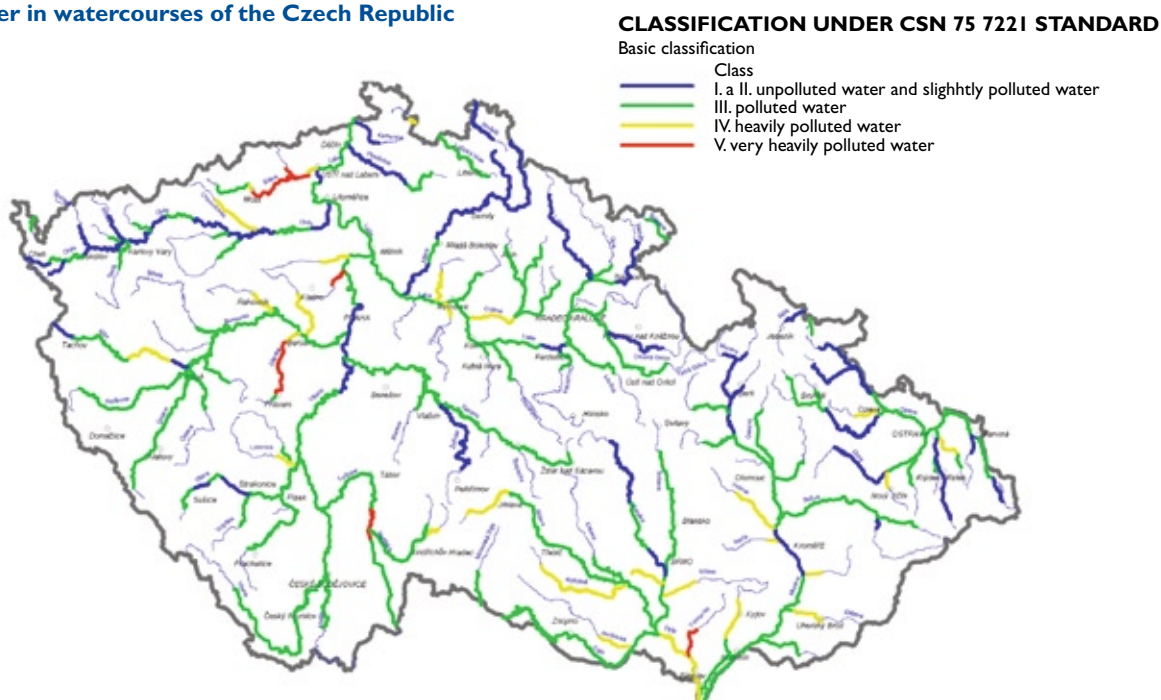
In the year 2009, the Agricultural Water Management Authority monitored in total 967 hydrometric profiles on watercourses and small reservoirs. Water samples were monitored with regard to basic

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 2008–2009



Source: River Boards, s.e.

physical and chemical indicators, allowing at an early stage to identify minor contamination originating from municipal and agricultural pollution sources as well as extraneous substances indicating potential contamination of the environment by heavy metals and certain specific organic substances. The content of extraneous substances was monitored by single measurements at the suggested profiles. Also the hydrobiological monitoring was performed at the selected profiles.

In the field of the 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 Crop Research Institute, 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 Sciences 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 forwarded to the data warehouse of the extraneous substances 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 bathing during the bathing season 2009

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

The quality control of recreational waters in the Czech Republic is carried out under the Act No. 258/2000 Coll., on the protection of public health, as amended, Decree No. 135/2004 Coll., establishing sanitary requirements for bathing 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 Decree No. 159/2003 Coll., establishing surface waters used for bathing, as amended by Decree No. 152/2008 Coll. The Council Directive 76/160/EEC of 8 December 1975, on the quality of waters for bathing, was fully implemented into the above mentioned legal regulations. At present, the implementation of the new Directive of the European Parliament and of the Council No. 2006/7/EC is being finalized.

Recreational waters used for outdoor bathing are divided in the Czech Republic into outdoor bathing pools and surface waters used for bathing (so-called bathing areas).

The most frequent problems with water quality are connected with a huge presence of cyanobacteria, which resulted in proclaiming ban on bathing in certain localities. During the bathing season 2009, the bodies responsible for the protection of public health proclaimed in total eight bans on bathing (of that three bans in bathing pools and five in bathing areas). Czech Republic accepted the recommendation of the World Health Organization (hereinafter referred to as the "WHO") as the limit values for the cyanobacteria indicator; i.e. three-level classification of water quality, with a ban on bathing issued if the presence of water bloom is identified by visual inspection.

Due to unsatisfactory microbiological quality of water, no ban on bathing was issued in the bathing season 2009.

Salmon and carp waters in the year 2009

Salmon and carp waters are designated by legislation as surface waters which are suitable for the life and reproduction of the indigenous fish species and other aquatic animals (Government Order No. 71/2003 Coll.).

Government Order No. 71/2003 Coll. (similarly to the Directive 2006/44/EC, on freshwaters), allows (in the case that not sufficient quantity of data is available) to assess compliance with the pollution standards according to the maximum measured value for the given period. Based on the assessment of values collected in hydrometric profiles demarcating the delimited waters, it was established that pollution standard under the order were met in 75% of these waters (77% of salmon waters and 72% of 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 and 13% of salmon waters). Most waters where pollution standards under the order are not complied with do not meet one or two related indicators (65 stretches). Three and more unmet applicable



The Mže River – Hracholusky Reservoir

indicators in this assessment are shown by 12 stretches, for example, the Rusava River, the Daniž River, the Trkmanka River, the Kyjovka River, the Třeštský stream, the Litava River.

Quality of suspended matter and sediments

In the year 2009, the monitoring of suspended matter and stream sediment quality was carried out, as a part of the surveillance monitoring programme, in 47 hydrometric profiles on main watercourses of the Czech Republic and their significant tributaries. The monitored indicators were contents of heavy metals, metalloids and specific organic substances including the majority of priority pollutants with relevance to the constant matrix. The sampling frequency for suspended matter was four times a year and for sediments twice a year.

The assessment of the chemical status of suspended matter and sediments, similarly to the preceding years, was performed on the basis of classification of measured values into categories under the Guidance Document of the Department for Environmental Damage of the Ministry of the Environment "Criteria for Soil and Groundwater Pollution" from 1996 in accordance with the Guidance Document of the Ministry of the Environment for the Contaminated Land Risk Assessment No. 9/2005. These indicative values of the A, B, C criteria were used for the assessment of constant matrices in the aquatic environment and for the purposes of this assessment are used as the assessment limits. The exceedance of category B limit is assessed as increased pollution which may be of negative effect on human health and individual environmental compartments, the exceedance of category C limit represents pollution which may pose a significant risk to human health and other environmental compartments.

In suspended matter matrix, of the total number of 183 samples, the

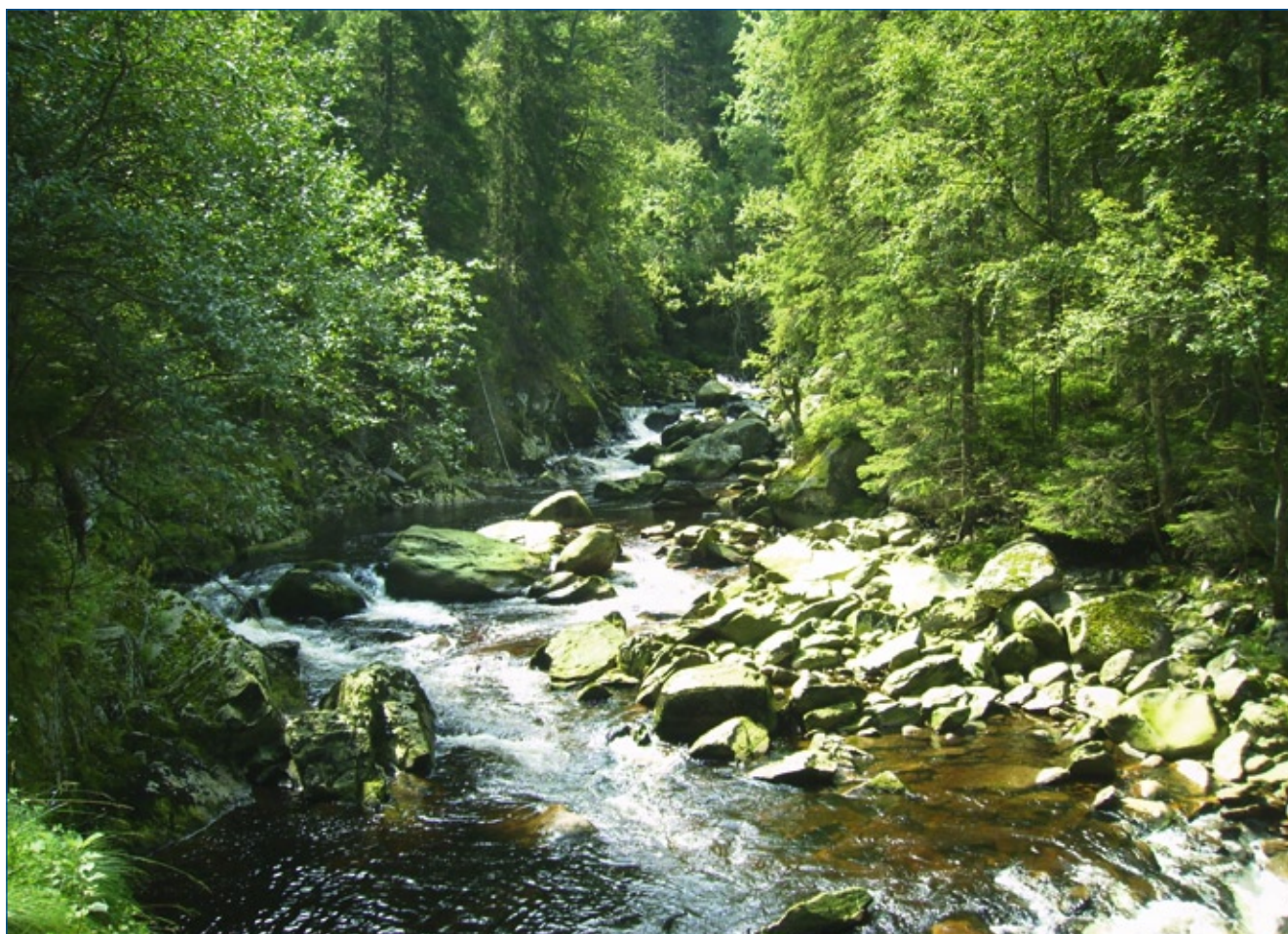
limit for risk posing pollution (limit C) was exceeded, similarly to the preceding years, in contents of benzo(a)pyrene (6% of measured values), arsenic (4% of measured values) and sporadically in contents of beryllium, lead and benzo(a)anthracene. Values indicating increased pollution (category B) were identified especially in contents of benzo(a)pyrene (6.5% of measured values) and sporadically in contents of mercury, zinc and benzo(b)fluoranthene. In sediments, of the total number of 94 samples, values exceeding the limit were identified in contents of arsenic (3% of measured values), benzo(a)pyrene (2% of measured values) and sporadically in contents of mercury. Generally, it can be stated that contents of the monitored substances, similarly to the preceding years, largely corresponded to the level of natural values to moderate pollution. As regards the categories of increased pollution and risk posing pollution, the above mentioned substances largely showed only their highest measured values. The exception in this respect are traditionally heavily modified the Bílina River and the Ohře River courses. On the Ohře River above the Nechanická reservoir, increased contamination by arsenic and beryllium was identified in all suspended matter and sediment samples. The contents of arsenic exceeded the limits for the majority of suspended matter and sediment samples also in the Bílina River.

Looking at the long-term status of constant matrix pollution, no major changes in the contamination have been identified. As regards metals, the status is stabilized; only for mercury in Bílina – Ústí nad Labem an isolated signal of possible deterioration of pollution load was identified (in sediments, so far the highest measured value of mercury was recorded). On the contrary, a slight decline was recorded for contents of arsenic near Bílina; nevertheless, its contents continue to be in the category of risk posing values.

An increase compared to the years 2007 and 2008 was recorded in the number of localities showing above-limit contents of PAH group substances, particularly benzo(a)pyrene and benzo(a)anthracene

in suspended matter. In addition to localities showing long-term pollution load, such as the Oder River below the Ostrava-Karviná agglomeration, the Svitava River in Bilovice and the upper Morava River in Raškov, increased pollution was identified also in other profiles of the upper Elbe, the Vltava River, the Otava River, the Lužnice River, the Dřevnice River and the Morava River courses. The source of the contamination in localities beyond urban agglomerations is predominantly atmospheric deposition of the products of combustion of solid and fossil fuels in small heating sources (home fireplaces). The identified pollution values show minimum differences between industrially polluted localities (the Ostrava area), urban localities and localities with predominantly small heating sources. The majority of other monitored and identified PAH group substances were evaluated to belong to the category of slight pollution.

The monitored pesticides, particularly substances belonging to DDT series (most frequently isomers p,p' DDT', o,p' DDT, p,p' DDD and o,p' DDD), occurred, similarly to the preceding years, at most in the category of slight pollution. The maximum pollution values were identified in the Elbe River downstream of Děčín and in the Bílina River at Ústí nad Labem. As regards other pesticides occurring in slightly increased contents, endrine and HCH in the Cidlina River – Sány and in the Bečva River – Dluhonice, trifluraline in the Cidlina River, in the middle Morava River and in the Berounka River downstream of Plzeň can be mentioned. A slight pollution by hexachlorobenzene in both suspended matter and sediments was identified especially in the Bílina River – Ústí n. L., in the lower Elbe River downstream of Děčín and in the Ohře River. Also summary contents of PCB group substances mostly corresponded to slight pollution; the highest values were identified in the upper Oder River suspended matter, in the Bečva River at Troubky, in the Dřevnice River downstream of Zlín; in sediments the highest amounts accumulated in the Bílina River and the lower Elbe River downstream of Děčín. As regards the chlorobenzene group, in the category of slightly increased pollution



The Vydra River

there occurred trichlorobenzenes showing the highest contents in the middle Elbe River at Valy, and then in the middle Morava, Dyje and Bečva Rivers.

As regards the negative effects on aquatic organisms and human health, the constant occurrence of high contents of arsenic and beryllium in the Ohře River and the Bílina River; in the industrial region of North Bohemia, and higher mercury and PAH substances load near the Oder River in an exposed locality downstream of the Ostrava-Karviná agglomeration can be assessed to correspond to a serious status.

Accumulation bio-monitoring of surface waters in the year 2009

In the year 2009, similarly to the preceding years, the 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 the following biotic matrices were selected for surface water quality evaluation: zebra mussel *Dreissena polymorpha* (18 localities monitored), biofilm (21 localities monitored), fish – *Leuciscus cephalus* (European chub – 12 localities monitored), juvenile stages of fish – the fry (21 localities monitored) and benthic organisms (*Hydropsyche* sp., *Erpobdella* sp., *Gammarus* sp. – 21 localities monitored).

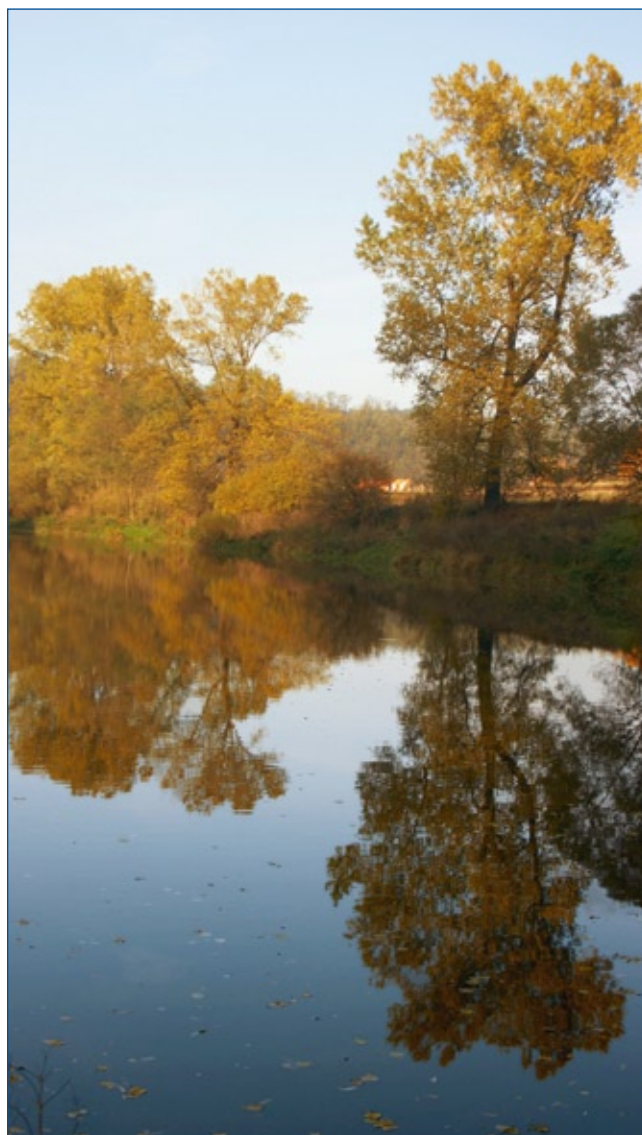
The assessed pollutants are substances with very low solubility in water and they easily accumulate in fats. Among heavy metals the monitored pollutants are lead, cadmium, mercury, chromium, zinc, copper, nickel and arsenic, and among specific organic substances indicator PCB congeners (PCB-28, PCB-52, PCB-101, PCB-138, PCB-153, PCB-180), chlorinated pesticides (o,p and p,p DDT isomers) and HCB, polybrominated diphenylethers (PBDE) - (congeners 28, 47, 99, 100, 153 and 154), polyaromatic hydrocarbons (PAH) - (the sum of compounds: fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene) and biochemical parameters (biochemical markers) in fish (European chub). Organisms selected for evaluation purposes are those that accumulate best the individual pollutants (the concentration is expressed in $\mu\text{g.kg}^{-1}$ of dry matter (for organic substances) and in mg.kg^{-1} of dry matter (for metals)).

Chlorinated pesticides

As regards chlorinated pesticides, the values monitored were DDT concentrations and products of its decomposition (DDE, DDD) in fish (European chub) and in juvenile fish. In all of the monitored profiles the highest concentration was identified for the p,p'-DDE isomer (product of the partial biodegradation of DDT), where the detected values, similarly to the preceding year, were higher by one order compared to the p,p'-DDD isomer values and by two orders compared to the p,p'-DDT isomer values.

DDT values (the sum of DDT, DDE, DDD o,p' and p,p' - congeners) in fish muscle tissue (European chub) ranged from $41 \mu\text{g.kg}^{-1}$ (the Sázava River in Nespeky) to $595 \mu\text{g.kg}^{-1}$ (the Dyje River in Pohansko). High values were also identified in the Elbe River – Schmilka profile ($432 \mu\text{g.kg}^{-1}$). These values probably result from sites contaminated by the chemical production in Spolchemie in Ústí nad Labem. HCH values (the sum of α -HCH, β -HCH, γ -HCH, δ -HCH congeners) ranged from $1.4 \mu\text{g.kg}^{-1}$ (the Otava River in Topělec) to $6.7 \mu\text{g.kg}^{-1}$ (the Berounka River in Srbsko).

DDT concentrations in juvenile fish ranged from $55 \mu\text{g.kg}^{-1}$ (the Bečva River in Troubky) to $689 \mu\text{g.kg}^{-1}$ (the Bílina River in Ústí nad



The Sázava River

Labem). High values were also identified in the Elbe River – Obříství and Schmilka profiles, further in the Svatka River, the Dyje River and also in the Elbe River at Lysá nad Labem. In the year 2009, DDT values identified in juvenile fish in the absolute majority of the profiles were the highest in the entire three-year monitored period. The juvenile stages of fish should give us more information on the respective sampling site pollution than adult fish that can migrate long distances. Nevertheless, quite surprising was the concordance of both high and low values of the monitored pesticides in muscle tissue of the European chub and the fry.

In benthic organisms (*Erpobdella* sp.), the highest DDT and HCB values were identified in the Bílina River in Ústí nad Labem. DDT values differed by one order from other monitored profiles ($3,363 \mu\text{g.kg}^{-1}$ DDT and $53.3 \mu\text{g.kg}^{-1}$ HCB). The second highest DDT and HCB values were measured in the Elbe River – Schmilka border profile (309 and $25.1 \mu\text{g.kg}^{-1}$, respectively). As regards other profiles, a high concentration of DDT ($307 \mu\text{g.kg}^{-1}$) was identified on the Dyje River at Pohansko, again probably resulting from sites contaminated by the chemical and agricultural production.

Polyaromatic hydrocarbons

In 2009, polyaromatic hydrocarbons were evaluated in biofilm, where the identified values were by order higher compared to other matrices. The concentrations of polyaromatic hydrocarbons ranged from $426 \mu\text{g.kg}^{-1}$ (the Elbe River at Obříství) to $9,170 \mu\text{g.kg}^{-1}$ (the Oder River at Bohumín). High values were also measured in the Lužická



The Úpa Peatland

Nisa River at Hrádek nad Nisou, in the Svatka River at Židlochovice and in the Bečva River at Troubky.

Polychlorinated biphenyls and polybrominated diphenylethers

The highest concentration of polychlorinated biphenyls (the sum of 6 PCB indicator congeners) in benthic organisms was identified in the Elbe River – Schmilka profile ($276 \mu\text{g.kg}^{-1}$); high values were also measured in the Lužická Nisa River and the Jizera River outfall profiles, the lowest value was identified in the Otava River at Topělec. The highest concentration of PBDE in benthic organisms was identified in the Bílina River ($40.2 \mu\text{g.kg}^{-1}$).

In zebra mussel *Dreissena polymorpha*, the concentrations of polybrominated diphenylethers (the sum of PBDE ind. congeners) ranged from $1.7 \mu\text{g.kg}^{-1}$ (the Lužnice River in Bechyně) to $39.1 \mu\text{g.kg}^{-1}$ (the Bílina River in Ústí nad Labem). The lowest values in the Lužnice River – Bechyně profile were also measured in the last two years. The second highest concentration was identified in the Jizera River at Předměřice. The highest PCB concentrations in zebra mussel *Dreissena polymorpha* were identified in the Svatka River at Židlochovice and in the Bílina River outfall profile; high values were also measured in the Elbe River at Valy and in the Elbe River at Lysá nad Labem.

Heavy metals

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

- Hg:** 0.11 mg.kg^{-1} (the Elbe River at Debrné) to 15 mg.kg^{-1} (the Oder River at Bohumín)
- As:** 5.5 mg.kg^{-1} (the Morava River at Lanžhot) to 36.2 mg.kg^{-1} (the Bílina River at Ústí nad Labem)
- Cd:** 0.4 mg.kg^{-1} (the Elbe River at Obříství) to 6.0 mg.kg^{-1} (the Berounka River at Srbsko)
- Cr:** 20.0 mg.kg^{-1} (the Elbe River at Obříství) to 117 mg.kg^{-1} (the Jihlava River at Ivančice)

- Cu:** 20.5 mg.kg^{-1} (the Elbe River at Obříství) to 141 mg.kg^{-1} (the Lužická Nisa River at Hrádek nad Nisou)
- Ni:** 11.4 mg.kg^{-1} (the Elbe River at Obříství) to 69.6 mg.kg^{-1} (the Jihlava River at Ivančice)
- Pb:** 17.4 mg.kg^{-1} (the Elbe River at Obříství) to 184 mg.kg^{-1} (the Berounka River at Srbsko)
- Zn:** 120 mg.kg^{-1} (the Sázava River at Nespeky) to 607 mg.kg^{-1} (the Berounka River at Srbsko)

In general, it can be said that the highest pollution levels caused by heavy metals were, similarly to the preceding year, identified in the Lužická Nisa River – Hrádek nad Nisou (Cd, Cr, Cu and Pb), and the Bílina River – Ústí nad Labem (Hg, As and Ni) hydrometric profiles. High values were also identified in the Berounka River at Srbsko (As, Cd, Pb and Zn) and in the Oder River at Bohumín (very high Hg and Zn values).

Biomarkers

The monitored biomarkers in fish give us the important information on adverse effects of the aquatic system contamination on the organism of fish and significantly complement the chemical monitoring system. These indicators mostly do not react to a specific pollutant but indicate complex pollution and help assess to what extent the aquatic ecosystem is affected. One of important indicators is the concentration of vitellogenin ("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 places 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, steroid substances, pesticides, mercury, etc. The next significant biochemical markers indicating the contamination include the cytochrome P450 (isoform of CYP1A) and the related enzyme activity EROD. The cytochromes are predominantly present in the liver. Increased values then indicate the aquatic environment contamination by toxic substances.

In the year 2009, VTG values in the majority of the monitored profiles were markedly higher; compared to the year 2008. The highest values were identified in the Vltava River outfall profile and in the Svatka River below Brno.

Evaluation for the individual river basin districts

The upper and middle Elbe River basin district is an area with significant industrial sources of pollution and urban agglomerations, such as Neratovice (Spolana), Liberec, Jablonec nad Nisou and Mladá Boleslav. The heavy metals and PCB load is represented by rather high values identified in the Lužická Nisa River. High PCB values were identified in the Elbe River in Obříství, Lysá nad Labem and Valy hydrometric profiles. Rather high PBDE concentrations were measured in the Jizera River.

The Ohře River and the lower Elbe River basin districts are significantly affected by the chemical industry and contaminated sites. In the Bílina River high concentrations of heavy metals and the highest concentrations of PBDE, DDT and HCB were measured. In the Elbe River boundary hydrometric profile, high PCB values and rather high PBDE and HCB concentrations were identified.

The lower Vltava River basin district is characterized by the Vltava River outfall hydrometric profile downstream of Prague, where high PCB and PBDE values and the highest VTG value were identified in fish.

The upper Vltava River basin district is evaluated in outfall hydrometric profiles of the Otava and the Lužnice Rivers. The detected values of the monitored pollutants are, compared to other river basin districts, quite low. In contrast to the year 2008, high concentrations of HCH and a rather high value of DDT were found in the Otava River at Topělec.

The hydrometric profile which is characteristic of the Berounka River basin district is the Berounka River-Srbsko outfall profile with

repeatedly occurring high values of lead and cadmium. In the year 2009, also a high concentration of arsenic was identified.

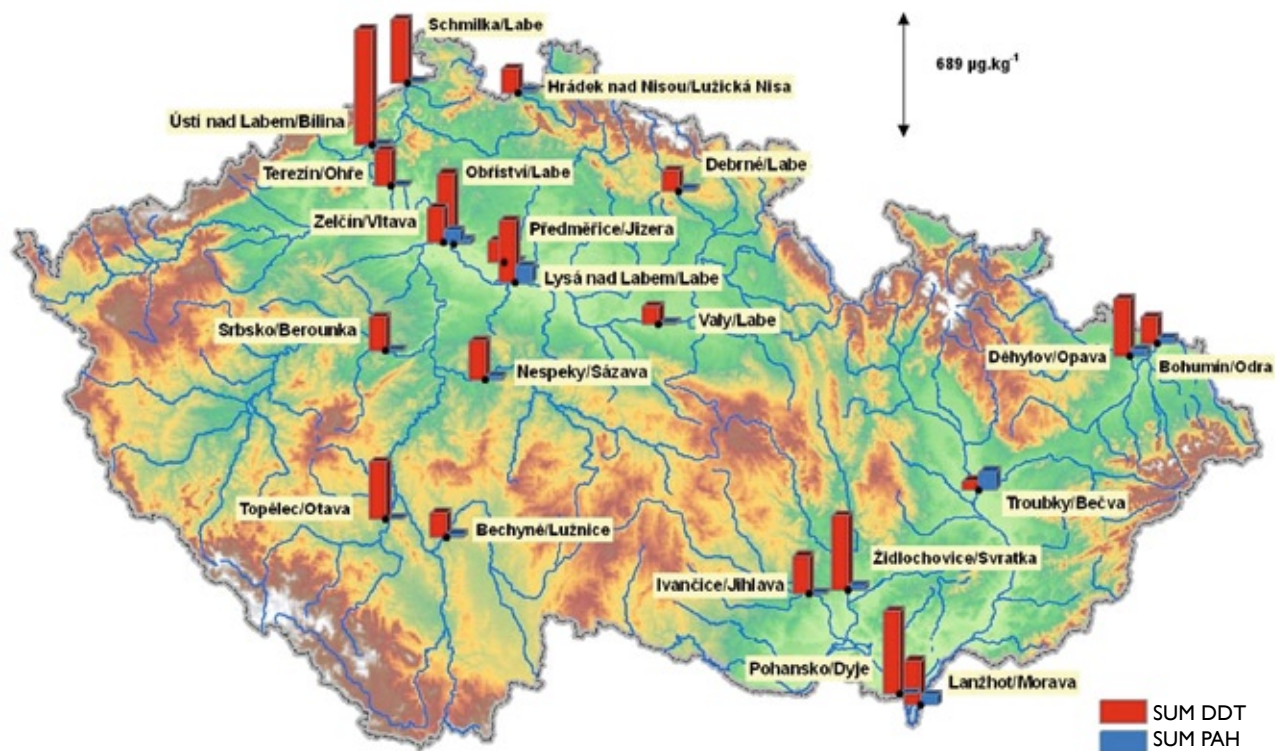
The Dyje River basin district is probably affected by contaminated land resulting from the agricultural production, which is documented by high DDT values (the sum of ortho- and para- isomers) in the Dyje River outfall profile. The Svatka River downstream of the Brno agglomeration is markedly affected, with high PCB concentrations and the second highest VTG concentration having been identified in fish.

The Morava River basin district is characterized by the Morava River–Lanžhot outfall profile, where the monitored organic substances occurred in relatively low concentrations. Rather low values were found also for heavy metals.

The Oder River basin district is affected primarily by the Ostrava industrial agglomeration, and pollution is monitored in the Oder River boundary profile, where high concentrations of mercury and PAH are repeatedly found.

Accumulation bio-monitoring includes monitoring of substances that are, in the process of water analyses, present in low concentrations and very often below the limit of detection by analytical methods. These substances are insoluble in water and persistent, with significant bioaccumulation potential, which means that their accumulation in constant matrices can be assumed. The results of accumulation bio-monitoring clearly show that these substances are present in aquatic ecosystems, and often in high concentrations. The monitoring of the 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 on the status of overall environmental contamination. Bio-monitoring has been proceeding since the year 2000, and so far no significant decrease in values of the monitored substances was observed. In addition, the negative reaction of fish to the contamination of the aquatic environment was confirmed.

Figure 3.1.3
Contents of DDT and PAH in juvenile stages of fish in the year 2009



Source: Czech Hydrometeorological Institute

3.2

Groundwater quality

In the year 2009 the national water quality monitoring network monitored 652 sites comprising 173 springs (the monitoring of springs documents natural drainage of groundwaters particularly in the Crystalline complex and local drainage of Cretaceous structures), 214 shallow wells (the wells are largely located in alluvial plains of the Elbe, Orlice, Jizera, Ohře, Dyje, Morava, Bečva, Oder and Opava Rivers) and 265 deep wells (the wells are concentrated mainly in the Bohemian Cretaceous Basin, the České Budějovice Basin and the Třeboň Basin areas). In total, 278 indicators were determined twice a year in the spring and autumn periods.

With regard to the requirements of the Directive 2000/60/EC (Water Framework Directive), the evaluation of groundwater quality results in the year 2009 focused especially on hazardous 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 Soil and Groundwater Contamination. It also compared the values with the limits for drinking water under Decree of the Ministry of Health No. 252/2004 Coll., which stipulates the requirements for drinking water and the scope and frequency of the inspections.

In the year 2009 the highest percentage of exceedances of the most stringent normative C was recorded among indicators for chlorides (4.3% of all samples, 8.0% of samples from shallow wells), ammonia ions (3.6% of all samples, 5.3% of samples from shallow wells) and aluminium (2.8% of all samples, 3.6% of samples from shallow wells). Values exceeding the normative C were less frequently found for nitrites (0.8% of all samples), 1,2-cis-dichloroethene (0.6% of all samples), beryllium (0.6% of all samples), fluorides (0.4% of all samples) and from the pesticides group for the alachlorine and metholachlorine metabolites, i. e. ESA alachlorine (1.1% of all samples) and ESA metholachlorine (0.4% of all samples). Among other indicators for all evaluated groups (metals, volatile organic compounds, PAHs, pesticides and chlorobenzenes), values exceeding the normative C were recorded very sporadically (max. 0.3% of all samples). Values above the B limit and below the C limit were measured among indicators for chlorides (4.7% of all samples, 11.1% of samples from shallow wells), ammonia ions (3.2% of all samples, 5.3% of samples from shallow wells), boron (3.0% of all samples, 3.8% of samples from deep wells and springs), aluminium (2.1% of all samples, 2.1% of samples from deep wells and springs), fluorides (1.4% of all samples, 1.9% of samples from deep wells and springs), nitrites (0.9% of all samples, 2.2% of samples from

shallow wells), beryllium (0.8% of all samples, 1.1% of samples from deep wells and springs) and from the pesticides group then ESA alachlorine (1.7% of all samples), ESA metholachlorine (1.7% of all samples), bentazone (0.5% of all samples) and OA metholachlorine (0.4% of all samples). The percentage of exceedances of the B limit for other indicators reached max. 0.2% of all samples.

In general, the presence of indicators exceeding the B and C 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 2008 (Table 3.2.1), it can be stated that with regard to the percentage of sites exceeding the B or C criteria values, the situation in shallow wells slightly worsened, and in the category of deep wells and springs the situation even more markedly worsened (under the Guidance Document issued by the Ministry of the Environment on 15 September 1996, Part 2 – the Criteria for Soil and Groundwater Contamination).

When comparing the groundwater quality indicators with the requirements for drinking water, the most frequently detected values exceeding the limit were found among indicators for group determination of organic substances, such as absorbance at 256 nm (29.2% of samples above the limit values), chemical oxygen demand by permanganate (12.7% of samples above the limit values) and dissolved organic carbon (5.6% of samples above the limit values). These determinations and mainly absorbance are affected by concentrations of other toxicologically less significant indicators, such as humic substances (3.6% of samples above the limit values). Other indicators more frequently showing concentrations above the limit values include ammonia ions (12.2% of samples above the limit values), nitrates (11.1% of samples above the limit values), chlorides (9.1% of samples above the limit values), and sulphates (8.2% of samples above the limit values). The group of metals includes especially aluminium (6.2% of samples above the limit values), arsenic (5.8% of samples above the limit values) and nickel (3.1% of samples above the limit values). As regards the pesticides group, the indicators concerned are the above mentioned indicators in comparing to the B and C normatives, i. e. ESA alachlorine (4.1% of samples above the limit values) and ESA metholachlorine (3.2% of samples above the limit values), followed by triazine pesticides, namely, desethylatrazine (2.2% of samples above the limit values) and atrazine (1.4% of samples above the limit values). As regards PAHs, the limit for drinking water was exceeded only by benzo(a) pyrene (0.9% of samples above the limit values). As regards volatile organic compounds, the most frequently detected values exceeding the concentration limit were found for 1,1-dichloroethene (1.0% of samples above the limit values) and chloroethene (0.9% of samples above the limit values), for which again a more stringent limit is set compared to other indicators in the group. As regards radiochemical properties of groundwaters, the only general indicator of the total volume activity alpha was monitored (27.1% of samples above the limit values). More marked exceedances of limits for

Table 3.2.1

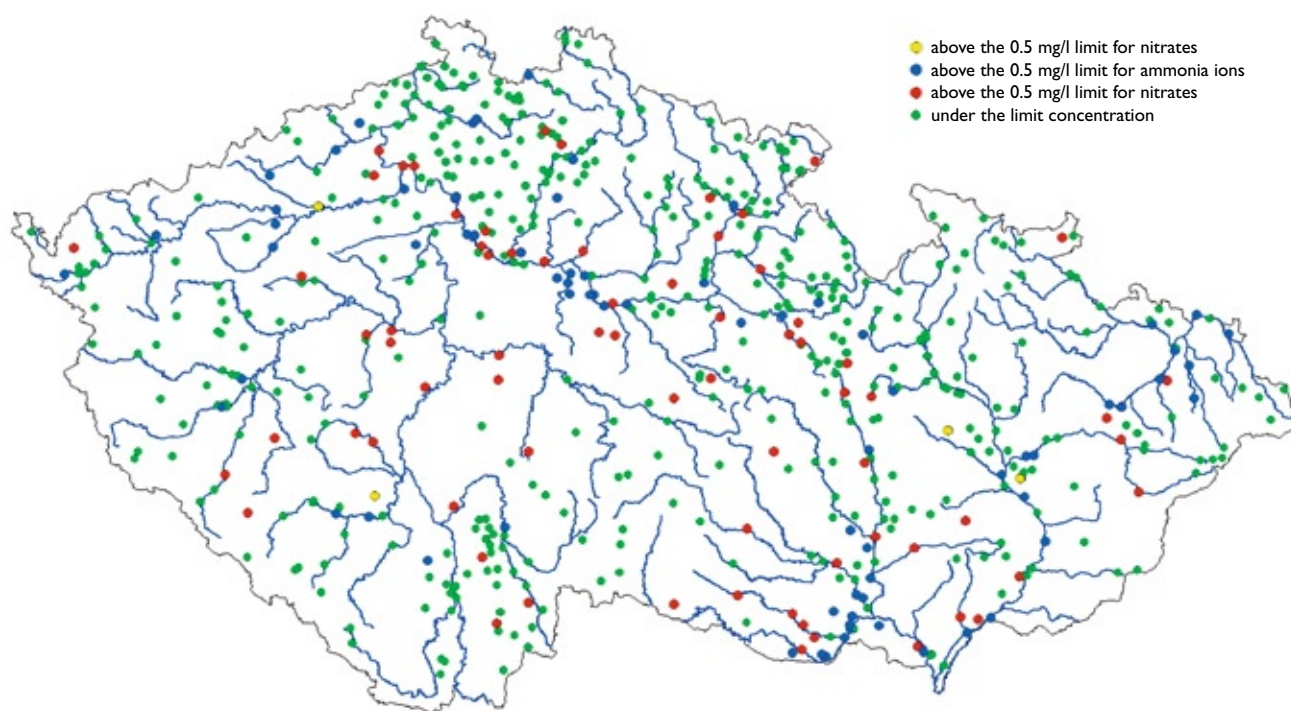
Summary of the number of sites where the values of the B or C criteria were exceeded at least in 1 indicator for the year 2009 (compared to 2008)

Sites	Number of sites	Number of sites where B or C was exceeded	% of sites where B or C was exceeded
Shallow wells	214	106	49.5 (46.1 in 2008)
Deep wells and springs	438	102	23.3 (16.1 in 2008)
All sites	652	208	31.9 (25.9 in 2008)

Source: Czech Hydrometeorological Institute

Figure 3.2.1

Concentrations of nitrogenous substances in groundwaters, exceeding the limit in the year 2009 (exceedances of limit values under Decree No. 252/2004 Coll.)



Source: Czech Hydrometeorological Institute

drinking water for most of the indicators, compared to the B and C criteria, are of course influenced by the fact that these criteria are in an overwhelming majority of cases less stringent. Usually, exceedances of the limit for drinking water are more frequent in shallow wells. Fluorides, arsenic, beryllium and boron, on the contrary, are indicators showing far more frequently concentrations above the limit values for the joint group of deep wells and springs.

To sum up, in general, the most distinct groundwater pollution indicators seem to be nitrogenous substances (in particular, nitrates and ammonia ions), sulphates, chlorides, metals and pesticides. Organic substances occur in groundwater contamination to a smaller extent, most frequently volatile organic compounds are present.



The Elbe River – Elbe Reservoir



Hynek Tráška

24 | 10 years, Černuc basic school, Středočeský kraj region

4.1

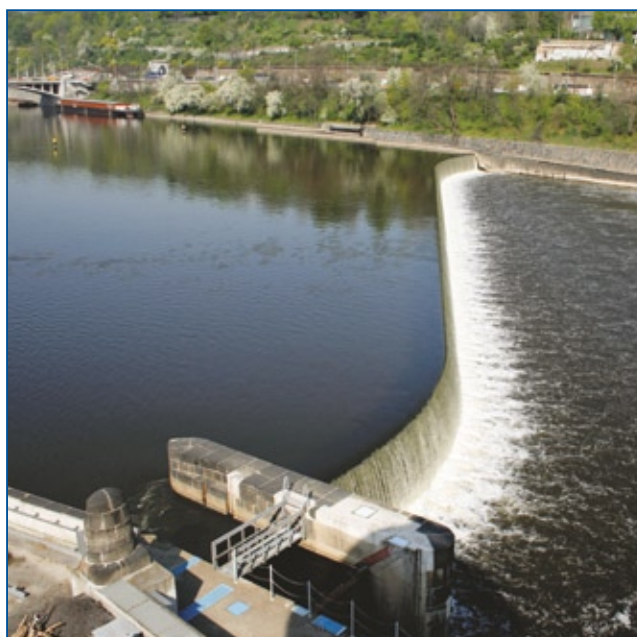
Surface water abstractions

The Reports on water management in the Czech Republic in the past years stated that a year-to-year decrease in surface water abstractions rather ceased. With regard to the situation in the year 2009, nevertheless, it is obvious that in this year, compared to the year 2008, surface water abstractions again decreased (although less markedly compared to the 1990s) from 1,608.2 million m³ to 1,571.5 million m³, i. e. by 2.3%.

The monitoring of data on groundwater and surface water abstractions and on discharged waters is governed by Decree No. 431/2001 Coll., on the content of water balance, the method of its compiling and on the water balance data. Pursuant to the provision in Section 10 of this Decree, the scope of reported data changed 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 to the Czech Statistical Office by the respective river basin administrators before the deadline of 31 March of that year. The data for the year 2007 were classified only according to the sector classification of economic activities – SCEA (published by the Czech Statistical Office, Prague 1998). The data reported for the year 2008 were classified both according to SCEA and also with regard to NACE – the new classification of economic activities according to Eurostat. For the year 2009, the Czech Statistical Office in cooperation with the river basin administrators performed the data classification according to NACE only (Table 4.1.1).

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

The most significant increase in the percentage of water abstractions was observed (more than in the year 2008) in agriculture (including irrigation), namely by 33.6%. This fact is associated with the provision of Section 101 of the Water Act (compensation for humidity deficit of agricultural crops – only a part of abstracted water is charged, nevertheless, for the purposes of Decree No. 431/2001 Coll., all abstracted water must be reported). It is obvious that in the recent



The Vltava River – Štvanice Reservoir

years “reporting discipline” for these abstractions improved rather than a real increase in actually abstracted volumes occurred. Water abstractions stagnated in the energy industry. In the year 2008 the total abstraction in this sector amounted to 916.8 million m³, in the year 2009 to 916.6 million m³. As regards surface water abstractions for public water supply networks, it can be stated that compared to the year 2008 these abstractions decreased by 1.3% (a decrease from 361.6 million m³ to 357.0 million m³). As for industry (including extraction of mineral resources), in the year 2009 the abstractions, compared to the year 2008, again decreased from 265.6 million m³ to 260.2 million m³, i. e. by 2.0%.

As regards surface water abstractions registered by the individual River Boards, s. e. (Section 54 of the Water Act), an insignificant increase was recorded only in the Morava River Basin to 100.9%, while other River Boards, s. e. recorded, compared to the year 2008, a decrease in abstractions as follows: to 99.2% in the Elbe River Basin, to 96.3% in the Vltava River Basin, to 95.9% in the Ohře River Basin, and to 90.4% in the Oder River Basin. As regards surface water abstractions for public water supply networks, an increase was recorded in the Elbe River Basin, namely to 100.8% and in the Ohře River Basin, to 107.4%. The remaining River Boards, s. e. recorded a decrease in abstractions as follows: in the Vltava River Basin to

Table 4.1.1

classification of users in the individual categories according to the NACE classification

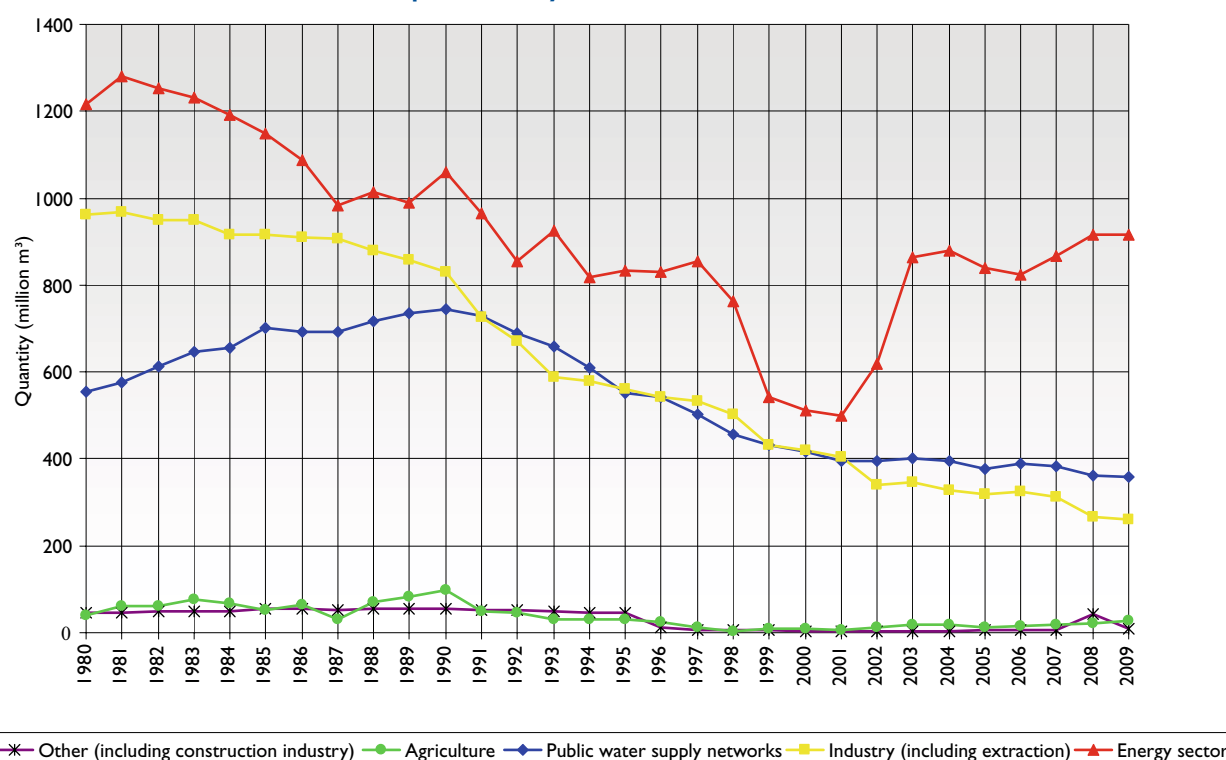
Public water supply networks	NACE 36
Agriculture (incl. irrigation)	NACE 01 – 03
Energy sector (electricity and heat generation and distribution)	NACE 35
Industry (incl. extraction of mineral resources – excl. energy sector)	NACE 05 – 34
Other (incl. construction industry)	NACE 37 – 96
Total (excl. fishponds and transfers)	NACE 01 – 96

Source: Czech Statistical Office

Table 4.1.2**Surface water abstractions in the year 2009 exceeding 6,000 m³/year or 500 m³/month in millions of m³**

River Board, state enterprise	Public water supply networks		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. con- struction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe River Board, s. e.	39.6	35	8.3	48	668.7	12	96.2	88	1.4	39	814.2	222
Vltava River Board, s. e.	149.4	50	0.9	13	53.0	19	43.7	78	6.3	38	253.3	198
Ohře River Board, s. e.	55.4	21	6.2	25	52.6	5	43.0	60	0.1	13	157.3	124
Oder River Board, s. e.	72.9	28	0.0	0	8.8	1	64.5	56	0.5	34	146.7	119
Morava River Board, s. e.	39.7	34	13.6	34	133.5	2	12.8	102	0.4	14	200.0	186
Total	357.0	168	29.0	120	916.6	39	260.2	384	8.7	138	1,571.5	849

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 1980–2009**

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

95.5%, in the Oder River Basin to 98.5%, in the Morava River basin to 98.5%. In terms of abstractions for agriculture, all River Boards, s. e. (except for the Ohře River Basin) reported a significant increase, particularly in the Morava River Basin (from 6.8 million m³ in the year 2008 to 13.6 million m³ in the year 2009). Abstractions for the energy industry increased only insignificantly in the Ohře River Basin, namely by 3.1%. As regards water abstractions for other industries (including extraction of mineral resources) within the Vltava River Basin, a certain numerically reported increase compared to the year 2008 should be pointed out. The given case, however, concerns only a specification of the NACE code for Syntos Kralupy enterprise (in the year 2009).

The total charged abstractions decreased from 1,543.6 million m³ in the year 2008 to 1,506.0 million m³ in the year 2009, i. e. to 97.6%. The proportion of charged abstractions amounted to 95.8% of the registered abstractions in total.

The structure of the registered water abstractions in the respective

river basins in the year 2009 is shown in Table 4.1.2. The overall development of surface water abstractions since the year 1980 is shown in Chart 4.1.1. After the year 1990 the improvement of price ratios in water services provided and also the change in the structure of industrial and agricultural production resulted in a significant decrease 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 357.0 million m³. Thus, the abstractions in the year 2009 amount only to 47.9% of the volume abstracted in 1990. The most significant decrease occurred in the industrial sector; from 830.1 million m³ in the year 1990 to 260.2 million m³ in the year 2009, i. e. to no more than 31.3% of the volume in 1990. Similarly, a significant decrease can be seen in agriculture, where the abstractions decreased from 92.2 million m³ to 29.0 million m³, i. e. to no more than 31.5% of the volume abstracted in 1990.

This fact, however, does not mean that water resources would be less

exposed to anthropogenic impacts. Along with a decrease in surface water abstractions, also a decrease in the volume of discharged waste waters occurred (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 136.5 million m³ in the year 2009.

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

The users were classified in the respective groups according to the new valid NACE classification only (incomplete acronym of

the French expression “Nomenclature statistique des activités économiques dans la Communauté européenne”) and not according to the cancelled SCEA. The following overview shows, in more detail, the information on classification of the individual surface water and groundwater abstractions in the respective user groups.

4.2 Groundwater abstractions

The total volume of abstracted groundwater remained, compared to the year 2008, in principle, at the same level (a decrease by 1.2%). This fact shows that the decrease rate in this abstraction category reached its maximum during the previous periods – at present the abstractions tend to stagnate.

Table 4.2.1

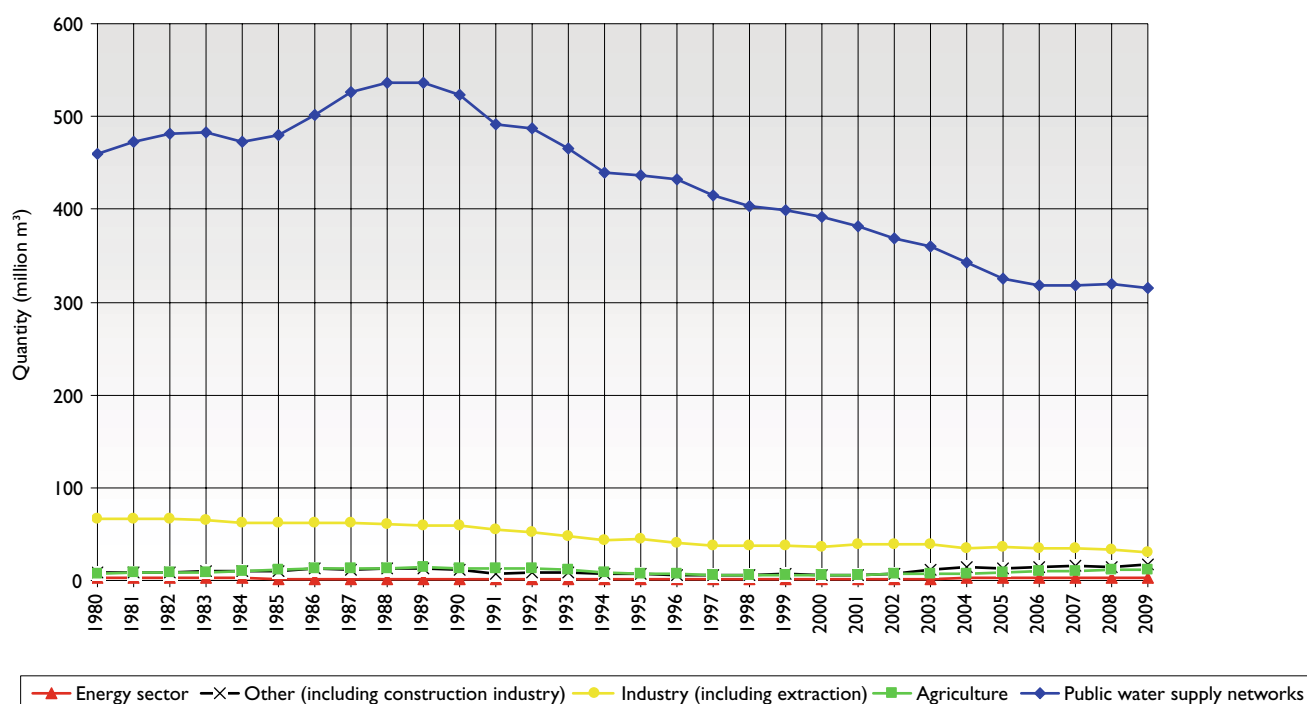
Groundwater abstractions in the year 2009 exceeding 6,000 m³/year or 500 m³/month in millions of m³

River Board, s. e.	Public water supply systems		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. construction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe River Board, s. e.	99.1	665	2.2	164	0.9	7	6.7	126	3.1	55	112.0	1,017
Vltava River Board, s. e.	34.0	571	4.1	294	0.3	8	9.4	123	8.8	324	56.6	1,320
Ohře River Board, s. e.	51.2	322	0.5	25	0.9	1	5.3	109	2.0	28	59.9	485
Oder River Board, s. e.	18.2	135	0.4	28	0.0	0	1.1	30	0.4	24	20.1	217
Morava River Board, s. e.	112.5	652	4.1	251	0.1	0	7.9	154	3.4	92	128.0	1,149
Total	315.0	2,345	11.3	762	2.2	16	30.4	542	17.7	523	376.6	4,188

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 1980–2009



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

A certain change in the development trends showing a steady decrease occurred already in the year 2006. As regards groundwater abstractions for public water supply networks, it can be stated that compared to the year 2008 there was stagnation in the year 2009 (an insignificant decrease from 320.1 million m³ to 315.0 million m³, i. e. by 0.8%). The pattern of registered water abstractions in the respective river basins in the year 2009 is shown in Table 4.2.1. In the year 2009, in total 4,188 groundwater abstractions, amounting to 376.6 million m³, were registered (this figure includes only abstractions exceeding 6,000 m³ per year or 500 m³ per month). As regards industry (including extraction of mineral resources), in the year 2009 the abstractions decreased, compared to the year 2008, from 32.9 million m³ to 30.4 million m³, i. e. by 7.6%. In agriculture, compared to the year 2008, the abstractions insignificantly decreased from 11.4 million m³ to 11.3 million m³, i. e. by 0.1%. The energy sector shows again an insignificant decrease from 2.4 million m³ to 2.2 million m³, i. e. by 8.3%.

In the individual river basins the highest percentage of the total groundwater abstractions was recorded in the river basins administered by the Morava River Board, s. e. (34.0%); the lowest percentage of groundwater abstractions was recorded in the river basins administered by the Oder River Board, s. e. (5.3%).

Looking at the territorial pattern, the registered groundwater abstractions in total decreased in the following river basins administered by: the Oder River Board, s. e., to 87.0% of the 2008 level, the Elbe River Board, s. e., to 97.5% of the 2008 level and the Morava River Board, s. e., to 98.4% of the 2008 level. In the Vltava River Board, s. e., and the Ohře River Board, s. e., the total registered groundwater abstractions slightly increased in the year 2009 to 104.6% and 101.4% of the 2008 level.

4.3

Waste water discharges

In the year 2009, in total 1,993.6 million m³ of waste waters and mine waters were discharged into surface waters. Compared to the year 2008, this represented an increase by 1.2%. Similarly to the preceding years, with regard to the integration of data provided by the individual River Boards, state enterprises, these water discharges did not include waters discharged from fishpond systems.

Evaluation of the quantity and quality of discharged waste waters until the year 2001 was based on the data reported by water users under Directive No. 7/1977 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 and groundwaters. Since 2002 this evaluation has been carried out under Decree No. 431/2001 Coll., on the content of water balance, the method of its compilation and on data for water balance. Pursuant to the provision in Section 10 of this Decree, the scope of reported data changed so that now the registered abstractions (as well as waste water and mine water discharges) include abstractions exceeding only 6,000 m³ per year or 500 m³ per month. This resulted in an increased number of the registered entities. This data, which is reported and registered every year, includes information on the quantity of waste waters, including waters specified pursuant to the provision in Section 4 of the Act No. 254/2001 (Water Act), which were originally called special waters. These waters were pursuant to Section 2 of the Act No. 138/1973 Coll. (in force until 31 December 2001) mine waters and mineral waters. The obligation to report the above data related only to such cases where the discharged water quantity exceeded 15,000 m³ per year. At present, under the Water Act, the term "special waters" was cancelled. There are, therefore, pursuant to Sections 2 and 4 of the Water Act, surface waters, groundwaters, waters constituting under a special act (Act No. 44/1988 Coll., on protection and utilization of mineral resources, 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 – the Water Act) 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 Statistical Office.

The largest percentual increase in the quantity of discharged waste waters compared to the year 2008 was observed in the category of public sewerage systems (by 4%) and the category of industry (including extraction of mineral resources) by 2.6%. The energy sector showed stagnation – in the year 2008 the discharged waste waters amounted to 778.1 million m³, in the year 2009 to 780.1 million m³. An insignificant decrease was recorded in agriculture, from 7.3 million m³ in the year 2008 to 7.1 million m³ in the year 2009, i. e. by 2.7%. A decrease was also observed in the category "other" (including construction industry).

It is evident that compared to the year 2008 the annual quantity of discharged waste waters stagnated. A decrease in the quantity

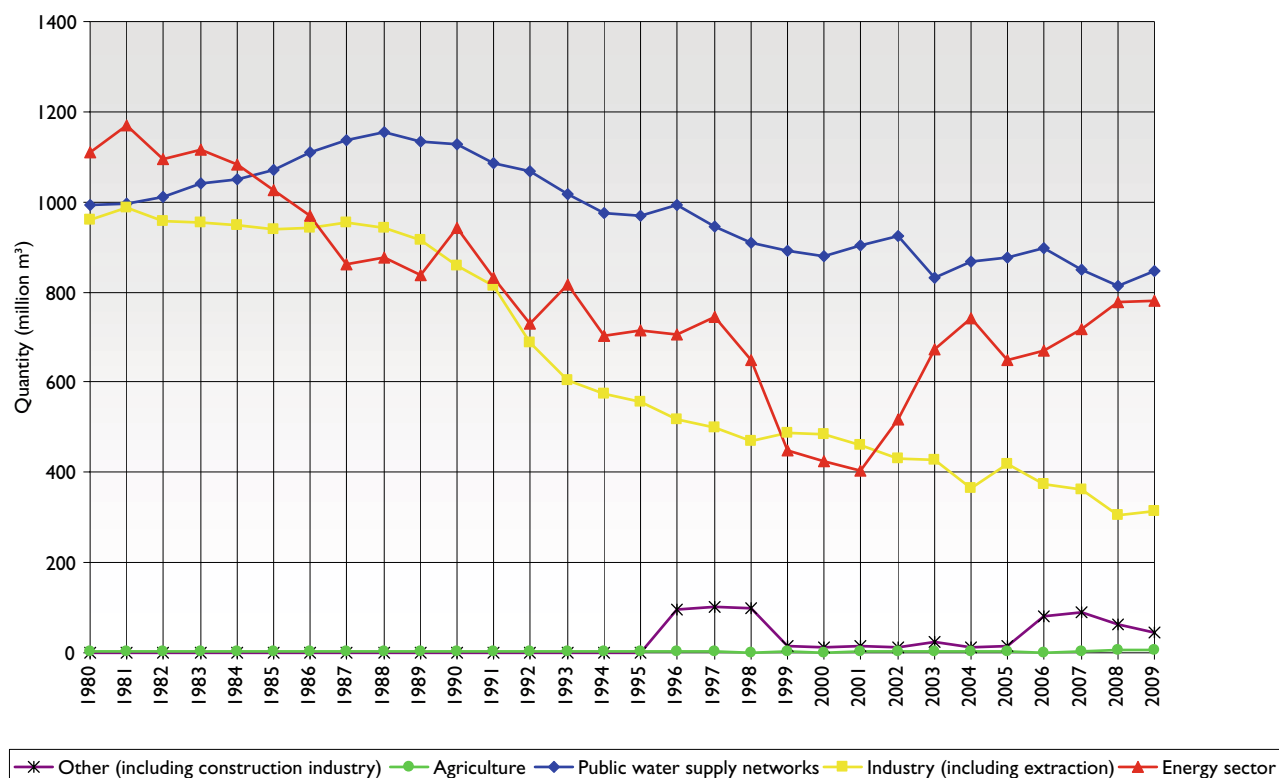
Table 4.3.1
Discharges of waste waters and mine waters into surface waters from sources exceeding 6,000 m³/year or 500 m³/month in the year 2009 in millions of m³

River Board, s. e.	Public sewerage systems		Agriculture incl. irrigation		Energy sector		Industry incl. extraction		Other incl. construction industry		Total	
	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number	Volume	Number
Elbe River Board, s. e.	174.5	602	0.0	3	636.4	21	96.4	183	3.7	54	911.0	863
Vltava River Board, s. e.	276.3	630	1.3	5	15.7	21	51.0	150	29.6	542	373.9	1 348
Ohře River Board, s. e.	77.4	269	5.7	2	22.6	15	83.2	173	3.4	31	192.3	490
Oder River Board, s. e.	111.9	318	0.0	0	5.7	1	64.4	73	5.5	88	187.5	480
Morava River Board, s. e.	207.8	973	0.1	5	99.7	3	19.0	144	2.3	39	328.9	1,164
Total	847.9	2,792	7.1	15	780.1	61	314.0	723	44.5	754	1,993.6	4,345

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 1980–2009



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

of discharged waste waters was recorded in the river basins administered by the Elbe River Board, s. e., to 99.8% of the 2008 level, and in the river basins administered by the Ohře River Board, s. e., to 97.0% of the 2008 level. An increase was recorded in the Morava River Board, s. e., by 4.5% , in the Vltava River Board, s. e., by

3.6% and in the Oder River Board, s. e., by 2.0% compared to the 2008 level.

The users were classified in the respective groups according to the valid sectoral NACE classification. Public sewerage systems (excl. transfers) NACE 37.



The Ostravice River in Frýdek-Místek



Adéla Parmová

30 | 9 years, Dolákova basic school and nursery school, Prague

Sources of pollution

5.

5.1

Point sources of pollution

Surface water quality is affected primarily by point sources of pollution (municipalities, industrial plants and farms with intensive agricultural animal production). The level of water protection against pollution is most often assessed based on the development of the produced and discharged pollution.

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

Production of organic pollution in the year 2009, compared to the year 2008, did not change significantly, having reached the following figures: BOD₅ indicator decreased by 3,639 tonnes (by 1.5%) and the COD_{Cr} indicator decreased by 8,371 tonnes (by 1.4%). In the SS indicator production in the year 2009 decreased by 6,342 tonnes (by 2.3%) and in the DIS indicator by 19,175 tonnes (by 2.4%).

Discharged pollution is the contamination contained in waste waters discharged to surface waters. Compared to the year 2008, the discharged pollution decreased in the year 2009 by 542 tonnes (by 7%) in the BOD₅ indicator, by 1,139 tonnes (by 2.5%) in the COD_{Cr} indicator, by 475 tonnes (by 3.4%) in the SS indicator and by 7,660 tonnes (by 0.9%) in the DIS indicator. The positive trend in the decrease of discharged pollution according to the BOD₅, COD_{Cr} and SS indicators thus also continued in the year 2009. The decrease was observed for almost all of the data reported by the individual River Boards, state enterprises. The BOD₅ indicator increased in the data reported by the Oder River Board, s. e., and the COD_{Cr}



The Morava River – the Bolelouč Dam

indicator increased in the data reported by the Morava River Board, s. e. and the Oder River Board, s. e. A partial increase was recorded for the SS indicator by the Ohře River Board, s. e. and the Oder River Board, s. e., and for the DIS indicator by the Vltava River, the Ohře River and the Oder River Boards, s. e. Increased N_{inorganic} indicator was reported by the Ohře River Board, s. e. 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.

Between the years 1990 and 2009 the discharged pollution decreased in the BOD₅ indicator by 95.1%, in the COD_{Cr} indicator by 89.1%, in the SS indicator by 92.9% and in the DIS indicator by 19.3%.

In the 1990–2009 period, the water management sector succeeded also in reducing the quantity of the discharged hazardous and especially hazardous harmful substances. A significant decrease was also observed for macronutrients (nitrogen, phosphorus) as a result of the fact that waste water treatment technologies in the new and the so-called intensified waste water treatment plants apply the focused use of biological removal of nitrogen and biological or chemical removal of phosphorus.

Table 5.1.1

Produced and discharged pollution in the year 2009

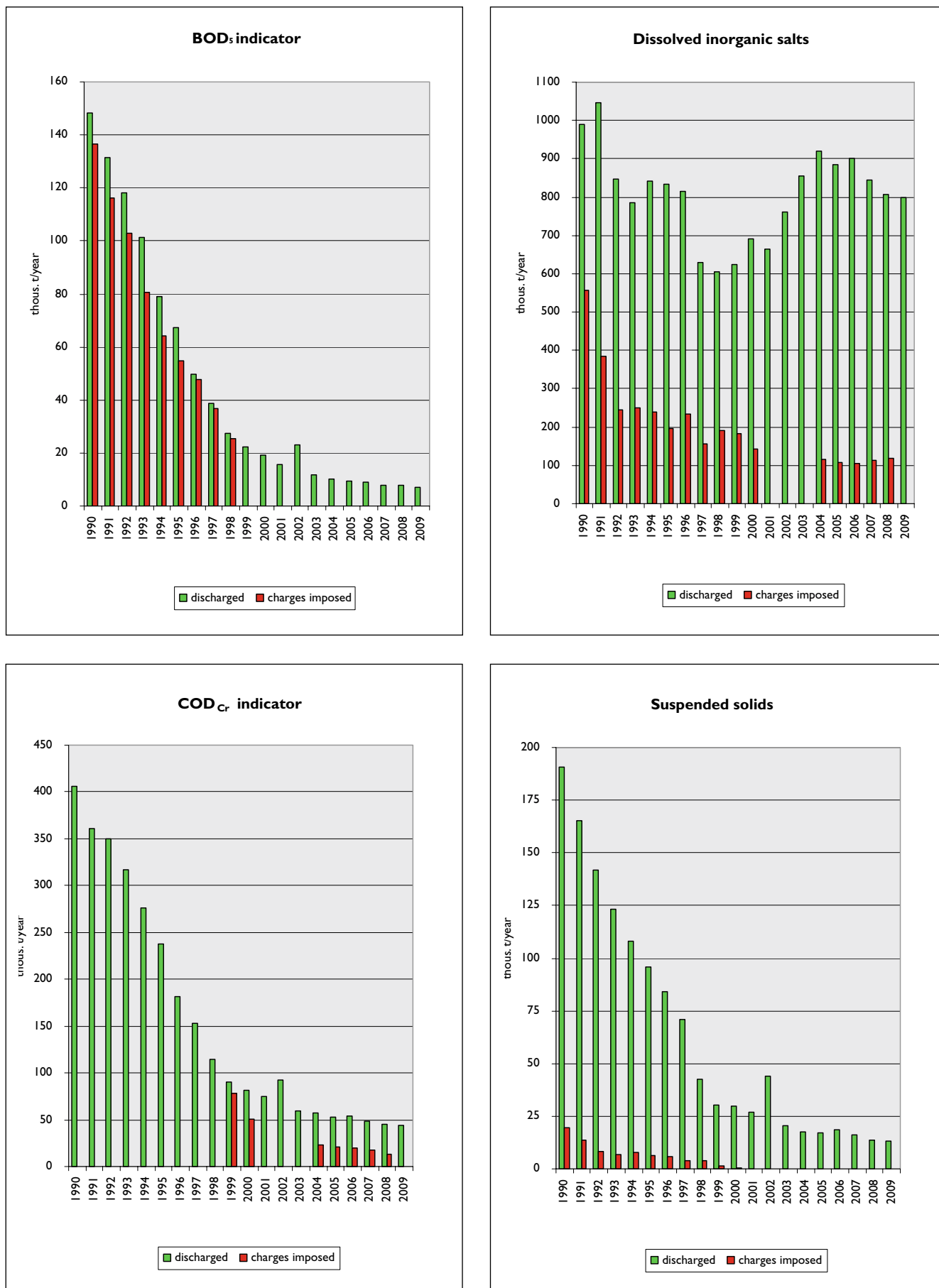
River Board, s. e.	Produced pollution in tonnes/year						Discharged pollution in tonnes/year					
	BOD ₅	COD _{Cr}	NL	RAS ^{*)}	N _{inorganic}	P _{total}	BOD ₅	COD _{Cr}	NL	RAS	N _{inorganic}	P _{total}
Elbe River Board, s. e.	44,291	117,507	47,440	194,327	7,491	1,024	1,939	11,842	3,851	190,519	4,234	269
Vltava River Board, s. e.	86,451	196,484	95,516	127,550 ^{*)}	9,361	2,354	2,000	11,852	2,831	143,915	3,824	297
Ohře River Board, s. e.	17,047	58,677	20,657	127,187	2,131	696	798	4,975	2,197	128,681	1,184	232
Oder River Board, s. e.	37,017	76,022	36,905	216,642	3,722	655	861	7,293	2,304	216,642	1,275	126
Morava River Board, s. e.	60,515	135,204	70,819	120,641	6,369	1,637	1,596	8,381	2,237	118,380	2,320	232

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

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

Chart 5.1.1

Discharged pollution and pollution on which charges were imposed in the years 1990–2009



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

5.2

Area pollution

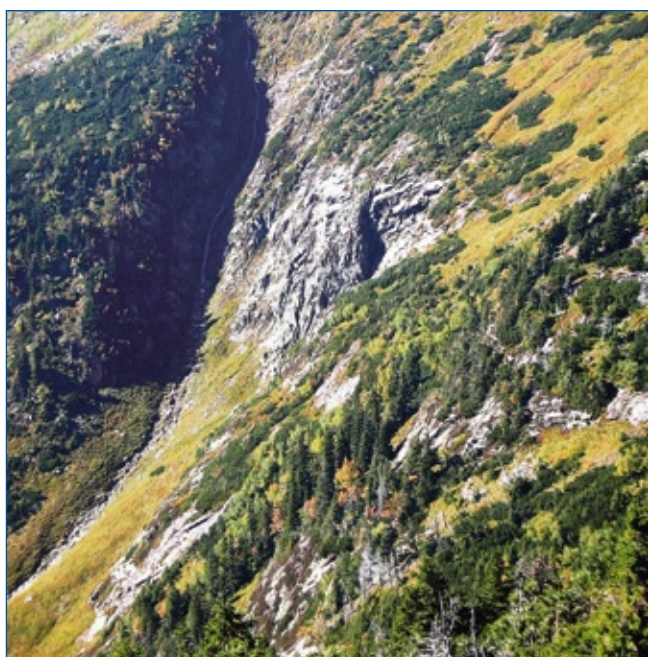
Surface water and groundwater quality is also significantly affected by area pollution, in particular the pollution from farming, atmospheric depositions and erosive runoff in the landscape. The importance of area pollution is increasing in parallel with the continued decrease in point source pollution. 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 Coll., on delimitation of vulnerable areas, the use and storage of fertilizers and 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.

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

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 in farming companies in vulnerable areas (approximately 300 companies),



The Úpa River headspring



The Otava River in Klášterský Mlýn

- monitoring of the impacts of farming under the action programme on water quality in the vulnerable area 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 sub-basins 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.

5.3

Accidental pollution

Surface water and groundwater quality is also affected by the adverse impacts of accidental pollution. In the year 2009 the Czech Environmental Inspectorate registered 111 accidental pollution events and events posing a threat to water quality, including four events in groundwaters.

Compared to the year 2008, the total number of accidents affecting water quality in the year 2009 decreased by 25 events. The most numerous group of pollutants continued to be oil and oil products: 41.5% of the total number of the registered events, followed by waste waters: 20.7% and sludges and solid substances: 5.4%. The character of pollutants was not identified for 17 accidents (15.3%). Classified by the cause (inflictor) of the accident, the most numerous were accidents caused in traffic (9.0%), followed by accidents in agriculture, in hunting and game management and related activities (7.2%), accidents associated with waste water and solid waste disposal (6.3%) and accidents caused by other inflictors (8.1%). The inflictor was not identified (according to SCEA) in 45.0% of all events (in the year 2008 it was 45.6% of all events). In 2009, the Czech Environmental Inspectorate imposed in total 744 financial penalties for breach of legal regulations in force in the field of water management, of which 665 penalties became fully effective and amounted in total sum to CZK 40.973 million.



Karolína Molíková

10 years, Dolákova basic school and nursery school, Prague

Watercourse administration

6.

6.1

Professional administration of watercourses

The inland position of the Czech Republic in the heart of Central Europe predetermines its relation to the European river network and from the hydrological viewpoint we may call the country “the roof of Europe”. The basic hydrographic system is constituted by approximately 79,000 km of watercourses (with both natural and regulated stream channels). Watercourses on the territory of the Czech Republic are divided into two categories: significant watercourses and minor watercourses. In the year 2009, the professional administration of watercourses was carried out in accordance with the provision of Section 47 of the Act No. 254/2001 Coll., 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 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 95.3% of the total length of watercourses in the Czech Republic. Other entities involved, including the Ministry of Defence, the National Park Administrations and other natural and legal persons are responsible for approximately 4.7% 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 again 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 specific account of significant watercourses is published



The Bílá ravine in Klatovy

in Decree No. 470/2001 Coll., stipulating the list of significant watercourses and the method of carrying out the activities relating to watercourse administration, as amended by Decree 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 I to the above mentioned Decree. 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 Coll., on river basins, by the respective River Boards, state enterprises: the Elbe River Board, the Morava River Board, the Oder River Board, the Ohře River Board and the Vltava River Board. The backbone watercourses are the Elbe (370 km) with the Vltava River (433 km) in Bohemia, the Morava River (272 km) with the Dyje River (306 km) in South Moravia, and the Oder River (135 km) with the Opava River (131 km), in North Moravia and Silesia.

Table 6.1.1

Professional watercourse administration

Category	Administrator	Length of watercourses in km	
		2008	2009
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
	Oder River Board, s. e.	1,111.39	1,111.39
	Morava River Board, s. e.	3,814.61	3,814.61
	Total	15,538.01	15,538.01
Minor watercourses	Agricultural Water Management Administration	38,682.02	38,888.97
	Forests of the Czech Republic, s. e.	19,570.83	19,598.64
	River Boards, s. e. in total	1,357.37	1,281.42
	Other *)	3,880.77	3,721.96
	Total	63,490.99	63,490.99
Watercourses in total		79,029.00	79,029.00

Source: MoA

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

All the other watercourses (provision of Section 43 of the Water Act) are minor watercourses. The total length of minor watercourses is almost 60,500 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 specified in detail in the above mentioned Decree No. 470/2001 Coll.

The public administration bodies and the general public find detailed information on the establishment of the administration of the respective watercourse in the "Register of Watercourses", which is available on the water management portal called WATER INFORMATION SYSTEM in the Czech Republic, i. e. www.voda.gov.cz. Currently, the original register of watercourses on a scale of 1:50 000 and a newly arising register on a scale of 1:10 000 are presented.

The acquisition value of the non-current tangible assets relating to watercourses amounted in the year 2009 to CZK 49.26 billion. Compared to the previous period, this value shows a year-on-year growth of CZK 0.81 billion.

The year-on-year growth is mainly caused by the increase in the non-current tangible assets generated by the renewal and planned development of entrusted property in the form of routine capital investment construction and by consecutive entries of the assets taken over, and the completed hydraulic structures in the accounting records. In the year 2009 no watercourse administrator completed the construction, 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 asset values in purchase prices and the year-on-year development (increase in the non-current tangible assets) for the individual watercourse administrators are shown in Table 6.1.2.

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

Watercourse administrators directly responsible to the Ministry of Agriculture	2008	2009
Elbe River Board, s. e.	8.51	8.55
Vltava River Board, s. e.	7.56	7.79
Ohře River Board, s. e.	8.19	8.39
Oder River Board, s. e.	5.01	5.06
Morava River Board, s. e.	6.88	6.91
River Boards, s. e. in total	36.15	36.70
Agricultural Water Management Administration	9.56	9.71
Forests of the Czech Republic, s. e.	2.74	2.85
Total	48.45	49.26

Source: MoA

In connection with the Order of the Minister of Agriculture No. 32/2009, regarding the competence of the office authorized to establish state organizations such as state enterprises and joint stock companies, new amended statutes of the River Boards, state enterprises and rules of procedure of the supervisory boards were issued in 2009.

According to the above mentioned order, the competence of the office authorized to establish state organizations was delegated to the Department of Economy and Administration, to be performed in cooperation with the respective departments. Water Management Department bears responsibility for the River Boards, state enterprises. 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 comprehensive and selective audits were carried out in the year 2009.

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 17 audits were carried out in the year 2009, at least two at each of the following River Boards: the Vltava River Board, the Ohře River Board, the Oder River Board and the Morava River Board state enterprises. The majority of audits were carried out by the Department of Programme Financing and the Department of Audit and Supervision. Except for one audit, no major irregularities were identified, and it was established that the state budget funds were used in compliance with all regulations. During two audits, minor irregularities were identified and duly remedied.

Financial Authorities

In the year 2009 these state administration bodies carried out in total 7 financial audits in the Vltava River Board, the Oder River Board, the Elbe River Board and the Ohře River Board state enterprises, focused on inspecting the legitimacy of the use of subsidies and the observance of budget rules and budgetary discipline. During the audits no shortcomings were found. One audit in the Ohře River Board, state enterprise, has not been finished yet.

The Czech Social Security Administration

In the year 2009 the district branches of this institution carried out in total 9 audits at all River Boards, state enterprises, focused on social security contributions, sickness insurance and fulfilment of tasks regarding pensions. One audit identified failing to adhere to deadlines for registration and deregistration of employees. The new deadline for performing the remedial measures was met.

Health Insurance Company

The obligation of the employer in the field of health insurance payments was audited at all River Boards, state enterprises, with in total 7 audits having been carried out. Based on investigations, differences in insurance payments not exceeding 300 CZK were identified twice.

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 6 audits were carried out at the Vltava River Board, the Ohře River Board, the Oder River Board and the Morava River Board state enterprises. No breach of duties was identified in these audits.

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

The Occupational Health and Safety Inspectorate, together with the Employment Office and the Trade Union of Workers in Woodworking Industries, Forestry and Water Management in the Czech Republic carried out in total 6 audits at the Vltava River Board, the Oder River Board, the Ohře 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. Based on these investigations, a few minor malpractices in this respect were identified and duly remedied.

Fire Rescue Service

The locally responsible Fire Rescue Teams carried out in total 5 comprehensive fire inspections at the Vltava River Board, the Morava River Board and the Ohře 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 remedial measures were imposed.

Audits carried out by other state administration bodies

The State Energy Inspection of the Czech Republic carried out one audit at each of the following River Boards: the Vltava River Board, the Elbe River Board and the Ohře River Board, state enterprises, regarding the technical and economic data from energy generating plants for renewable sources and the audit of observance of the Act on prices to meet the conditions for the admission of price in sales of electricity.

The Czech Environmental Inspection audited compliance with Act No. 114/1992 Coll., on the Protection of Nature and Landscape during an inspection at the Morava River Board, state enterprise. The audit focused on adherence to the water level in the central reservoir of the Nové Mlýny hydraulic structure. The next audit at the Morava River Board, s. e., regarding the condition of the purchased laboratory equipment (60% of costs covered from public funds) was carried out by the State Environmental Fund. The National Accrediting Body carried out at all workplaces of the Morava River Board, s. e. the assessments according to the CSN EN ISO/IEC 17025:2005 standard, performed by the water management laboratory. The Czech Metrology Institute in Prague carried out state metrological supervision under the Act No. 505/1991 Coll., at the Morava River Board, state enterprise.

The State Office for Nuclear Safety in Prague carried out inspection of radiation protection at the Elbe River Board, state enterprise. At the same River Board, s. e., the Ministry of Transport carried out inspection of the physical execution of the Poděbrady and Čelákovice hydraulic structure projects and of the upper navigation channel at Brandýs nad Labem.

Ostrava City Council carried out at the Oder River Board, s. e. an audit which focused on the ongoing use of subsidy for flood control measures at Ostrava Hrabová and Ostrava Svinov. The Regional Veterinary Administration for Moravia carried out investigations at several special fishing management plants.

In most of the completed 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 comprehensive and selective audits were carried out at this organization in the year 2009.

Ministry of Agriculture

The Department of Programme Financing in Water Management



The Vltava River – small hydroelectric power plants Troja

carried out ongoing on-site public inspections at the Agricultural Water Management Administration by virtue of the Act No. 320/2001 Coll. These audits were aimed at fulfilling the conditions for the use of state budget funds for projects financed under the sub-programme 129 123 – “Support for flood control measures along watercourses” and the sub-programme 229 013 – “Minor watercourses administered by the Agricultural Water Management Administration”. Audits were also carried out for the projects funded through the subsidy tool “Support for other measures in water management”. These audits identified no irregularities and neither the Binding Criteria for Provision of Funds in the Field of Waters in the year 2009 nor the method of controlling their use were breached. In total five projects were audited. The Department of Programme Financing in Water Management of the Ministry of Agriculture also carried out a public inspection of the course and results of public procurement under the programme 129 120: “Flood control measures” and the sub-programme 229 114: “Remedying of the impacts of floods in the year 2006”. These audits identified only minor irregularities as regards internal regulations, and they were promptly remedied.

External audits of the activities in the Economic Department

In the year 2009 one audit was carried out at the Economic Department of the Agricultural Water Management Administration by the Czech Social Security Administration bodies and one by the health insurance company. These audits identified no shortcomings.

6.2

River Boards, state enterprises

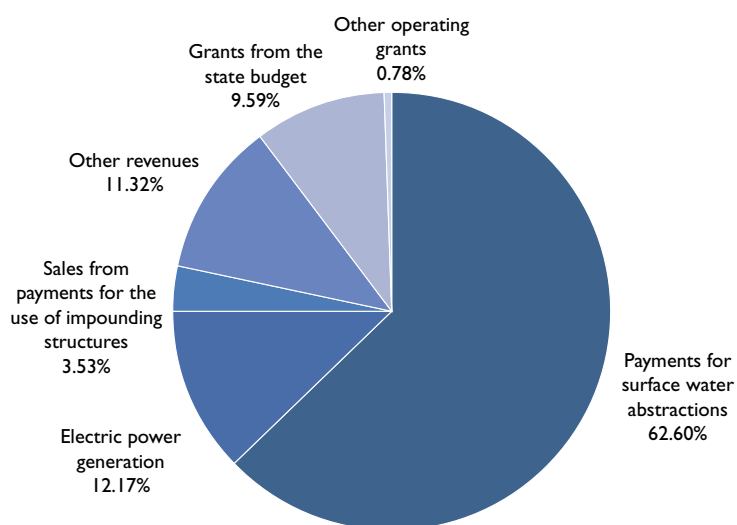
The overall revenues generated by the River Boards, state enterprises in the year 2009 reached a year-on-year increase amounting to 7.8%, i. e. in absolute figures an increasing in revenues by more than CZK 321 million. This increase was mainly generated by payments for surface water abstractions, which are in term 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 increased sales figures for all items shown in Table 6.2.1. The highest increase by almost CZK 104 million, equalling to a year-on-year increase amounting to 3.9%, was reached by surface water sales. Also quite a significant year-on-year increase was recorded for state budget subsidies, namely by CZK 80 million (i. e. a year-on-year increase of over 23%) and a five-fold increase was recorded also for other operating subsidies, by

Table 6.2.1**Structure of the revenues of the River Boards, state enterprises in the year 2009 in thousands of CZK**

Indicator	Elbe River Board, s. e.	Vltava River Board, s. e.	Ohře River Board, s. e.	Oder River Board, s. e.	Morava River Board, s. e.	Total
Payments for surface water abstractions	784,716	640,464	468,723	430,779	457,219	2,781,901
Electric power generation	40,497	208,580	194,925	60,937	36,024	540,963
Sales from payments for the use of impounding structures	13,896	134,870	3,283	-	4,956	157,005
Other revenues	129,663	128,136	117,623	58,163	69,306	502,891
Grants from the state budget	65,819	38,165	160	3,699	318,687	426,530
Other operating grants	0	8,783	3,003	-	22,614	34,400
River Boards, s. e. in total	1,034,591	1,158,998	787,717	553,578	908,806	4,443,690

Source: MoA, River Boards, s. e.

Chart 6.2.1**Structure of the revenues of the River Boards, s. e. in the year 2009**

Source: MoA

Table 6.2.2**Surface water supplies charged for in the years 2002–2009 in thousands of m³**

River Board, s. e.		2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	a)	571,365	803,416	815,491	777,041	748,522	765,070	807,073	800,772
	b)	41,618	36,334	39,182	39,818	46,518	39,396	36,031	36,787
Vltava River Board, s. e.	a)	266,916	286,889	274,084	262,532	263,685	260,008	252,659	243,528
	b)	167,878	173,773	163,896	160,483	161,528	155,382	153,131	146,670
Ohře River Board, s. e.	a)	169,092	170,975	162,934	155,315	161,071	152,636	150,115	148,330
	b)	57,807	58,951	57,033	53,644	55,385	52,410	51,514	50,299
Oder River Board, s. e.	a)	173,275	172,795	163,874	165,044	171,301	164,087	153,946	138,961
	b)	72,167	74,183	70,729	72,682	75,001	71,979	69,288	68,171
Morava River Board, s. e.	a)	135,366	165,653	145,185	154,770	162,336	174,803	179,833	174,398
	b)	38,112	38,256	36,969	34,953	34,128	33,554	32,553	31,233
River Boards, s. e. in total	a)	1,316,014	1,599,728	1,561,568	1,514,702	1,506,915	1,516,604	1,543,626	1,505,989
	b)	377,582	381,497	367,809	361,580	372,560	352,721	342,517	333,160

Source: River Boards, s. e.

Note: a) charged for in total,

b) of that for public water supply systems.

CZK 27 million in the absolute figure. In addition, other revenues showed a year-on-year increase by almost CZK 65 million, i. e. a year-on-year increase by 14.7%. Revenues from payments for the use of impounding structures showed a year-on-year increase by 16.3%, i. e. a year-on-year increase by almost CZK 22 million. A similar year-on-year increase by CZK 23 million, i. e. a year-on-year increase by 4.5% only, was reached in electric power generation. The revenues from electric power generation in the majority of River Boards, state enterprises come solely from their own small hydroelectric power plants, only at the Ohře River Board, s. e., also photovoltaic power plant takes a share, to a smaller extent, in sales figures.

The structure of the revenues of the River Boards, state enterprises, in the year 2009 is shown in Table 6.2.1. Chart 6.2.1 illustrates the proportion of the individual revenue types in the overall revenues of the River Boards, state enterprises.

The development of the overall surface water supplies charged for in technical units in a longer time series is shown in Table 6.2.2.

Prices for the individual types of surface water abstractions are shown in Tables 6.2.3 and 6.2.4.

Surface water prices in the context of other abstractions increased by 17.2%, which against the year 2008 (comparable to the year 2007) represents a rapid growth. In 2009, the average price of surface water ranged around CZK 3.13 per m³. These prices are the so-called factually regulated prices, which may include only eligible costs, reasonable profit and the tax pursuant to the relevant tax regulations.

In addition to through-flow cooling, since the year 2003 abstraction levels and prices of surface water have also been identified for the purposes of charged agricultural irrigation and flooding of artificial depressions in the landscape. Except for the Oder River Board, s. e., in the year 2009 the River Boards, s. e. in total abstracted water for the purposes of agricultural irrigation in the amount of 185 thousand m³ which in the aggregate for all River Boards, state enterprises in the year-on-year comparison represents a decrease by 84 thousand m³



compared to the previous year. This category of abstractions rather fluctuates, failing to show clear signs of major trends. The Vltava River Board, s. e. most significantly participated in this decrease in abstractions for the purposes of agricultural irrigation, followed by the Morava River Board, s. e. and the Ohře River Board, s. e. The Ohře River Board, s. e., similarly to the preceding years, is the only one reporting surface water abstractions for flooding of artificial depressions in the landscape, with a rapid increase by 18.6 million m³. Surface water abstractions for flooding purposes reached the total amount of 22,252 million m³.

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

These prices are subject regulated pursuant to Act No. 526/1990 Coll. on prices, and the rules stipulated by the decisions of the Ministry of Finance on price regulation, i. e. by the respective notifications issuing the list of goods with regulated prices which are published in the Price Journal.

In the year 2009 the River Boards, state enterprises reported in aggregate an increase in revenues from payments for surface water abstractions, which in absolute figures approximately amounts to CZK 103 million, compared to the year 2008, and corresponds to a year-on-year increase in this revenue category by almost 4%. Except for the Oder River Board, s. e., all the remaining River Boards, s. e. reported an increase in sales for surface water abstractions. The highest increase in sales for surface water abstractions is reported by the Elbe River Board, s. e., with a year-on-year increase amounting to CZK 50 million.

Table 6.2.3

Price for abstractions used for through-flow cooling in the years 2000–2009 in CZK/m³

River Board, s. e.	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	0.67	0.67	0.65	0.39	0.40	0.40	0.40	0.44	0.49	0.53
Vltava River Board, s. e.	0.76	0.81	0.86	0.91	0.92	0.93	0.94	0.96	1.00	1.03
Morava River Board, s. e.	0.56	0.60	0.53	0.41	0.49	0.54	0.56	0.62	0.67	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 2000–2009 in CZK/m³

River Board, s. e.	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	1.54	1.71	1.88	2.04	2.20	2.35	2.51	2.70	2.93	3.16
Vltava River Board, s. e.	1.55	1.65	1.70	1.79	1.90	2.00	2.11	2.24	2.45	2.68
Ohře River Board, s. e.	1.99	2.11	2.23	2.33	2.41	2.53	2.71	2.85	3.01	3.16
Oder River Board, s. e.	1.74	1.80	2.01	2.08	2.12	2.40	2.53	2.70	2.89	3.10
Morava River Board, s. e.	2.53	2.66	2.89	3.06	3.12	3.26	3.49	3.88	4.19	4.65
Average price quoted by River Boards, s. e. *)	1.76	1.90	2.10	2.23	2.44	2.42	2.56	2.68	2.67	3.13

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 2000–2009 in millions of CZK**

River Board, s. e.	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	532	536	566	613	669	669	678	705	735	785
Vltava River Board, s. e.	401	408	438	495	508	513	547	572	609	640
Ohře River Board, s. e.	367	397	399	427	420	393 ^{*)}	434 ^{*)}	434 ^{*)}	450 ^{*)}	469 ^{*)}
Oder River Board, s. e.	294	301	347	359	347	396	433	443	445	431
Morava River Board, s. e.	277	287	300	368	359	362	394	420	440	457
River Boards, s. e. in total	1,871	1,929	2,050	2,262	2,303	2,333	2,486	2,574	2,679	2,782

Source: River Boards, s. e.

Note: ^{*)} Since 2005 excluding sales from transport and abstraction of water.

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

The favourable hydrological situation also continued in the year 2009, allowing an increase in the revenues from sales of electric power from small hydroelectric power plants owned by the River Boards, s. e. by almost CZK 23 million and the overall revenues in this revenue category amounted almost to CZK 541 million.

The revenues from sales of electric power generated in small hydroelectric power plants annually increase the proportion in the overall revenues, taking the second place after the main source of revenues which are payments for surface water abstractions. Compared to the previous

years, the number of small hydroelectric power plants owned by the River Boards, s. e. remained unchanged, having only increased by one small hydroelectric power plant at the Vltava River Board, s. e. and decreased by one at the Morava River Board, s. e. The Ohře River Board, s. e. operating the largest number of their own small hydroelectric power plants, does not report the highest revenues, compared to the previous years. The highest revenues from sales of electric power amounting to CZK 208.5 million, due to an increase in the number of small hydroelectric power plants by one, are reported by the Vltava River Board, s. e. which operates 18 own small hydroelectric power plants.

In more detail, the information on the total number of small hydroelectric power plants owned by the individual River Boards, state enterprises, their installed capacity, electric power generation and sales is shown in Table 6.2.6.

Table 6.2.6**Small hydroelectric power plants owned by River Boards, s. e. in the years 2004–2009**

River Board s. e.	Indicator	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	Number of small hydro power plants	17	17	19	19	20	20
	Installed capacity in kW	4,876	4,876	5,217	5,217	5,892	5,892
	Electric power generation in MWh	15,284	19,135	18,619	19,270	18,325	20,356
	Sales in thousands of CZK	24,109	30,786	31,873	34,429	34,773	40,497
Vltava River Board, s. e.	Number of small hydro power plants	16	16	17	17	17	18
	Installed capacity in kW	15,900	15,300	18,400	18,400	18,400	21,200
	Electric power generation in MWh	67,706	74,050	73,485	83,568	82,039	89,239
	Sales in thousands of CZK	103,649	115,982	126,279	151,919	181,435	208,580
Ohře River Board, s. e.	Number of small hydro power plants	20	20	20	20	21	21
	Installed capacity in kW	16,677	16,677	16,677	16,677	16,949	16,930
	Electric power generation in MWh	87,465	96,967	96,188	107,876	94,056	90,027
	Sales in thousands of CZK	137,879	157,570	167,066	209,510	197,824	194,911
Oder River Board, s. e.	Number of small hydro power plants	14	14	14	14	16	16
	Installed capacity in kW	4,985	5,103	5,103	5,103	5,731	5,731
	Electric power generation in MWh	24,292	20,649	20,801	25,827	31,964	28,662
	Sales in thousands of CZK	36,484	35,049	35,033	50,120	68,710	60,937
Morava River Board, s. e.	Number of small hydro power plants	14	14	13	16	15	14
	Installed capacity in kW	3,612	3,612	3,400	3,530	3,522	3,482
	Electric power generation in MWh	13,803	14,415	14,483	8,709	14,281	14,252
	Sales in thousands of CZK	21,221	23,125	24,394	14,982	34,922	36,024
River Boards s. e. in total	Number of small hydro power plants	81	81	83	86	89	89
	Installed capacity in kW	46,050	45,568	48,797	48,927	50,494	53,235
	Electric power generation in MWh	208,550	225,216	223,576	245,250	240,665	242,536
	Sales in thousands of CZK	323,342	362,512	384,645	460,960	517,664	540,949

Source: MoA, River Board, s. e.

Table 6.2.7**Other revenues of River Boards, s. e. in the years 2001–2009 in thousands of CZK**

River Board, s. e.	2001	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	124,730	173,429	6,368	87,233	92,256	162,403	115,334	105,185	129,663
Vltava River Board, s. e.	79,505	191,391	136,859	85,855	77,430	304,594	73,143	82,165	128,136
Ohře River Board, s. e.	57,809	65,606	67,525	59,410	73,068	80,937	74,837	110,493	117,623
Oder River Board, s. e.	28,208	47,853	41,618	34,712	35,656	41,780	34,911	61,628	58,163
Morava River Board, s. e.	46,462	44,975	55,643	48,960	58,411	61,959	46,423	78,966	69,306
River Boards, s. e. in total	336,714	523,254	370,013	316,170	336,821	651,673	344,648	438,437	502,891

Source: River Boards, s. e.

Other revenues of the River Boards, state enterprises comprise a sum of less significant items including in particular the lease of land, non-residential premises and water bodies as well as revenues from other business activities, among which the most significant ones are the revenues from sales of machinery services and automobile transport services, laboratory work and from design and engineering activities, 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 materialized 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 2009 to almost CZK 64.5 million. The highest year-on-year increase by almost CZK 46 million was reported by the Vltava River Board, state enterprise, followed by the Elbe River Board, state enterprise, with a year-on-year increase by almost CZK 24.5 million. The Oder River Board, s. e. and the Morava River Board, s. e. reported a slight decrease in sales in the other revenues category.

The summary of other revenues of the River Boards, state enterprises in a longer time series 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

control measures, define inundation areas and produce a number of conceptual studies.

The total amount of grants in the year 2009 increased compared to the previous year by 43.1%; however with a different proportion of the impacts of operating grants and investment grants. Grants of operating nature showed a year-on-year increase by 25.3% and investment subsidies showed a year-on-year increase by 51.1%. In total the grants in the year 2009 amounted to CZK 1.707 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 Transport Infrastructure Fund and by the Ministry of the Environment through the funds of the State Environmental Fund. Flood control measures were also co-financed with the contribution of certain regional authorities.

The total of operating (non-investment) and investment grants allocated to the individual River Boards, s. e. in the year 2009 is shown in Table 6.2.8. The Table shows the actual use of the grants, which except for the Ohře River Board, s. e. concurs with the total claimed amount. The Ohře River Board, s. e. in the year 2009 claimed the amount of CZK 3,782 thousand for operating grants and the amount of CZK 82,817 thousand for investment grants.

In the year 2009, the total costs increased, compared to the year 2008, by CZK 305.9 million, particularly due to an increase in the costs of external repairs by CZK 147.6 million. The increase in the total costs was also contributed to by an increase in personnel costs amounting to CZK 69.4 million, an increase in depreciation amounting to CZK 46.8 million and an increase in services amounting to CZK 35.7 million. The other items, compared to the year 2008, showed a slight increase or stagnation, costs of materials showed a slight decrease.

Table 6.2.8**Grants allocated to River Boards, s. e. in 2009 in thousands of CZK**

River Board, s. e.	Operating grant	Investment grant	Grants in total
Elbe River Board, s. e.	65,819	312,421	378,240
Vltava River Board, s. e.	46,948	405,155	452,103
Ohře River Board, s. e.	3,163 ¹⁾	45,810 ¹⁾	48,973 ¹⁾
Oder River Board, s. e.	3,699	354,479	358,178
Morava River Board, s. e.	342,064 ²⁾	127,922	469,986
River Boards, s. e. in total	461,693 ²⁾	1,245,787	1,707,480

Source: MoA, River Boards, s. e.

Note: ¹⁾ The total use of funds in the year 2009, unused funds are transferred to the next years.²⁾ The difference in this sum compared to the Table showing the structure of revenues and sales is caused by the grant invoicing date.

The highest increase in costs was observed at the Morava River Board, state enterprise, caused by a significant increase in costs of repairs due to remedying flood damage. An increase in the total costs was also high at the Vltava River Board, s. e. On the contrary, a decrease in costs was reported by the Elbe River Board, s. e. and the Oder River Board, s. e.

The summary of costs in the year 2009 reported by the River Boards, s. e. and their comparison with the previous year is shown in Table 6.2.9.

In the year 2009, River Boards, s. e. expended on investments the amount of CZK 2,225.6 million.

Compared to the previous year the investments made by the River Boards, state enterprises, in the year 2009 increased in total by CZK 354.3 million., having reached the total sum of CZK 2,225.6 million. Of this sum, approximately the amount of CZK 950.2 million was drawn from their own resources and the additional amount of over CZK 1,275.4 million not covered by the River Boards, s. e. own resources were expended on investments (the sum does not include the amount of CZK 19.5 million for the grant 129 120, which for the Vltava River Board, s. e. was included already in the year 2008, but financially settled as late as in January 2009).

The summary of investment funds over a ten-year time series is shown in Table 6.2.10 and Chart 6.2.2.

Table 6.2.9
Costs in 2008 and 2009 reported by River Boards, s. e. in millions of CZK

Type of cost	Year	Elbe River Board, s. e.	Vltava River Board, s. e.	Ohře River Board, s. e.	Oder River Board, s. e.	Morava River Board, s. e.	River Boards, s. e. in total
Depreciation	2008	157.3	200.3	177.7	126.3	119.5	781.1
	2009	156.5	236.8	178.6	128.7	127.3	827.9
Repairs	2008	296.5	245.5	151.8	120.9	161.0	975.7
	2009	196.4	294.8	156.4	93.9	381.8	1,123.3
Materials	2008	46.7	31.6	22.2	39.8	43.9	184.2
	2009	48.4	26.7	21.8	37.6	43.5	178.0
Energy and fuels	2008	41.8	33.2	32.0	5.8	12.3	125.1
	2009	37.5	33.4	41.9	5.6	14.8	133.2
Personnel costs	2008	400.1	357.4	271.4	194.6	285.6	1,509.1
	2009	421.6	371.7	288.7	199.9	296.6	1,578.5
Services	2008	71.0	88.6	32.4	40.2	37.7	269.9
	2009	79	111.5	33.5	45.2	36.4	305.6
Financial costs	2008	0.5	4.6	0.2	1.2	1.0	7.5
	2009	0.4	6.0	1.3	0.6	1.0	9.3
Other costs	2008	43.3	3.7	63.8	36.7	17.6	165.1
	2009	64.7	47.8	35.1	28.1	-7.9 ⁾	167.8
Total costs	2008	1,057.2	964.9	751.5	565.5	678.6	4,017.7
	2009	1,004.5	1,128.7	757.3	539.6	893.5	4,323.6

Source: River Boards, s. e.

Note: ⁾ accruals from the previous year were used

Table 6.2.10
Investments made by the River Boards, s. e. in the years 2000–2009 in millions of CZK

River Board, s. e.	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	328.5	347.1	529.1	607.6	915.2	485.2	394.9	212.0	455.0	459
Vltava River Board, s. e.	115.2	114.1	199.3	321.6	219.0	362.4	236.6	275.2	611.3 ⁾	761.1 ⁾
Ohře River Board, s. e.	148.2	173.4	212.8	339.8	329.5	354.4	170.4	215.7	322.5	277.5
Oder River Board, s. e.	361.6	226.8	282.3	316.3	301.3	260.6	254.7	199.7	244.2	473.5
Morava River Board, s. e.	356.8	257.8	200.5	407.4	411.9	462.3	518.2	413.5	257.8	254.5
River Boards, s. e. in total	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	2,225.6

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 (part of the grant 129 120 was carried forward to the year 2009, the amount of CZK 19.5 million was included already in the year 2008)

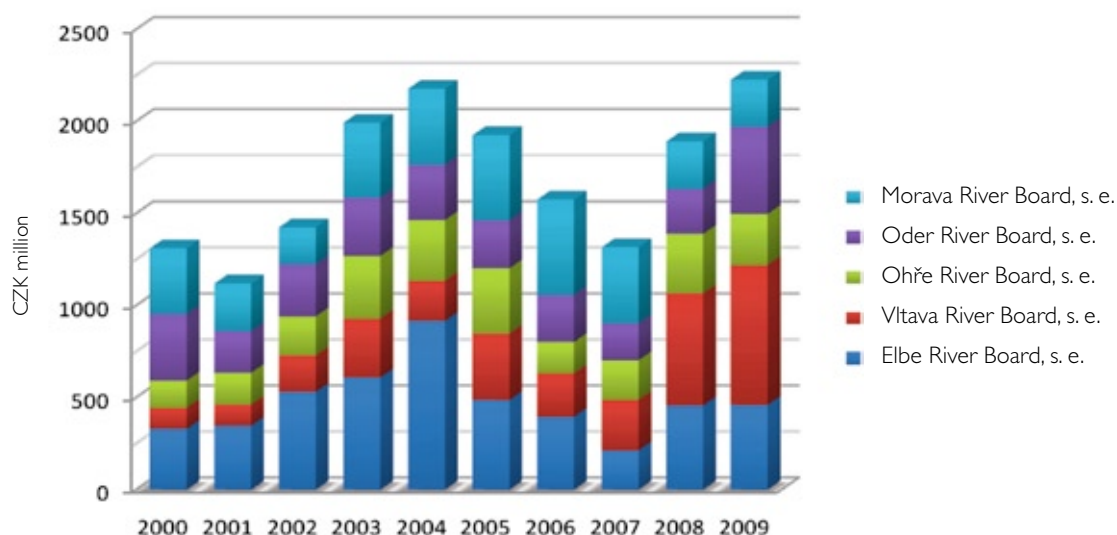
The financial results reached by all River Boards, state enterprises showed only a profit. The profit reached the total amount of almost CZK 120 million.

Compared to the previous year, the total profit is higher by approx. CZK 15 million. Except for the Ohře River Board, state enterprise, all of the remaining River Boards, state enterprises reached better results, compared to the year 2008.

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

The average recalculated number of employees in River Boards, state enterprises decreased in the year 2009 by 22 employees to a total of 3,504 persons.

A significant decrease in the number of employees was observed only in the Morava River Board, s. e., which shows a decrease of 30 employees. The Ohře River Board, s. e., reported the same number of employees as in the year 2008. The remaining River Boards, s. e. report a slight increase in staff numbers, namely, the Elbe River Board, s. e. by one employee, the Vltava River Board, s. e. by four employees and the Oder River Board, s. e. by three employees.

Chart 6.2.2**The development of capital construction in River Boards, s. e. in the years 2000–2009**

Source: MoA, River Boards, s. e.

Table 6.2.11**Profit/loss of River Boards, s. e. in the years 2002–2009 in thousands of CZK**

River Board, s. e.	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	4,774	26,542	39,445	36,777	6,132	15,798	16,692	30,050
Vltava River Board, s. e.	- 45,525	45,752	42,008	34,376	177,869	67,625	23,375	30,265
Ohře River Board, s. e.	11,334	28,274	16,817	17,070	47,735	71,817	22,401	30,371
Oder River Board, s. e.	23,002	38,671	11,877	16,680	56,401	24,595	29,296	20,928
Morava River Board, s. e.	24,512	32,170	37,142	13,038	11,054	12,417	13,035	15,295
River Boards, s. e. in total	18,097	171,409	147,289	117,941	299,191	192,252	104,799	126,909

Source: River Boards, s. e.

Table 6.2.12**Proposed allocation of profit of River Boards, s. e. for the year 2009 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.	30,050	3,005	8,000	16,045	-	3,000	-
Vltava River Board, s. e.	30,265	-	6,000	18,265	-	6,000	-
Ohře River Board, s. e.	30,371	6,074	7,000	10,297	-	7,000	-
Oder River Board, s. e.	20,928	6,964	7,464	-	-	6,500	-
Morava River Board, s. e.	15,295	1,530	7,200	-	-	3,500	3,065

Source: River Boards, s. e.

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**The number of employees of River Boards, s. e. in the years 2008 and 2009 (average recalculated number)**

River Board, s. e.	2008	2009
Elbe River Board, s. e.	942.8	943.7
Vltava River Board, s. e.	782.0	786.2
Ohře River Board, s. e.	605.5	605.2
Oder River Board, s. e.	458.9	461.7
Morava River Board, s. e.	736.4	706.9
River Boards, s. e. in total	3,525.6	3,503.7

Source: River Boards, s. e.



The Elbe River – Les Křídlovství Reservoir

Table 6.2.14**Average salaries in the individual River Boards, s. e. in the years 2002–2009 in CZK/month.**

River Board, s. e.	2002	2003	2004	2005	2006	2007	2008	2009
Elbe River Board, s. e.	17,941	18,750	20,125	21,781	23,036	24,318	25,778	27,283
Vltava River Board, s. e.	18,444	19,073	20,556	21,909	23,414	24,611	27,325	28,300
Ohře River Board, s. e.	18,435	19,420	20,661	22,091	23,464	24,971	26,794	28,620
Oder River Board, s. e.	17,516	18,362	19,656	21,050	22,337	23,817	25,534	26,104
Morava River Board, s. e.	16,216	16,899	17,975	19,233	20,798	22,052	23,823	25,778
Average monthly salary in River Boards, s. e.^{*)}	17,724	18,505	20,072	21,243	22,637	23,954	25,856	27,283

Source: River Boards, s. e.

Note: *) Calculated by weighted average.

The average monthly salary in the River Boards, state enterprises in the year 2009 amounted to CZK 27,283.

Compared to the previous year, the average monthly salary increased by almost CZK 1,400. The annual increase ranges from CZK 570 in the Oder River Board, s. e. up to CZK 1,955 in the Morava River Board, s. e., which, nevertheless, continues to report the lowest average monthly salary, amounting to CZK 25,778.

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 non-profit water management in the river sub-basins 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 Coll. on Water and on amendment to certain laws (the Water Act), as amended, the Act No. 219/2000 Coll. on the property of the Czech Republic and its performance in legal relations, as amended, in the year 2009 the Agricultural Water Management Administration carried out administration of minor watercourses in a total length of 38,889 km (including 16,701 km of regulated streams) and 512 reservoirs. The total acquisition value of the non-current tangible assets administered for minor watercourses by the Agricultural Water Management Administration amounts to CZK 9.709 billion.

Based on inventory results as of 31 December 2009, the Agricultural Water Management Administration also carries out the administration of large property falling into the category of main drainage facilities. At present, this property comprises in total 8,915 km of open drainage channels and channels regulated in pipelines, 137 pumping plants, 11 reservoirs relating to drainage systems and 526 culverts. The acquisition values of this property amounts to CZK 2.527 billion. In the year 2009, the administration of all entrusted property in the aggregate acquisition value exceeding CZK 12 billion was performed by the total of 388 employees in the Agricultural Water Management Administration.

In the year 2009 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 renovation of capital assets administered by the Ministry of Agriculture, programme solution and financing, remedying flood damages, the implementation of flood control measures and projects funded under landscaping programmes of the Ministry of the Environment, 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).

At the turn of June and July 2009, the territory of the Czech Republic was inflicted by local torrential rains. The floods that occurred particularly in smaller river basins, were of very fast pace and the maximum rainfalls were reported to mostly occur in the evening and night during 3–6 hours.

From the viewpoint of the Agricultural Water Management Administration, most heavily affected were the watercourses belonging to the Oder River basin district, the Morava River and the Dyje River basin districts and partly affected were also the Vltava River and the Ohře River basin districts. In the Elbe River basin district, no flood damage was reported. The character of damage to the Agricultural Water Management Administration property was highly varied,



having reflected the differences between flood situations in different localities impacted by floods. It can be summarized that upper stretches of watercourse channels were impacted, in particular, by erosive effects of water and drifting objects. Extensive damage to the structures on watercourses, changes in watercourse channel routes, damage to the banks including extensive devastation of bank vegetation were observed. Sedimentation of suspended matter occurred to a larger extent not only in watercourse channels and reservoirs, but also on the surrounding lands.

After a decline of increased discharges, the Agricultural Water Management Administration staff members within their respective territorial competence assessed and monitored the situation, remedied the states of disrepair, got involved in flood committee actions and evaluated and recorded the flood damage. Flood damage to the entrusted property was figured out in the amount of CZK 416.315 million.

In implementing the measures to remedy damages caused by floods last year, it was necessary to give the priority to ensuring the renewal and reconstruction of hydraulic structures and the stability and flow capacity of watercourse channels in their entire lengths, primarily in municipal and urban areas. These measures were implemented by the Agricultural Water Management Administration in the year 2009 through taking the so-called immediate actions that were funded from financial resources allocated by the Ministry of Agriculture. The subsequent systemic remediation of flood damage from the year 2009 will be implemented under the sub-programme 229 116.

In the year 2009, the Agricultural Water Management Administration focused especially on the preparation and execution of projects under stage II of the Flood Prevention Programme. In preparing the projects, complicated negotiations regarding the property settlement of lands proceeded. The implemented measures included, in particular, construction of water reservoirs and flood control dikes and measures to increase the flow capacity of watercourse channels in municipal areas. The financial resources expended on flood control measures in the year 2009 amounted to CZK 92.812 million.

Within the framework of the landscape hydrological regime optimization and using financial resources provided by the Ministry of the Environment for the programme 215 110 – "The Programme of Revitalization of River Systems", the Agricultural Water Management Administration also in the year 2009 participated in the execution of several projects and measures aiming to improve the hydrological regime in the landscape, improve the retention capacity of the area and rehabilitate the natural character of minor watercourses. Promising for the forthcoming years are financial resources to be

provided by the Ministry of Agriculture for the preparation and co-financing of projects of similar character, executed under the Operational Programme Environment.

During 2009, the Agricultural Water Management Administration continued, in accordance with the provisions of Section 50 and Section 56 of the Water Act, in negotiating the financial settlement with the owners of land below hydraulic structures administered by the Agricultural Water Management Administration. The settlement process was under way throughout the year, following the internal methodology of the Agricultural Water Management Administration through the programme 229 010 – "The Development and Renewal of the Technical and Material Base of the Ministry of Agriculture" (sub-programme 229 013) and through non-investment measures of the Agricultural Water Management Administration. In 2009, the total amount of CZK 10.553 million from the state budget was expended on land buy-outs and compensations for the land use.

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 89.223 million. The respective amount of financial resources, compared to the year 2008, was reduced due to financial crisis by approx. CZK 68 million, which partly disallowed the Agricultural Water Management Administration to provide for the necessary systemic management of the administered property. The maintenance of watercourses included in particular mowing, clearing, repairs of flood control 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 in the amount of CZK 26.582 million to take immediate action due to emergency situations caused mainly by local floods.

In the year 2009, measures of non-investment nature also included remedying flood damage from the years 2006 and 2007, 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 39.982 million were used in 2009 for main drainage facilities maintenance, primarily for grass mowing and cleaning the channels ensuring runoff from drainage systems. Part of the funds (CZK 1.031 million) were used to coping with emergency situations.

A summary of the actual use of funds allocated for measures of non-investment nature in the year 2009 is shown in Table 6.3.1.

Table 6.3.1

The use of individual non-investment financial resources of the Agricultural Water Management Administration in the year 2009 in millions of CZK

Activity	Resource	Budget	Reality
Maintenance and repairs of watercourses	State budget	89.433	89.223
Operation of watercourses and related hydraulic structures	State budget	22.071	21.828
Landscape conservation programme	State budget	0.193	0.192
Flood prevention	State budget	7.445	7.365
Maintenance of main drainage facilities	State budget	40.000	39.982
Operation of main drainage facilities	State budget	11.496	11.204
Other non-investment expenditures	State budget	20.874	20.798
Total		191.512	190.592

Source: Agricultural Water Management Administration

Note: Non-investment expenditures on remedying flood damages are shown in separate tables.

Table 6.3.2

Coverage of the expenditures of the Agricultural Water Management Administration on maintenance and repairs of watercourses and hydraulic structures in the years 2005–2009 in millions of CZK

Source of funds to cover the expenditures	2005	2006	2007	2008	2009
MoA Budget – Watercourses and reservoirs	90.1	81.5	169.7	156.8	89.2
MoA Budget – Main drainage facilities	17.5	19.4	60.5	37.6	40.0
Landscape conservation programme	0.2	0.1	0.1	0.1	0.2
Flood control measures	0	0	0	2.9	7.4
State Budget total	107.8	101.0	230.3	197.4	136.8
State Fund for Land Reclamation	1.5	0	0	0	0
Total	109.3	101.0	230.3	197.4	136.8
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	0	0	0	0	0
Total	109.3	101.0	230.3	197.4	136.8

Source: Agricultural Water Management Administration

Table 6.3.3

Non-investment expenses on watercourses, maintenance and repairs of main drainage facilities administered by Agricultural Water Management Administration in the year 2009 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.	27.639	1.606	0	15.026	1.324	45.595
Elbe River Board, s. e.	14.701	3.288	3.424	10.539	2.669	34.621
Ohře River Board, s. e.	6.524	1.087	0	2.987	0.146	10.744
Morava River Board, s. e.	24.609	11.610	0.301	7.950	6.325	50.795
Oder River Board, s. e.	15.749	4.237	1.467	3.480	0.740	25.673
Total	89.222	21.828	5.192	39.982	11.204	167.428

Source: Agricultural Water Management Administration

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 2009 by the individual river basin districts is shown in Table 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 2009 amounted in total to CZK 13.9 million, including payments for surface water abstractions, amounting to CZK 2.2 million. The surface water price was set for the year 2008 at CZK 1.34 per m³. This price does not include VAT since the Agricultural Water Management Administration, as one of the organizational 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.

Table 6.3.4

Structure of revenues of the Agricultural Water Management Administration in millions of CZK in the years 2005–2009

Revenues	2005	2006	2007	2008	2009
Payments for water abstractions	3.9	4.2	2.9	2.9	2.2
Rentals of hydraulic structures	5.2	5.4	3.4	3.4	3.9
Other revenues	5.1	2.7	4.7	11.3	7.8

Source: Agricultural Water Management Administration

In the year 2009, the Agricultural Water Management Administration, using the sub-programme 229 114 “Remedying the Impacts of Floods in the Year 2006”, finished the remedying of flood damages of both investment and non-investment nature from the year 2006. The remedying of flood damages from the year 2007 started under the sub-programme 229 115. The remedying of flood damages from the year 2009 (states of emergency) was partly financed from the funds allocated for current maintenance. An overview of funds used for remedying of flood damages in the course of the year 2009 is shown in Table 6.3.5.

Table 6.3.5

Remedying flood damages from the previous years on watercourses administered by the Agricultural Water Management Administration in 2009 in millions of CZK

Source – programme	Capital costs	Non-investment costs	Total
Programme 229 114	16.936	3.424	20.360
Programme 229 115	0.321	1.768	2.089
Total	17.257	5.192	22.449

Source: Agricultural Water Management Administration

In the year 2009, the Agricultural Water Management Administration carried out capital construction amounting to approximately CZK 121.3 million, including the implementation of flood control measures amounting to CZK 85.4 million and remedying flood damages from the

Table 6.3.6

Structure of investments and financial resources of the Agricultural Water Management Administration in the years 2006–2009 in millions of CZK

Structure of investments	Funds	2006	2007	2008	2009
Watercourse regulation	State budget – MoA	80.5	93.6	73.2	5.4
	Special-purpose fund (alternative land reclamation)	0	0	0	0
	State Fund for Land Reclamation	0	0	0	0
Study of runoff conditions	State budget	0	0	0	0
Revitalization of watercourses	State budget	26.1	14.4	0	13.3
Flood control measures	State budget	55.9	20.5	61.1	85.4
	European Investment Bank	12.1	0	0	0
Remedying of flood damage from the year 1997	State budget	0	0	0	0
	European Investment Bank	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	0	0	0
Remedying of flood damage from the year 2002	State budget	1.1	0	0	0
	European Investment Bank	0	0	0	0
Remedying of flood damage from the year 2006	State budget	1.6	3.6	48.6	16.9
Remedying of flood damage from the year 2007	State budget	0	0	0	0.3
Total		177.3	132.1	182.9	121.3

Source: Agricultural Water Management Administration

years 2006 and 2007 amounting to CZK 17.2 million. The structure of incurred expenditures is shown in Table 6.3.6.

As regards information technologies, the Agricultural Water Management Administration participates in preparing and processing source documents for the Water Management Information Portal in the area of the registration of structures used in water management land reclamation, preparing source documents for the Central Register of Watercourses (CEVT IO) and for the Central Register of Reservoirs (CEVN).

The Administration makes use of the already established Virtual Private Network for its intranet projects and data communication within the organization.

6.4

Forests of the Czech Republic, s. e.

Forests of the Czech Republic, state enterprise, performs the administration of the specified minor watercourses and torrents as one of non-production forest functions. At present, the Forests of the Czech Republic administer approximately 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 acquisition value exceeding CZK 2.8 million (in particular watercourse regulation, torrent and ravine control, flood control measures and reservoirs). The watercourse administration is managed by the Water Management Department at the Head Office of the Forests of the Czech Republic, s. e. and is carried out by 82 employees in six Watercourse Administrations, with territorial responsibility according to the respective river basin districts. Since October 2009, the Berounka River basin district has been integrated to the Vltava River basin district, based in Benešov.

The watercourse administration and the implemented measures (repairs, rehabilitation and new investments) were financed from the organization's own resources and to a certain extent from grants

and subsidies. As regards subsidies, the funds in question include measures carried out in the public interest pursuant to Section 35 of the Forest Act, financial resources from the state budget allocated for the programmes of the Ministry of Agriculture "Support for Flood Prevention II" and "Support for Remedying Flood Damages to State-owned Water Management Property" pursuant to Section 102 of the Water Act. In addition, the Forests of the Czech Republic, s. e. also used the EU funds from the "Operational Programme Environment" and the "Programme of Rural Development". Measures relating to minor watercourses are also to a certain extent funded by the Regional Authorities. The activities carried out in connection with watercourse administration are of a non-commercial nature and with regard to the overall funds expended they generate virtually no profit. The revenues from payments covering the watercourse administration amounted to CZK 10.5 million.



The Brumovka River in Brumov

In the year 2009, the activities of the Forests of the Czech Republic, s. e. in the field of water management were focused in particular on:

- remedying flood damage from June and July 2009,
- implementation of both capital investment projects and non-investment projects aimed at flood control measures, erosion control measures and also the public interest projects pursuant to Section 35 of the Forest Act,
- other activities aimed at riparian stand management, revitalization of watercourses which were improperly regulated in the past, non-productive forest functions, support of endangered species, elimination of non-indigenous invasive plant species, etc.

In the year 2009, the most significant event were floods from the turn of June and July. An extraordinary hydrometeorological event significantly afflicted, in particular, the Oder River basin district, namely the Nový Jičín and the Jeseník areas. In the Nový Jičín area, this concerned mainly the Jičínka River and the Zrzávka River basins, in the Jeseník area mainly the Javornický stream, the Skorošický stream, the Lánský stream and the Červený stream catchment areas.

In the last week in June, these floods significantly affected also the Morava River basin district, namely the Hranice area, the Rožnov area, the Valašské Meziříčí area, the Vsetín area and the Hodonín and the Uherské Hradiště districts. Later, torrential rains occurred in the Šumava Mountains (Boubín Hill) area, and in the beginning of July similar torrential rains caused floods to occur in the Děčín area. The total damage to watercourses and costs of measures to remedy flood damage amounted to CZK 600 million. More than 80 watercourses and 60 municipalities were afflicted by floods.

Immediately after the occurrence of flood situation, the individual watercourse administrators organized the most urgent actions to secure watercourse locations most heavily impacted by flood discharges. Almost CZK 20 million were expended on these actions. This was followed by preparing and executing works to remedy the impacts of flood damage that were not coped with in securing actions. The resulted situation led to preparing the concept of complex regulations for flood-afflicted watercourses with main focus on the strengthening of flood control measures for the residents and their homes.

In connection with watercourse administration, the Forests of the Czech Republic, s. e., through its organizational units, the Watercourse Administrations, disbursed in total CZK 465.2 million, including expenditures of capital investment nature amounting to CZK 239.4 million. Its own funds used for these investments amounted to CZK 89.4 million. In total CZK 225.8 million, including CZK 206.8 million of own funds were used to perform the administration, repairs and maintenance of torrent control structures. In total CZK 67.5 million, including CZK 53.7 million of own funds were expended on remedying flood damage. The above mentioned amounts include all costs relating to watercourse administration. The structure of water management financing by the Forests of the Czech Republic, s. e. in the year 2009 is shown in Table 6.4.1.

Table 6.4.1

Structure of financing watercourse administration by the Forests of the Czech Republic, s. e. in the year 2009 in millions of CZK

Forests of the Czech Republic, s. e.	Own resources	Subsidies	Flood damages	
			Own resources	Subsidies
Investments	89.4	150.0	6.9	12.1
Non-investments	206.8	19.0	6.9	41.6
Total	296.2	169.0	13.8	53.7

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

Measures in river basins

The Watercourse Administration for the Elbe River basin district completed in 2009 in the Orlické hory Mountains the following four projects of capital investment nature, financed under the "Flood Prevention Support II" programme of the Ministry of Agriculture: torrent control measures on the Hluký stream, flood control measures on the Bartošovický stream and the Jamenský stream and the Hořenský stream in the Turnov area.

As regards measures taken in the public interest pursuant to Section 35 of Forest Act, the following projects were completed: the Dolenský stream at Brandýs nad Orlicí, the Hlubočický stream near Skuteč and the Debrnský stream near Dvůr Králové. Own funds were used to execute further projects on the Ruprechtický stream and the Malý Sloupský stream in the Liberec area, and on the Lovětínský stream in the Chrudim area. As regards non-investment projects, significant repairs were executed in Krumburk, Čermná, Nové Hradky and Česká Rybná municipal areas.

After the flood in summer 2009, own funds were used to eliminate flood damage on the Markoušovický stream and Heřmánkovický stream in the Broumov area.

The Watercourse Administration for the Vltava River basin district completed in 2009 the following projects co-financed from the "Flood Prevention Support II" programme of the Ministry of Agriculture: the Zahořanský stream and the Ohrobecký stream in the Benešov area. The repair of torrent regulation of the Hradové Střímelice stream near Chocerady was completed in accordance with Section 35 of the Forest Act, and the remediation of the remaining flood damage to the Vltava River tributary near Rožmberk was started.

In 2009 on the territory of the Watercourse Administration floods occurred particularly in the Šumava Mountains (Boubín Forest) area. The remediation of flood damage included the execution of 14 projects of securing character. Another 10 projects were under preparation.

In the Berounka River basin district, the activities were particularly focused on the erection and promotion of structures designated to perform the forest functions, in cooperation with the Regional Authority Plzeň. The reconstruction of Vrátnice reservoir in the Plzeň area was completed.

More significant completed projects of capital investment nature include flood control measures on the Čížický stream and Radčický stream in the Plzeň area.

Own funds were used to complete the stabilization of the Berounka River tributary channel in the municipality of Kozojedy.

Within the elimination of flood damage from July, necessary securing works were executed on the Halounský stream in the municipality of Svinaře in the Beroun area.

In the Ohře River basin area the following projects were completed in 2009: rehabilitation of the Starosedelský stream in the Sokolov area, measures on the Hájský stream and Křižanovský stream aiming to capture suspended matters and to increase the channel capacity



The Otava River in Rejštejn

as the protection of lower-laying municipalities in the Teplice area, and projects Liščí II, the Martinovský stream and the Telnický stream. These projects were funded from the "Flood Prevention Support II" grant programme of the Ministry of Agriculture.

Grants in accordance with Section 35 of the Forest Act were used to finance the projects on the Lesní stream in the Teplice area and on the Struhařský stream in the Podbořany area.

Torrential rains in July 2009 caused floods in the Děčín area. The preparation of projects of repairs and reconstructions of stream channels to be started in the next year was under way.

In the Watercourse Administration for the Morava River basin district, the following projects funded from the "Flood Prevention Support II" grant programme of the Ministry of Agriculture were completed: the Hrabovský stream in the Šumperk area, Jasenka in Vsetín, the Kladénka River tributary and the Pozlovický stream tributary in the Uherský Brod area.

The EU funds, namely under the Rural Development Programme, were used to complete the project Ludina in Střítež in the Hranice area.

Larger projects financed by the Forests of the Czech Republic, s. e. from its own funds include, for example, projects on the Hrušovka watercourse near Valašské Klobouky, Bílá Voda, the Věžecký stream in the Kroměříž area and the Maretkový stream near Valašské Meziříčí.

In the last week in June, floods afflicted mainly the Hranice, Rožnov, Valašské Meziříčí, and Vsetín areas and districts of Hodonín and Uherské Hradiště. In the first phase of elimination of the impacts of floods securing works were executed, followed by the preparation of projects.

In the Watercourse Administration for the Oder River basin district the most significant event in 2009 were floods from the turn of June and July. The territory of this Watercourse Administration was most heavily afflicted, with flood damage having reached the amount of CZK 380 million.

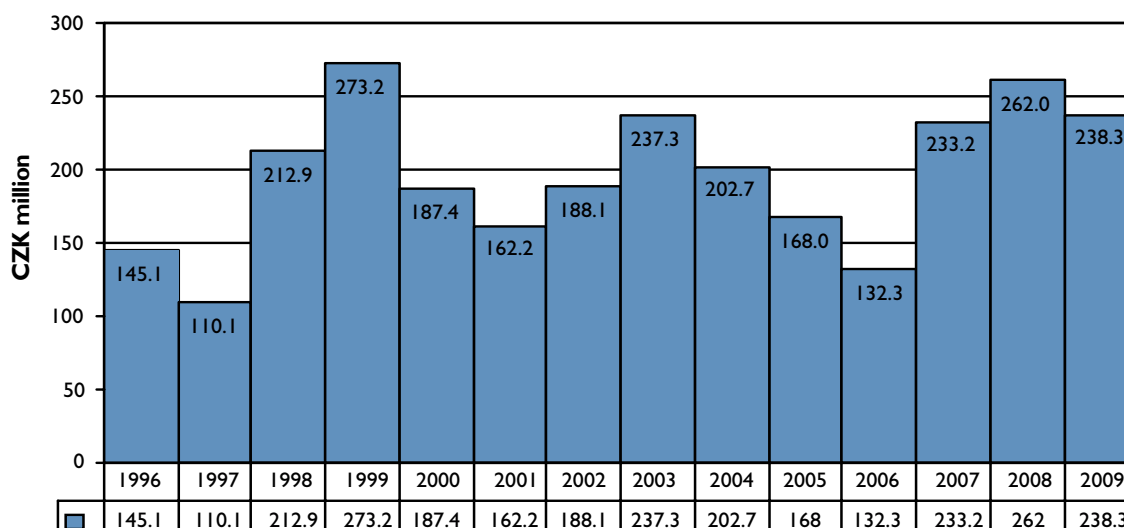
As regards major measures, the following projects were completed: projects on the Middle Opava River and its tributary the Bílý stream that form part of flood control measures for the town of Vrbno pod Pradědem and adjacent municipalities, and the project Increasing the Opavice River Channel Capacity in the Krnov Area, which was co-financed from the Operational Programme Environment.

Seven projects executed under Section 35 of the Forest Act were completed, of which the most significant are measures on the Podolský stream near Rýmařov.

The Watercourse Administration for the Dyje River basin district in 2009 completed four projects co-financed from the "Flood Prevention Support II" grant programme of the Ministry of Agriculture, of which the most significant is adaptation of the Leštínský stream in the municipality of Číčov in the Třebíč area. Projects funded from the Rural Development Programme of the EU were completed. They largely included repairs of the existing stream bed revetments in the municipalities of Věcov, Sudice, Věžná and Běleč in Českomoravská vrchovina Upland.

The Watercourse Administration also received support under the Operational Programme Environment for reconstruction of retention reservoirs Nedveka and Kravsko in the Znojmo area.

In South Moravian region, four projects pursuant to Section 35 of the Forest Act were completed. They included construction of three

Chart 6.4.1**Capital expenditures of the Forests of the Czech Republic, s. e. in the years 1996–2009 in millions of CZK – watercourses**

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

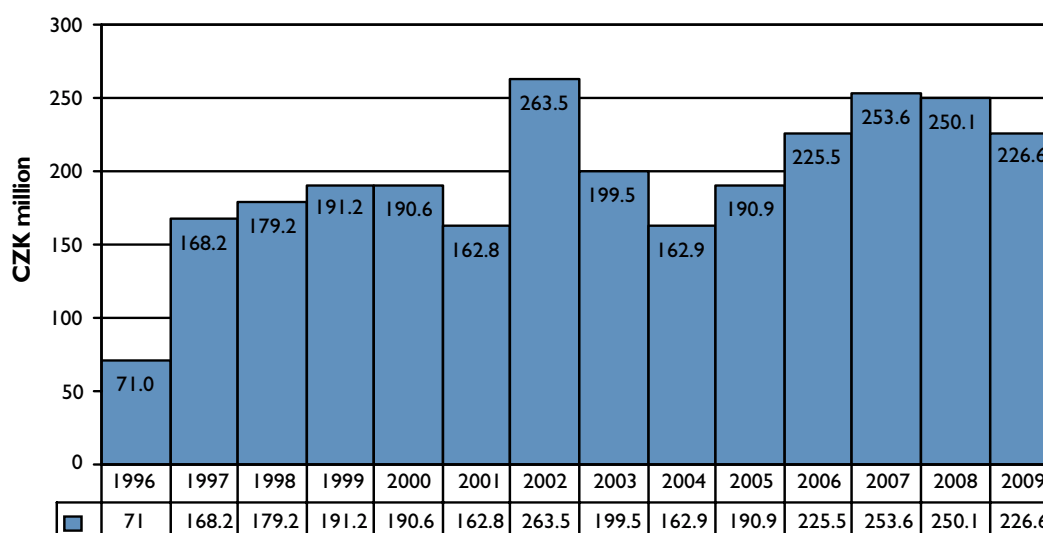
retention reservoirs and one measure to stabilize the watercourse channel.

Also within the territorial competence of the Watercourse Administration for the Dyje River Basin District local floods occurred in 2009. To eliminate the most serious damage to the Polomina watercourse in the municipality of Tasov in the Třebíč area and damage to the Vrtěžířský stream in the municipality of Štěpánov nad Svratkou, the preparation of the respective project documents

was contracted and the project execution is planned for the next year.

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.

Chart 6.4.2**Expenditure of the Forests of the Czech Republic, s. e. in the years 1996–2009 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 2003–2009 in thousands of CZK**

Year	2003	2004	2005	2006	2007	2008	2009
Sales	9,390	10,530	9,483	9,581	10,010	10,380	10,542
Price per m ³ *)	1.24	1.33	1.35	1.39	1.42	1.50	1.55

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

Note: *) Unit price per m³ is quoted excluding VAT.

6.5

Waterways

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

Under the "European Agreement on Main Inland Waterways of International Importance (AGN)" the E20 main European waterway, on the Elbe and its branch E 20-06 on the Vltava River, is a waterway of international importance. 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 constituting a fully operational traffic system, independent of outer natural conditions. Navigation traffic on the regulated stretch from Střekov down the stream to the state border CR/FRG depends on water stages based on the current flows.

The funds spent in the field of management of the development and modernization of waterways with significance for transport amounted in the year 2009 to CZK 1,557.0 million in total.

Programme development of waterways was funded by CZK 212.9 million allocated from the budget of the State Transport Infrastructure Fund, CZK 1,145.7 million from the EU funds in the Operational Programme Transport, and CZK 198.4 million from the loan provided by the EIB. Compared to the previous year, a significant increase in the drawing of investment funds by the state investor, the Ministry of Transport – Directorate of Waterways of the Czech Republic was allowed mainly by the drawing of funds from the Operational Programme Transport.

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 preparation of associated mitigation and revitalization measures is under way.

Significant amounts of funds were expended on large projects, such as the Completion of the Vltava Waterway in the stretch between České Budějovice and Týn nad Vltavou, whose execution started in 2008 and will proceed until 2013. Large projects on the Vltava River also include Adaptation of Navigation Channel Chvatěruby, whose execution started in 2009 and will be completed in November 2010. Reconstruction of railway bridge in Kolín is so far the most funds-consuming project of the Directorate of Waterways of the Czech Republic. The project execution started in July 2009 and will be completed in November 2010. After the project completion, vertical clearance of at least 5.25 m below the bridges on the entire navigable Elbe will be reached. The project Ústí nad Labem – Vaňov, reconstruction of port wall, whose execution started in 2009 and will be completed in 2010, will significantly contribute to improved transload safety and effectiveness in this public port.

As regards a number of minor projects, they include the completed reconstructions of a series of navigation chamber walls on the Middle Elbe upstream of Mělník, navigation chambers Nymburk and Kostomlátky, and modernization of unsatisfactory installations in the navigation chamber Lobkovice. The Directorate of Waterways of the Czech Republic so significantly contributed to a long-term stabilized status, corresponding to the requirements for safe and reliable traffic in navigation chambers on the Elbe. Furthermore, the development of tourism in the area of Bačův channel was contributed to by construction of landing-places Uherské Hradiště and Napajedla – Pahrbeek.

The projects that significantly contribute to the waterways traffic safety and passability include the Transmitter of Correction Signals DGPS, which since the end of 2009 transmits the data refining position information for advanced on-board navigation systems, and the Extension of RIS System under the project IRIS II, co-financed by the European Union from the TEN-T fund.



The Kyjovka River – Koryčany Reservoir



Aneta Prokopová

52 | 10 years, Pilníkov basic school and nursery school, Královohradecký kraj region

Public water supply and sewerage systems

7.

7.1

Drinking water supply

In the year 2009 water supply systems supplied water to 9.73 million inhabitants in the Czech Republic, i.e. 92.8% of the total population.

All water supply systems produced in total 653 million m³ of drinking water: 504.6 million m³ of drinking water were supplied and charged for (invoiced), including 328.5 million m³ of drinking water for households. Drinking water losses in pipeline network amounted to 125.1 million m³, i.e. 19.3% of water intended for consumption.

The data provided by the Czech Statistical Office was collected on the basis of information provided by 1,273 reporting units (i.e. 239 water supply and sewerage system operators and a selected set of 1,034 municipalities operating the water management infrastructure on their own; the data was, however, provided by 99.5% 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 are not published by the Czech Statistical Office since 2004.

Trends and development of indicators in the field of drinking water supply are shown in Table 7.1.1 and Chart 7.1.1.

The increase in the percentage of inhabitants supplied with drinking water largely results from the construction of new water supply systems on the outskirts of towns. The 1.1% year-on-year decrease in the quantity of water produced corresponds to the simultaneous 1.3% decrease in the quantity of water invoiced. The specific quantity



The Bečva River – waste water treatment plant Hranice na Moravě

of water invoiced to households decreased by 1.78 litres per person and day and amounts to 92.5 litres. The specific quantity of water invoiced in total recalculated per one inhabitant supplied with water, decreased by 4 litres. This indicates a continued decrease in consumption of households and other consumers. A year-on-year 2 litre decrease in water losses per 1 inhabitant supplied per person and day amounts annually approximately to 0.47 m³ per person.

Table 7.1.1

Water supply from water supply systems in the years 1989 and 2003–2009

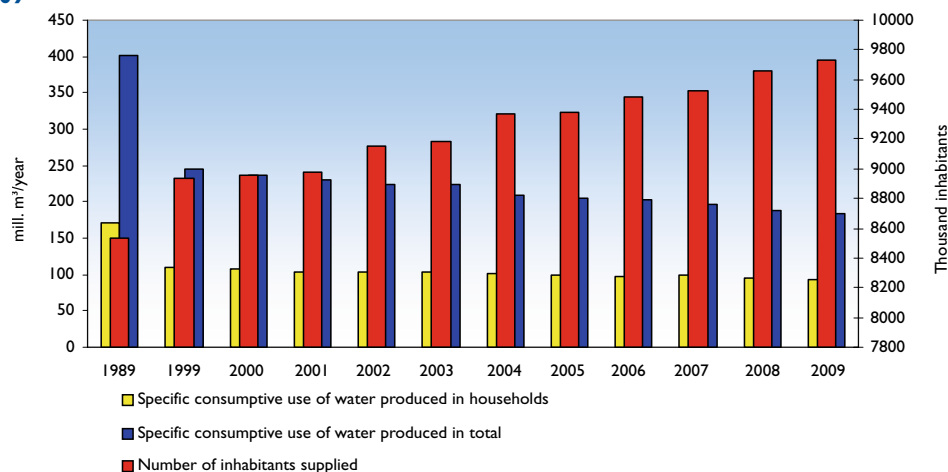
Indicator	Measurement unit	1989	2003	2004	2005	2006	2007	2008	2009
Inhabitants (mean)	thousand inhabitants	10,364	10,201	10,207	10,234	10,267	10,323	10,430	10,491
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537	9,179	9,346	9,376	9,483	9,525	9,664	9,733
	%	82.4	89.8	91.6	91.6	92.4	92.3	92.7	92.8
Water produced by water supply systems	million m ³ /year	1,251	751	720	699	699	683	667	653
	% as to 1989	100.0	60.0	57.6	55.9	55.9	54.6	53.3	52.2
Water invoiced in total	million m ³ /year	929.4	547.2	543.5	531.6	528.1	531.7	516.5	504.6
	% as to 1989	100.0	58.9	58.5	57.2	56.8	57.2	55.6	54.3
Specific consumptive use of water produced	l/person day	401	224	211	204	202	196	188	184
	% as to 1989	100.0	54.7	52.6	50.9	50.4	48.9	46.9	45.8
Specific quantity of water invoiced in total	l/person day	298	163	159	155	153	153	146	142
	% as to 1989	100.0	54.7	53.4	52.0	51.3	51.3	49.0	47.7
Specific quantity of water invoiced for households	l/person day	171	103	102	98.9	97.5	98.5	94.2	92.5
	% as to 1989	100.0	60.2	59.6	57.8	57.0	57.6	55.1	54.1
Water losses per 1 km of water main	l/km day	16,842 ^{*)}	7,783 ^{*)}	6,113	5,770	5,673	4,893	4,889	4,705
Water losses per 1 inhabitant supplied	l/person day	90 ^{*)}	52 ^{*)}	45	43	42	36	37	35

Source: Czech Statistical Office

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

Chart 7.1.1

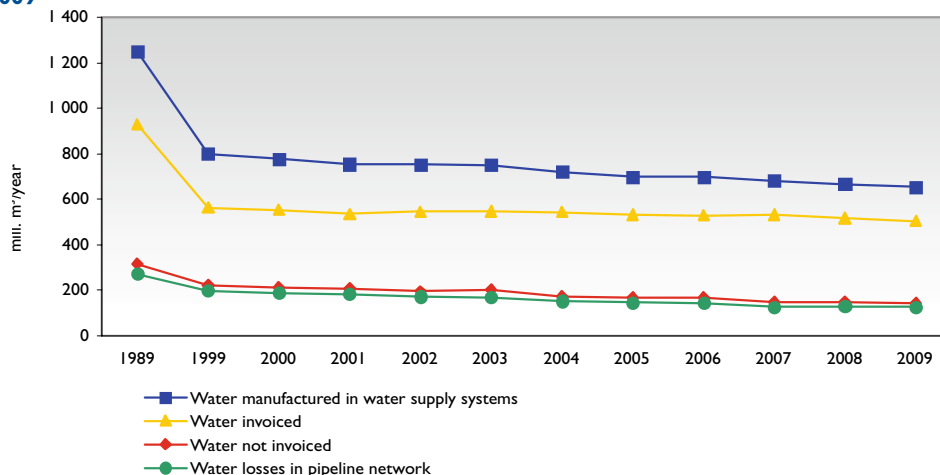
Development in the number of inhabitants supplied and the specific consumptive use of water produced in the years 1989 and 1999–2009



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 1999–2009



Source: Czech Statistical Office

Table 7.1.2

Inhabitants supplied, production and supply of water from water supply systems in the year 2009

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	1,242,914	100.0	122,865	82,809	51,768
Středočeský kraj	1,034,959	83.5	48,686	49,092	33,426
Jihočeský kraj	588,142	92.3	35,880	28,220	18,630
Plzeňský kraj	465,107	81.4	31,547	25,762	15,797
Karlovarský kraj	302,016	98.1	21,648	15,878	9,994
Ústecký kraj	791,321	94.6	58,147	40,685	24,555
Liberecký kraj	388,001	88.5	29,938	20,776	12,731
Královéhradecký kraj	508,027	91.6	33,085	24,704	16,254
Pardubický kraj	494,607	95.9	30,367	24,069	15,225
Kraj Vysočina	483,097	93.7	26,588	22,685	14,523
Jihomoravský kraj	1,099,097	95.6	67,843	55,262	37,764
Olomoucký kraj	573,700	89.4	30,639	26,218	18,257
Zlínský kraj	538,398	91.1	30,761	24,506	15,643
Moravskoslezský kraj	1,223,587	97.9	85,344	63,947	43,923
Czech Republic	9,732,973	92.8	653,338	504,613	328,490

Source: Czech Statistical Office

The highest percentage of inhabitants supplied with drinking water from water supply systems in 2009 was recorded in the City of Prague (100%) and in the Karlovarský kraj region (98.1%), the lowest percentage of inhabitants supplied with drinking water was recorded in the Plzeňský kraj region (81.4%) and the Středočeský kraj region (83.5%).

As regards Plzeňský kraj, Jihomoravský kraj and Ústecký kraj 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 a 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 most of the regions, a decrease was recorded only in the Plzeňský kraj and the Jihomoravský kraj regions. This decrease is given by a change, for some of the reporting units in these regions, in the methodology of determining the number of inhabitants actually connected to water supply systems.

In 2009, the length of water supply network was extended by the total of 699 km and reached the length of 72,866 km.

The year-on-year increase in the length of water supply network amounts to 0.96%, and the increase in length per 1 inhabitant supplied compared to the year 2008 amounts to 0.27%, which means an increase



The Morava River– waste water treatment plant Uherské Hradiště

by 0.02 m per 1 inhabitant supplied. The length of the water supply network per one inhabitant supplied in 2009 thus was 7.49 m. New construction of new water supply systems and completion of the existing ones thus increased in 2009 the number of inhabitants supplied by 68,794.

The number of water supply connections increased by 43,791 and amounted to 1,923,798. The number of water meters installed increased by 45,182 and amounted to 1,934,920.

7.2

Discharge and treatment of municipal waste waters

In 2009, in total 8.530 million inhabitants in the Czech Republic lived in buildings connected to sewerage systems, which is 81.3% of the total population. In total 496.4 million m³ of waste waters were discharged into sewerage systems. Of this quantity, 95.2% of waste waters were treated (excluding rain water), which amounts to 472.7 million m³.

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

The number of inhabitants connected to sewerage systems increased in the year-on-year comparison by 70,632. The quantity of waste waters discharged to sewerage systems, without rain water, decreased in the year-on-year comparison by 12.5 million m³, but the decrease in water supplied amounted to 11.87 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 7 regions these values exceed the reported quantity of water supplied, while 7 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, without rain water, may, contrary to logic, decrease in the year 2009 by 0.1%.

Table 7.2.1

Discharge and treatment of waste waters from sewerage systems in the years 1989 and 2003–2009

Indicator	Measurement unit	Year							
		1989	2003	2004	2005	2006	2007	2008	2009
Inhabitants (mean)	thousands of inhabitants	10,364	10,201	10,207	10,234	10,267	10,323	10,430	10,491
Inhabitants living in buildings connected to sewerage system	thousands of inhabitants	7,501	7,928	7,947	8,099	8,215	8,344	8,459	8,530
	%	72.4	77.7	77.9	79.1	80.0	80.8	81.1	81.3
Waste waters discharged to sewerage systems (excluding rain water) in total	million m ³	877.8	558.1	539.7	543.4	542.0	519.3	508.8	496.4
	% as at 1989	100.0	63.6	61.5	61.9	61.7	59.2	58.0	56.6
Treated waste waters including rain water ¹⁾	million m ³	897.4	782.7	821.5	841.5	857.4	841.2	807.5	842.9
Treated waste waters in total excluding rain water	million m ³	627.6	527.4	509.7	513.9	510.6	497.6	485.0	472.7
	% as at 1989	100.0	84.0	81.3	82.0	81.4	79.4	77.3	75.4
Percentage of treated waste waters excluding rain water ²⁾	%	71.5	94.5	94.4	94.6	94.2	95.8	95.3	95.2

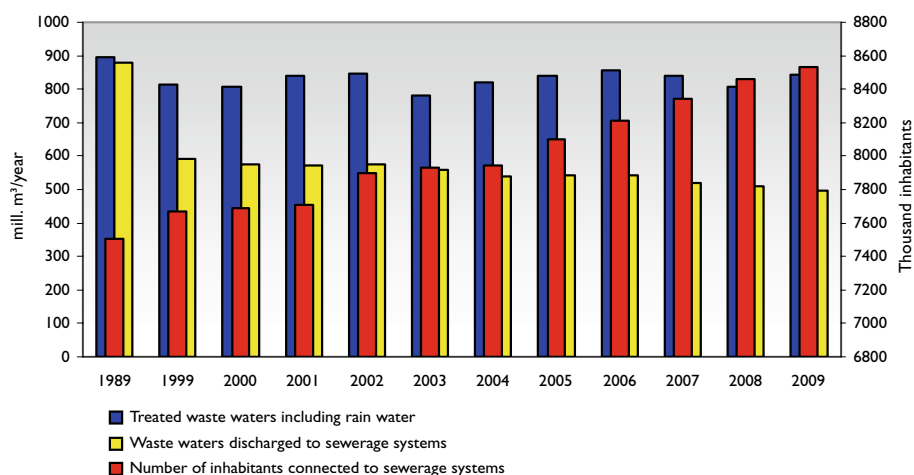
Source: Czech Statistical Office

Note: ¹⁾ In the years 1989 and 2003 the data relate to sewerage systems run by the main operators.

²⁾ This percentage relates to waters discharged to sewerage systems.

Chart 7.2.1

Development in the number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated waste waters in the years 1989 and 1999–2009



Source: Czech Statistical Office

Table 7.2.2

Number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated waste waters in the year 2009 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 (number)	Percentage of the total number of inhabitants (%)	Total (thousand m³)	Total (thousand m³)	Percentage (%)
City of Prague	1,230,640	99.0	77,566	77,525	99.9
Středočeský kraj	824,822	66.5	49,256	48,382	98.2
Jihočeský kraj	546,429	85.8	34,679	33,114	95.5
Plzeňský kraj	445,281	78.0	33,705	31,344	93.0
Karlovarský kraj	280,418	91.1	15,387	15,285	99.3
Ústecký kraj	680,763	81.4	32,419	30,440	93.9
Liberecký kraj	297,666	67.9	15,105	14,887	98.6
Královéhradecký kraj	404,843	73.0	25,204	23,035	91.4
Pardubický kraj	362,011	70.2	23,214	22,505	96.9
Kraj Vysočina	435,532	84.5	22,752	18,828	82.8
Jihomoravský kraj	1,010,496	87.9	54,253	52,365	96.5
Olomoucký kraj	496,600	77.4	29,495	28,205	95.6
Zlínský kraj	504,946	85.4	25,920	24,172	93.3
Moravskoslezský kraj	1,009,400	80.8	57,400	52,671	91.8
Czech Republic	8,529,847	81.3	496,355	472,758	95.2

Source: Czech Statistical Office

The highest percentage of inhabitants connected to sewerage systems in 2009 was recorded in the City of Prague (99.0%) and the Karlovarský kraj region (91.1%), the lowest percentage was recorded in the Středočeský kraj region (66.5%) and the Liberecký kraj region (67.9%).

The decrease in the number of inhabitants living in buildings connected to sewerage systems that was observed in the Středočeský kraj, Ústecký kraj, Liberecký kraj, Královéhradecký kraj and Moravskoslezský kraj regions is caused by a higher increase in the mean number of inhabitants which did not correspond to the

increase in the number of inhabitants actually connected to public sewerage systems. The number of inhabitants living in buildings connected to public sewerage systems increased in most of the regions, a decrease was recorded only in the Moravskoslezský kraj region.

In the year 2009, the sewerage network was extended by 1,063 km and reached the total length of 39,767 km.

Based on the data provided by the Czech Statistical Office, the total number of waste water treatment plants in the Czech Republic increased, in comparison with the previous year 2008, by 67 waste water treatment plants to 2,158 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 2009 amounted to 28.10 CZK/m³ and the average price of sewerage charge to 25.10 CZK/m³. Compared to the year 2008, the price of water rate thus increased by 7.3% and the price of sewerage charge by 9.1%.

Prior to the Act No. 76/2006 Coll. coming into force, i. e. before 2006, the information on the average price of water rates and sewerage charges was based on the information sent upon request of the Ministry of Agriculture by selected operators of water supply and sewerage systems. Through the amendment to this act, the owners or, as the case may be, the operators if authorized by the owner, pursuant to the provision in Section 36, Subsection 5 of the Act on Public Water Supply and Sewerage Systems, were imposed the obligation to send to the Ministry of Agriculture every year by 30 June at the latest full data on the total account of all items in the calculation of prices of water rates and sewerage charges in the

previous calendar year. The data on prices collected by the Ministry of Agriculture include VAT and are obtained through a weighted average. With regard to the deadline for submitting the account, these data cannot be evaluated and processed before the closing date of this publication. For this reason, this publication states only the data established by the Czech Statistical Office as the percentage of revenues from sales to the consumers and the quantity of the drinking water supplied and the sewage discharged. 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 Ústecký kraj region, where it reached the amount of CZK 31.20/m³. Compared to the national average this price was thus higher by 10.9%. The highest average price of sewerage charges was established in the Liberecký kraj region and with CZK 31.60/m³ exceeded the national average by 26.0%. On the contrary, the lowest average price of water rate (CZK 25.20/m³) was established in the Jihomoravský kraj and the Moravskoslezský kraj regions. The lowest average price of sewerage charges (CZK 18.60/m³) was established in the Plzeňský kraj region. Average prices in the respective regions are shown in Table 7.3.2.

Table 7.3.1

Strike prices of water and sewerage charges in the years 2008 and 2009

Indicator	Unit	2008	2009	Index 2009/2008
Water rates in total	CZK million	13,520	14,192	1.05
Water invoiced in total	million m ³ /year	516	505	0.98
Average price of water rate	CZK/m ³	26.20	28.10	1.07
Sewerage charges in total	CZK million	11,712	12,435	1.06
Waste waters discharged to sewerage systems	million m ³ /year	509	496	0.97
Average price of sewerage charges	CZK/m ³	23.00	25.10	1.09

Source: Czech Statistical Office

Table 7.3.2

Water consumption, average prices of water and sewerage charges excluding VAT in the year 2009

Region	Specific quantity of water invoiced in total (l/person/day)	Specific quantity of water invoiced to households (l/person/day)	Average price of water rate (CZK/m ³)	Average price of sewerage charge (CZK/m ³)
City of Prague	182.5	114.1	29.6	28.2
Středočeský	130.0	88.5	31.0	24.0
Jihočeský	131.5	86.8	30.9	23.1
Plzeňský	151.8	93.1	25.8	18.6
Karlovarský	144.0	90.7	31.0	26.7
Ústecký	140.9	85.0	31.2	30.8
Liberecký	146.7	89.9	30.1	31.6
Královéhradecký	133.2	87.7	26.7	25.2
Pardubický	133.3	84.3	25.4	25.5
Vysočina	128.7	82.4	27.6	19.6
Jihomoravský	137.8	94.1	25.2	27.8
Olomoucký	125.2	87.2	26.3	23.8
Zlínský	124.7	79.6	28.5	24.5
Moravskoslezský	143.2	98.3	25.2	21.5
Czech Republic	142.0	92.5	28.1	25.1

Source: Czech Statistical Office



Kateřina Bártová

10 years, Sázavka basic school, Vysočina region

Fisheries and fishpond management

8.

8.1

Fisheries and fishpond management in the year 2009

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 perform 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, they have ecostabilization 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 470 kg fish/hectare. Representation of market fish species is fairly stable and has not changed compared to the previous years. Carp constituted 86.0 % of the total quantity of fish produced by fish farming, while herbivorous fish (silver carp, grass carp) constituted 5.0 %, salmonids (in particular rainbow trout and brown trout) 3.3 %, tench 1.3 %, predatory fish and other fish species 4.4 %.

In 2009, market fish production in the Czech Republic reached approximately 20.1 thousand tonnes. The production has not significantly changed in the course of the last five years. Fish production from special facilities amounted to 653 tonnes. Based on the estimate of the Czech Fish Farmers Association, the consumption of freshwater fish produced by fish breeding and by fish-hooking in 2009 reached the value of approximately 1.37 kg/person/year.

Live fish export in 2009 amounted to almost 45 % of the total production. The main export commodity was traditionally carp. The import of live freshwater fish to the Czech Republic was quite insignificant compared to the export, having constituted approximately 3% of the export and having been represented by trout.

The fish production is associated with fish processing. Annually, 8



The Podhradský Pond

to 11 % of the market production of freshwater fish is processed in the Czech Republic. In 2009, in total 1,595 tonnes of live weight fish were processed which represented 8.0 % 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 of about 42 thousand hectares. Recreational fishing is a hobby for 350 thousand registered members of all fishing associations, who in 2009 caught approximately 4.1 thousand tonnes of fish.

Table 8.1.1

Overview of fish production for direct consumption in the years 2005–2009

Indicator of production and consumption of fish	2005	2006	2007	2008	2009
Production in thousands of tonnes	20.50	20.40	20.40	20.40	20.1
Of that: export in thousands of tonnes	9.30	10.00	10.45	10.12	8.95
Catch in fishing districts in thousands of tonnes	4.20	4.60	4.30	4.16	4.10
Consumption per person in kg/year ¹	1.40	1.40	1.40	1.32	1.37

Source: MoA and the Czech Fish Farmers Association

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

1. National sectoral support measures relating to aquaculture and freshwater fishing: Yield Capacity Control, Special Consultancy for Animal Production, School Production Facilities, Support for Non-productive Fishpond Functions and Genetic Resources.
2. Operational Programme Fisheries 2007–2013: where fishermen may use the respective funds within Priority Axis 2 – Aquaculture for investments into aquaculture production, equalization

payments aimed at improving the aquatic environment, measures in the field of fish health and investments into fish processing and marketing. The subsidy within Priority Axis 3 – Measures in the Common Interest relates to the development of new markets, promotion campaigns, reintroduction of eel (*Anguilla*) and pilot projects.

In July 2009, 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 within Call 3 of accepting applications for subsidies from the Operational Programme Fisheries 2007–2013.

Table 8.1.2
Operational Programme Fisheries 2007–2013

Priority axis 2 – Aquaculture	
Number of measure	Name of measure
Measure 2.1	Investments into productive aquaculture
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	Common activities
Measure 3.2	Measures for the protection and development of aquatic animals and plants
Measure 3.3	Support and development of new markets and promotion campaigns
Measure 3.4	Pilot projects

Source: MoA

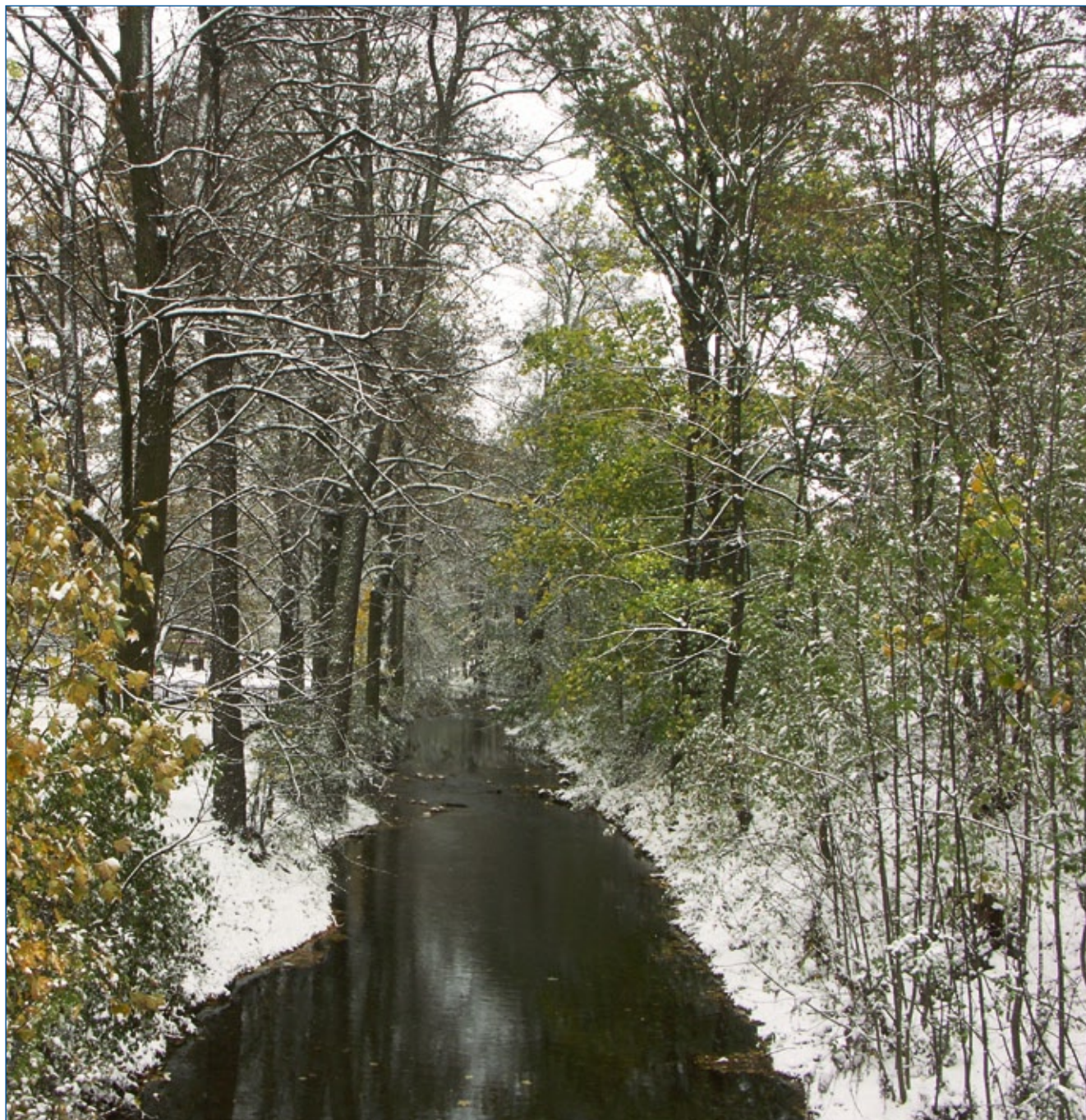
Under measure 2.1 *Measure for Productive Investments into Aquaculture*, in 2009 the decisions were issued to grant subsidies for 102 business plan projects a) with the aggregate subsidy amounting to approximately CZK 72.78 million, 29 business plan projects b) with the aggregate subsidy amounting to approximately CZK 25.83 million, 21 business plan projects c) with the aggregate subsidy amounting to approximately CZK 39.93 million, 6 business plan projects d) with the aggregate subsidy amounting to approximately CZK 1.45 million and 3 business plan projects e) with the aggregate subsidy amounting to approximately CZK 5.52 million. In total, under measure 2.1 in 2009 the decisions were issued to grant subsidies for 161 projects with the aggregate subsidy amounting to approximately CZK 145.51 million.

Under measure 2.4 *Investments in Processing and Marketing*, in 2009 the decisions were issued to grant subsidies for 10 business plan projects a) with the aggregate subsidy amounting to approximately CZK 22.28 million and 2 business plan projects b) with the aggregate subsidy amounting to approximately CZK 3.39 million. In total, under measure 2.4 in 2009 the decisions were issued to grant subsidies for 12 projects with the aggregate subsidy amounting to approximately CZK 25.68 million.

Under measure 3.4 *Pilot Projects*, in 2009 the decisions were issued to grant subsidies for 11 projects with the aggregate subsidy amounting to approximately CZK 10.9 million.



The Husinec Pond



The Loučná River in Litomyšl

In November 2009, the Ministry of Agriculture started the pre-financing of measure 2.1 and measure 2.4 projects under the Operational Programme Fisheries 2007–2013. In 2009, under measure 2.1, subsidies in amount of CZK 16.1 million were disbursed for 29 projects. In 2009, under measure 2.4, subsidies in amount of CZK 1.5 million were disbursed for 2 projects.

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 control and landscaping importance has already ended.

Sub-programme 229 218 – “Remedying of Damages to Fishponds and Reservoirs after Floods in August 2002” was followed in 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 operational safety of fishponds and reservoirs in connection with flood situations. The retention capacity is also supported by the continued dredging of the most silted ponds and it is also possible to support the construction of water reservoirs serving for flood control and protection against drought. Under sub-programme 129 130, in 2009 the funding of 73 projects was under way, with the total expenditures amounting to CZK 618.62 million. In more detail, the information on the sub-programme 129 130 funding is presented in chapter 9.

padá z velké výšky na dešťovou..

Kap, kap, kapka, kapka, prší, prší, hodně kapka...



Výška, kterou voda umáší až do nekonečna moře

Kap, kap, kapka, kapka, prší, prší..

State financial support for water management

9.

9.1

Financial support provided by the Ministry of Agriculture of the Czech Republic

In 2009, the Ministry of Agriculture provided support amounting to the total of approximately CZK 1.8 billion under its programme 229 310 “Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure” and programme 129 180 “Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II” aimed at implementation of measures to meet the directives of the EU in the field of water supply and sewerage systems and at the development of this sector. The programme 229 310, based on the approved documentation, was scheduled for the years 2006–2010. With regard to the fact that in the years 2009–2010 this programme will be involved in the co-financing of multi-year projects, the Ministry of Agriculture prepared a follow-up subsidy 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 “advantaged loans”. In 2009, 157 projects received from the state budget support amounting to approximately CZK 721 million under sub-programmes 229 312 and 129 182 of the Ministry of Agriculture (measures aimed at water supply systems) and 148 projects were granted support amounting to approximately CZK 1,098 billion under sub-programmes 229 313 and 129 183 of the Ministry of Agriculture (measures aimed at sewerage systems).



The Haraska River in Boleradice

At the same time, in 2009 the remaining 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 1999, and simultaneously from the loan granted by the CEB. In 2009, these loans were used to provide support for two projects amounting to CZK 9 million. In 2009, these terminated loans were 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. In 2009, subjects investing into 32 projects with loan contracts amounting to approximately CZK 430 million were reimbursed a part of interest on these loans in the total amount of CZK 3.1 million (this is a subsidy for a part of interest, therefore, this amount is included in tables 9.1.1 and 9.1.2 on the line “subsidy”).

Table 9.1.1

State budget funds provided in the year 2009 under the programmes 229 310 and 129 180 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 financial assistance	0.000	0.000	0.000
Subsidy	721.489	1,097.985	1,819.474
Total	721.489	1,097.985	1,819.474

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 2005–2009, provided by the Ministry of Agriculture in millions of CZK

Financial resource	2005	2006	2007	2008	2009
Refundable financial assistance	0	0	0	0	0
State budget subsidy	1,746	925	1,620	1,947	1,819
Support from the state budget	1,746	925	1,620	1,947	1,819
Advantaged loan (EIB and CEB)	754	486	161	31	9
Support in total	2,500	1,411	1,781	1,978	1,828

Source: MoA

In response to floods that in June and July 2009 afflicted territories of parts of the Jihočeský kraj, Ústecký kraj, Olomoucký kraj and Moravskoslezský kraj regions, prepared a subsidy sub-programme 129 142 "Support for Remedying Damages Caused by Floods 2009" under the programme "Support for Remedying Flood Damages to Water Supply and Sewerage System Infrastructure". For this sub-programme, a subsidy framework amounting to approximately CZK 160 million is scheduled. The drawing of subsidies under this sub-programme will be started in 2010.

In 2009, the Ministry of Agriculture implemented programmes aimed at rehabilitation of water management property owned by watercourse administrators, within the process of remedying damages caused by floods in the previous years, as well as at the implementation of flood control measures, the renewal, dredging and rehabilitation of fishponds and water reservoirs, increasing the functionality and utility of hydraulic structures, the renewal

and construction of irrigation detail and optimization of irrigation systems, and the management of state-owned property on minor watercourses and main drainage facilities. The remedying of 2006 flood damage to fishpond dams and structures owned by legal and natural persons was also financed in the year 2009.

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

In 2009, the Ministry of Agriculture continued to administer the programme 129 120 "Support for Flood Prevention II", which includes four sub-programmes thematically focusing on support for flood control measures with retention, support for flood control measures along watercourses, support for increasing the safety of hydraulic structures and support for delimitation of flood areas and studies of

Table 9.1.3

State funds provided by the Ministry of Agriculture in the year 2009 for capital and current expenditures under programme financing in programme 229 110 in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
229 110	Remedying of the impacts of floods on state-owned water management property	491.519

Source: MoA

Table 9.1.4

State funds provided by the Ministry of Agriculture in the year 2009 for capital and current expenditures under programme financing in programmes 129 120, 129 130, 129 150, 129 160 and 129 170 in millions of CZK

Programme identification number	Name of programme	Expenditures on programme financing
129 120	Flood prevention II	1,796.137
129 130	Renewal, dredging and rehabilitation of fishponds and water reservoirs	618.620
129 150	Support for the planning process in the field of water	0
129 160	Support for the renewal and construction of irrigation detail and optimization of irrigation systems	12.803
129 170	Support for increasing the functionality of hydraulic structures	8.650

Source: MoA

Table 9.1.5

Non-investment support provided by the Ministry of Agriculture in the year 2009 for other measures in water management in millions of CZK

Name of support	Amount of funds provided	Beneficiary
Administration of minor watercourses *)	111.051	Agricultural Water Management Administration
Administration of main drainage facilities *)	51.186	Agricultural Water Management Administration

Source: MoA

Note: *) Including operation and maintenance.



Remedying of flood damage to the Česká Kamenice River

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 Control Measures with Retention" is the construction and the renewal of polders, the construction and rehabilitation of water reservoirs, the restoration of the existing reservoirs and polders and also the construction and restoration of structures in areas designated for overflowing.

Sub-programme 129 123 "Support for Flood Control Measures

along Watercourses" is aimed at increasing channel capacity of watercourses, flood banks, flood ways and diversion tunnels, increasing the flow capacity of weirs, rehabilitation of dams and stabilization of watercourse channels.

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

Sub-programme 129 125 "Support for Delimitation of Flood Areas and Studies of Runoff Conditions" is in particular aimed at identification of the extent of floods and plotting this extent to maps. This sub-programme also includes the delimitation of areas exposed to threat of special floods caused by a failure of hydraulic structure or a dam break of reservoirs impounding surface water. The defined flood areas, approved by the water authority become one of the land use limits and are used by the public administration bodies particularly in issuing building permits. The studies of runoff conditions are sources of information on flood areas prior to and after the implementation of the proposed flood control measures, on the quantification of the

extent of flood damages and evaluation of the effectiveness of the proposed technical and non-technical measures.

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 Coll., 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, and also the City of Prague which, as the investor, is responsible for implementation of flood control measures built on the territory of the capital.

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

In 2009, the total number of projects in progress under the programme 129 120 "Support for Flood Prevention II" included 6 capital investment projects of flood control measures with retention,

Table 9.1.6

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

Watercourse administrators	Name of project	Implementation period	Total costs	Subsidies in 2009
Forests of the Czech Republic, s. e.	Flood control measures on the Skorošický stream, km 4.797-6.692	01/08-06/11	20.802	8.500
Elbe River Board, s. e.	The Elbe, Křešice, increasing the protection of the municipality by dams	01/09-12/12	190.275	85.063
Morava River Board, s. e.	The Svitava River, Blansko – stream channel regulation	03/09-12/10	49.887	47.126
Oder River Board, s. e.	Left bank embankment on the Oder River; Ostrava – Antošovice km 9.700-12.000	12/08-05/10	33.625	27.166
Ohře River Board, s. e.	Hydraulic structure Janov, securing stability and safety of the dam	10/07-06/11	45.568	13.280
Vltava River Board, s. e.	Plzeň, the Berounka River – complex measures in the Roudná area	02/09-12/10	109.103	96.053
Agricultural Water Management Administration	Increase in the channel capacity on the Lačnovský stream	08/08-12/10	37.540	28.260
City of Prague	Construction project 0012 Flood control measures for the protection of the City of Prague, stage 0006 Zbraslav, Radotín, part 14 Zbraslav – south	10/08-03/11	289.558	180.204

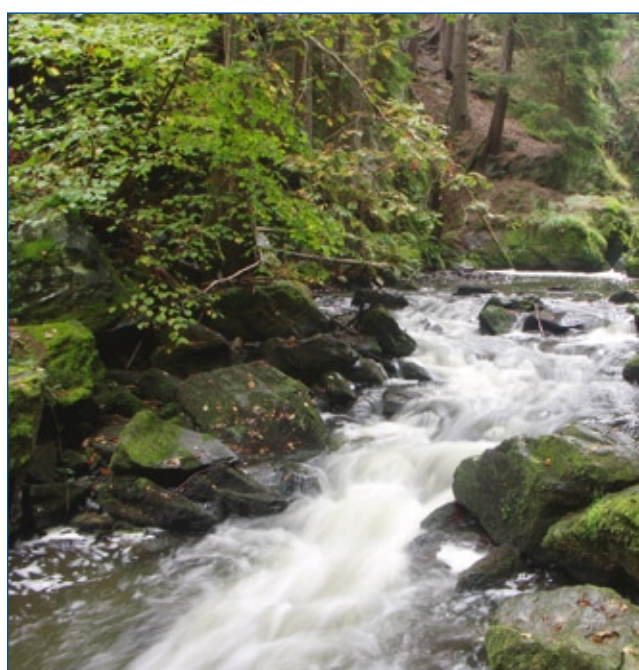
Source: MoA

Table 9.1.7

Use of state budget funds in the year 2009 under the programme 129 120 by the individual watercourse administrators in millions of CZK

Owners and administrators	Use of funds in 2009	
	Investments	Non-investments
Elbe River Board, s. e.	282.353	0
Vltava River Board, s. e.	401.489	0
Ohře River Board, s. e.	25.124	0
Oder River Board, s. e.	191.102	0
Morava River Board, s. e.	93.109	0
Forests of the Czech Republic, s. e.	99.138	0
Agricultural Water Management Administration	85.447	7.365
Minor watercourse administrators – municipalities	75.695	0
City of Prague	535.314	0
Total	1,788.771	7.365

Source: MoA



The Doubrava River in Chotěboř

87 capital investment projects of flood control measures along watercourses, 5 capital investment projects aimed at increasing the safety of hydraulic structures and 7 projects of the delimitation of flood areas and studies of runoff conditions. The following Table 9.1.6 shows some of the major projects under the programme 129 120.

In 2009, the Ministry of Agriculture continued to implement the programme 229 110 aimed at the rehabilitation of water management property owned by watercourse administrators, within

the framework of remedying flood damages from the previous years. This proceeds through the implementation of the sub-programme 229 114 "Remedying of the Impacts of Floods in the Year 2006", the sub-programme 229 115 "Remedying of the Impacts of Floods in the Year 2007" and the sub-programme 229 116 "Remedying of the Impacts of Floods in the Year 2009".

In 2009, under the sub-programme 229 114, financial support was granted to 122 projects. Most of them – 108 projects – were

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 period	Total costs of the project	Investor
1002	The Maršovský stream, river km 2.2-2.7 (Unčín) – rehabilitation	10/08-5/10	11.461	Ohře River Board, s. e.
1010	The Modlanský stream, river km 6.7-7.2 (Proboštov) – rehabilitation	9/08-12/09	4.437	Ohře River Board, s. e.
1013	The Bílý stream, river km 8.628-8.929 (Šumná) – rehabilitation	11/08-12/09	5.158	Ohře River Board, s. e.
2407	Remedying of flood damage to the right-bank tributary of the Vltava River from Rožmberk	9/08-10/09	2.199	Forests of the Czech Republic, s. e.
5004	The Bílovka River – Bílovec km 9.849-10.300	10/08-10/10	36.191	Oder River Board, s. e.
6099	Elbe, hydraulic structure Labská, dredging of sediments	1/09-12/09	48.389	Elbe River Board, s. e.
6101	Elbe, Špindlerův Mlýn, gravel barrier	1/09-12/09	26.647	Elbe River Board, s. e.
6105	Hydraulic structure Les Království, dredging of sediments from dam reservoir	1/09-12/09	30.005	Elbe River Board, s. e.
9026	The Morava River, conflux with the Syrovinka stream, water runoff from inundation area	4/09-2/10	4.353	Morava River Board, s. e.
9027	The Sitka River; Moravská Huzová – Stádló – rehabilitation of stream channel	3/09-12/09	1.026	Morava River Board, s. e.
9136	The Moravská Sázava River; km 0.400-5.850 – repair of stream channel and river bed drops	3/09-12/09	8.695	Morava River Board, s. e.
9153	The Bečva River; Přerov – repair of stream channel	4/09-10/09	5.311	Morava River Board, s. e.
9281	The Svratka River; km 65.800-66.000, V. Bitýška, repair of lateral spillway at Tejkal weir	1/09-12/09	5.246	Morava River Board, s. e.
9332	The Morava River; Vnorovy left bank km 133.450-135.650, repair and dredging of sediments	10/09-12/09	12.585	Morava River Board, s. e.
9342	The Jevíčka River; mouth – Jevíčko – repair of channel	4/09-7/09	10.923	Morava River Board, s. e.

Source: MoA

Table 9.1.9

Use of state budget funds in the year 2009 under the programme 229 114 – "Remedying of the Impacts of Floods in the Year 2006" in millions of CZK

Owners and administrators	Use of funds in 2009	
	Investments	Non-investments
Elbe River Board, s. e.	26.021	63.911
Ohře River Board, s. e.	15.554	0
Oder River Board, s. e.	28.400	0
Morava River Board, s. e.	15.902	259.816
Forests of the Czech Republic, s. e.	1.600	0
Agricultural Water Management Administration	16.936	3.424
Total	104.413	327.151

Source: MoA



Table 9.1.10

Summary of costs of some of the projects under the sub-programme 229 115 – "Remedying of the Impacts of Floods in the Year 2007" in millions of CZK

ISPROFIN 229 115	Name of project	Implementation period	Total costs of the project	Investor
3021	Mušlov left bank 2 0.000-0.600	11/09-12/10	0.156	Agricultural Water Management Administration
3034	The Ludgeřovický stream	9/09-12/09	0.537	Agricultural Water Management Administration
3035	Polančice	9/09-12/09	0.364	Agricultural Water Management Administration
5644	The Opavice River; Hynčice km 19.000–19.600	12/08-10/10	14.806	Oder River Board, s. e.
5979	The Opavice River – Krnov – Chomýž km 3.090-3.900 (flood damage 2007)	10/09-12/09	2.109	Oder River Board, s. e.

Source: MoA

Table 9.1.11

Use of funds in the year 2009 under the sub-programme 229 115 – “Remedying of the Impacts of Floods in the Year 2007” in millions of CZK

Owners and administrators	Use of funds in 2009	
	Investments	Non-investments
Oder River Board, s. e.	14.522	2.359
Agricultural Water Management Administration	0.321	1.768
Total	14.843	4.127

Source: MoA

Table 9.1.12

Summary of costs of selected major projects under the sub-programme 229 116 – “Remedying of the Impacts of Floods in the Year 2009” in millions of CZK

ISPROFIN 229 116	Name of project	Implementation period	Total costs of the project	Investor
2101	The Javornický stream in the town of Javorník km 3.600-4.00 – remedying of flood damage 06/2009	7/09-12/09	2.005	Forests of the Czech Republic, s. e.
2105	The Skorošický stream km 6.692-8.645	11/09-12/10	2.319	Forests of the Czech Republic, s. e.
2156	The Skorošický stream km 6.692-8.645	10/09-7/10	2.004	Forests of the Czech Republic, s. e.
4202	The Volyňka River; Vimperk – waste water treatment plant, river km 33.970-34.200 – restoration of flow profile	8/09-12/09	2.269	Vltava River Board, s. e.
4208	The Volyňka River; Čkyně, river km 26.220-26.670 – repair of regulated stream channel	8/09-12/09	1.881	Vltava River Board, s. e.
4231	The Blanice River; Strunkovice nad Blanicí, river km 46.000-48.100 – repair of regulated stream channel	10/09-12/09	1.868	Vltava River Board, s. e.
4243	The Zlatý potok stream, Vitějovice, river km 11.000-11.800 – repair of regulated stream channel	10/09-12/09	1.160	Vltava River Board, s. e.
5151	The Vidnáva River - Kobylá km 7.460-9.930	11/09-6/10	2.289	Vltava River Board, s. e.

Source: MoA

implemented by the Morava River Board, s. e. The following Table 9.1.8 shows some of the major projects and Table 9.1.9 shows the use of funds under this sub-programme.

In 2009, under the sub-programme 229 115, financial support was granted to 22 projects. Most of them – 17 projects – were implemented by the Agricultural Water Management Administration. The following Table 9.1.10 shows some of the major projects and Table 9.1.11 shows the use of funds under this sub-programme.

In 2009, under the sub-programme 229 116, financial support was granted to 72 projects. Most of them – 44 projects – were implemented by the Vltava River Board, s. e. The following Table 9.1.12 shows some of the major projects and Table 9.1.13 shows the use of funds under this sub-programme.

In 2009, the Ministry of Agriculture continued to

Table 9.1.13

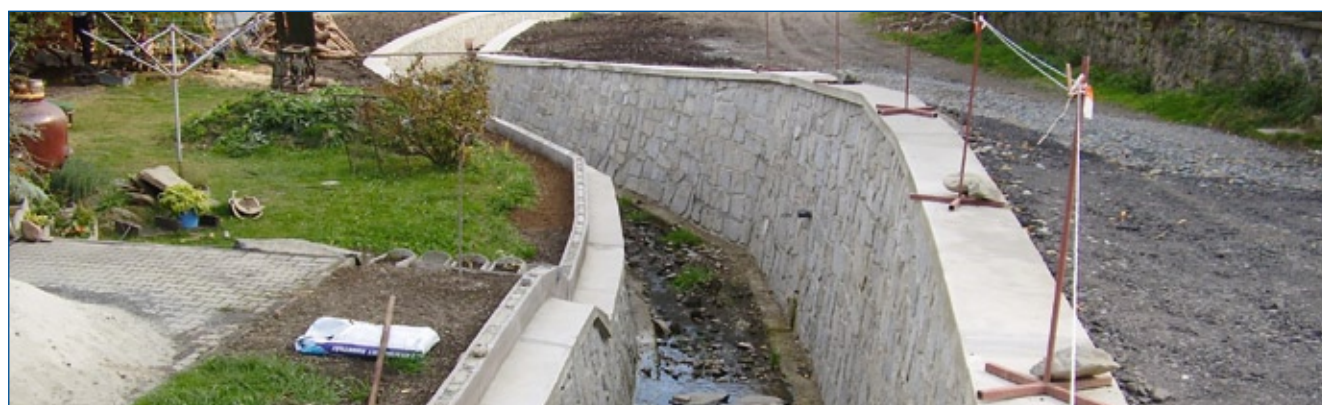
Use of funds in the year 2009 under the sub-programme 229 116 – “Remedying of the Impacts of Floods in the Year 2009” in millions of CZK

Owners and administrators	Use of funds in 2009	
	Investments	Non-investments
Vltava River Board, s. e.	0	29.516
Oder River Board, s. e.	0	1.340
Forests of the Czech Republic, s. e.	4.584	5.545
Total	4.584	36.401

Source: MoA

implement the programme 129 130 – “Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs”.

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



Regulation of the Liptašský stream

Table 9.1.14

Use of funds for selected major projects under the programme 129 130 – “Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs”, in millions of CZK

Applicant	Name of project	Implementation period	Total costs	Subsidies in 2009
KONSTRUKTIS Praha s.r.o.	Malkovický fishpond in the cad. terr. of Kvasejovice, construction of dam against floods and drought	04/09-08/09	13.578	10.500
ČRS MO Humpolec	Construction of retention water reservoir Hadina	01/08-12/09	38.434	30.747
Rybářství Lnáře s.r.o.	Rehabilitation of Divák fishpond	03/09-12/09	30.325	24.259
Rybníkářství Pohořelice a.s.	Ivanovický fishpond . dredging and repair of emergency spillway	11/08-07/09	28.444	22.918
Petr Scholle	Dredging of Velká Kaplice fishpond	02/09-10/09	25.503	20.402

Source: MoA

In 2009, in total 73 projects were financed under the following breakdown: non-capital investment funds of the state budget were expended in the amount of CZK 190.00 million and capital investment funds in the amount of CZK 59.99 million, the EIB loan was used to draw non-investment funds in amount of CZK 282.18 million and capital investment funds in amount of CZK 86.45 million.

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

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

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

In case of construction of a new water reservoir (or a system of water reservoirs), which must be larger than 2 hectares, the main purpose of such hydraulic structure will be the protection against floods and drought, i. e. only extensive fish farming will be permitted. The Table 9.1.14 shows some of the major projects included in the programme 129 130.

In 2009, the Ministry of Agriculture launched the programme 129 160 – Sub-programme 129 162 “Support for the Renewal and Construction of Irrigation Detail and Optimization of Irrigation Systems”.

Floods cause damage to tangible property and by their devastating effects may even endanger human lives. A similar problem faced by farmers carrying out business in especially dry areas are insufficient precipitation totals. Irrigation systems serve to eliminate the threat of negative impacts of insufficient precipitation totals. Irrigation allows to achieve optimal yields of agricultural crops even in dry areas. To support the renewal and construction of irrigation detail and optimization of irrigation systems, the Ministry of Agriculture launched the programme 129 160 – sub-programme 129 162.

Under this programme, the applicants may apply for support under the following measures:

- Support for the renewal and construction of irrigation detail, namely to cover:
 - purchase of machinery and equipment for irrigation water delivery to the crops (irrigation detail), except for drip irrigation in orchards, hop gardens, vineyards and seed-plots,
 - purchase of complex mobile irrigation systems.
- Support for the renewal, construction and optimization of irrigation systems, namely to cover:
 - construction and renewal of pumping stations,
 - construction and renewal of abstraction facilities,
 - construction and renewal of piping distribution systems and irrigation canals,
 - control and optimization systems for irrigation systems.

In 2009, the first year of implementation of this programme, in total 13 projects were granted financial support under the sub-programme 129 162 “Support for the Renewal and Construction of Irrigation Detail and Optimization of Irrigation Systems”. In 2009, the beneficiaries were granted financial support in the amount of CZK 12.80 million.

In 2009, the Ministry of Agriculture launched the programme 129 170 “Support for Improving the Functionality of Hydraulic Structures”.

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

The subject-matter objectives of the programme are supported by rich experience in coherent and systematic technical and safety surveillance of hydraulic structures and water quality monitoring in the reservoirs. The programme focuses, in particular, on implementation of measures aiming to remedy the condition of the most threatening hydraulic structures.

The programme objectives are oriented at improving the functionality of the impounding structure itself and the dam, at accessories and service structures, and also at the reservoir area and the quality of accumulated water.

The programme does not include measures for fishponds and certain measures to improve the safety which are covered by another subsidy tools.

The beneficiaries are, in particular, River Boards, state enterprises,

pursuant to the Act No. 305/2000 Coll., on river basins, in the case of the sub-programme 129 174 the applicants may include River Boards, state enterprises and other owners of hydraulic structures.

The programme is divided into three sub-programmes:

129 172 "Support for Improving the Functionality and Safety of Hydraulic Structures" is focused on:

- earthfill dams of hydraulic structures,
- concrete and masonry dams of hydraulic structures;

129 173 "Support for Sediment Removal from the Reservoirs" is focused on:

- water supply reservoirs,
- water reservoirs classified in bathing areas;

129 174 "Support for Recovery of Function of Hydraulic Structures in Emergency Situations" is focused on:

- hydraulic structures, at which state of emergency was declared.

Under the individual sub-programmes, only one application for the specific hydraulic structure may be registered during the entire period of the programme duration.

In 2009, the first year of implementation of this programme, two projects falling within the Vltava River Board, s. e. were granted financial support under the programme 129 170. In total, the amount of CZK 8.61 million was used.

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

In 2009, under the sub-programme 229 013 the Agricultural Water Management Administration made land acquisitions for 51 projects (including land acquisitions pursuant to Sections 50 and 56 of the Water Act) in the amount of CZK 4.39 million with an area larger than 21.7 hectares and prepared one project documentation for the Loubní potok stream adaptation.

In 2009, the total capital investment funds of the state budget expended under this sub-programme amounted to CZK 4.50 million.

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

To prepare the programme launching, the programme documentation was elaborated in 2009 and submitted to the Ministry of Finance for approval. The programme follows up with the sub-programme 229 013 and includes expenditures on purchase and technical renovation of state-owned property administered by the Ministry of Agriculture, namely by its organizational unit – Agricultural Water Management Administration.



Revitalization of the Hostákovský stream in Třebíč

The programme is constituted by three sub-programmes:

129 192 "Preparation of Projects under the Operational Programme Environment"

129 193 "Rehabilitation of Watercourses and New Adaptations of Watercourses"

129 194 "Restoration of Water Reservoirs"

Under the sub-programme 129 194 – "Restoration of Water Reservoirs", the project of water reservoir Loštice with the total costs of CZK 3.94 million was started. In 2009, the state budget funds expended under this sub-programme amounted to CZK 940 thousand.

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 current expenditures of the specific indicator "Support for water management in total" in the budget chapter of the Ministry of Agriculture for maintenance of minor watercourses, water reservoirs and polders and related structures, as well as for maintenance and operation of main drainage facilities.

Maintenance of minor watercourses, water reservoirs and polders

In 2009, the non-capital investment funds of the state budget expended within the framework of this support, i. e. for maintenance, repairs and 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 to CZK 89.22 million. In total 914 non-capital investment projects (including 295 immediate interventions) were executed and completed and maintenance was carried out on 567km of minor watercourses.

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

In 2009, the non-capital investment funds of the state budget expended within the framework of this support amounted to CZK 21.83 million. The Agricultural Water Management Administration executed and completed 324 operational measures.

Maintenance of main drainage facilities

In 2009, the non-capital investment funds of the state budget expended within the framework of this support, i. e. for maintenance, repairs and management of the state-owned property on main drainage facilities and related structures administered by the Agricultural Water Management Administration amounted to CZK 39.98 million. In total 536 non-capital investment projects (including 19 immediate interventions) were executed and completed and maintenance was carried out for 529km of main drainage facilities.

Operation of main drainage facilities

In 2009, the non-capital investment funds of the state budget expended within the framework of this support amounted to CZK 11.20 million. The Agricultural Water Management Administration executed and completed 120 operational measures.

State funds are also provided for national subsidy programmes aiming to support restructuring and enhance competitiveness. Competitive agricultural production cannot go without water supply in

Table 9.1.15

Use of funds under the subsidy programme I.1. "Support for the Establishment of Drip Irrigation in Orchards, Hop Gardens and Vineyards" in the years 2001–2009 in thousands of CZK

Type of agricultural crops	year	hectares	disbursed amount in thousands of CZK
vineyards	2001	4	163.44
	2002	57	3,221.90
	2003	166	4,416.73
	2004	126	6,217.53
	2005	128	7,199.71
	2006	40.5	2,428.20
	2007	70	4,194.60
	2008	80	2,997.24
	2009	18.5	901.27
- total		690	31,740.62
hop gardens	2001	133	6,295.88
	2002	90	5,008.35
	2003	50	1,312.60
	2004	113	5,513.33
	2005	94	5,264.43
	2006	67.5	4,047.60
	2007	90	4,854.00
	2008	84.5	3,159.18
	2009	59	2,847.07
- total		781	38,302.41
orchards	2001	347	16,450.81
	2002	293	16,396.74
	2003	634	16,824.26
	2004	272	13,264.91
	2005	223	12,532.10
	2006	262	15,701.40
	2007	331	19,851.00
	2008	364	13,616.22
	2009	332	16,139.88
- total		3,058	140,777.32
seed-plots	2008	6	226.64
	2009	2.3	111.69
- total		8.3	338.33
total		4,537.00	211,158.68

optimum quantities in optimum time. This also applies to permanent crops, therefore, a subsidy title I.1. "Support for the Establishment of Drip Irrigation in Orchards, Hop Gardens and Vineyards" was launched in 2001, and later extended for permanent crops seed-plots and ornamental plant seed-plots.

This subsidy programme is a national subsidy, i. e. paid from the national funds. Until 2007, financial limit amounted to CZK 25 million in total in the respective year, and to CZK 20 million in the following years. Due to its rather simple rules it is exploited to a large extent. Prior to the accession of the Czech Republic to the EU, this programme was notified and approved by the European Commission.

The basic terms of access to this programme are annually published in "Principles stipulating the terms for the granting of subsidies

pursuant to Sections 2 and 2d of the Act No. 252/1997 Coll., on agriculture". Over the period of its duration, drip irrigation was established in the extent shown in Table 9.1.15.

9.2

Financial support provided by the Ministry of the Environment of the Czech Republic

One of the main financial support titles provided by the Ministry of the Environment is the Programme of Revitalization of River Systems. The programme presumes gradual steps in meeting the objectives to maintain and support biodiversity, favourable

Table 9.2.1
Use of subsidies by the type of measures supported in 2009

Type of revitalization measure (sub-programme)	Number	Number of projects	thousand CZK
Revitalization of the natural function of watercourses	215 112	6	9,197
Establishment and revitalization of the components ensuring the territorial stability of ecosystems dependent on water regime	215 113	1	2,024
Removal of transverse obstacles in watercourses and support for technical measures not including such obstacles (integration of fish ladders and fishways)	215 114	2	2,854
Revitalization of the retention capacity of the landscape	215 115	3	3,392
Construction and renewal of waste water treatment plants and sewerage systems, including establishment of artificial wetlands	215 117	21	123,718
Revitalization of the natural function of watercourses with revitalization of the retention capacity of the landscape	215 118	1	4,151
Total		34	145,336

Source: MoE

pattern of water regime in the landscape, increase water quality and purity and make use of the land in the areas concerned in a functional manner. The support provided by this programme is in particular aimed at measures in the area of the revitalization of the natural functions of watercourses, the establishment of the components ensuring the territorial stability of ecosystems dependent on water regime, the removal of unnatural transverse obstacles on watercourses, the rehabilitation of retention capacity of the landscape and tackling the problems connected with 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. Since 2003, the Programme of Revitalization of River Systems also includes measures to tackle the issues of waste water drainage and treatment. In 2009, funds were granted for the execution of the revitalization measures under the following sub-programmes:

- 215 112 "Revitalization of the Natural Function of Watercourses"
- 215 113 "Establishment and Revitalization of the Components Ensuring the Territorial Stability of Ecosystems Dependent on Water Regime"
- 215 114 "Removal of Transverse Obstacles on Watercourses and Support for Technical Solutions Not Including Such Obstacles (Integration and Construction of Fish Ladders and Fishways)"
- 215 115 "Revitalization of the Retention Capacity of the Landscape"
- 215 117 "Construction and Renewal of Waste Water Treatment Plants and Sewerage Systems Including the Establishment of Artificial Wetlands"
- 215 118 "Revitalization of the Natural Function of Watercourses with Revitalization of the Retention Capacity of the Landscape"

The Programme of Revitalization of River Systems is a subsidy programme of the Ministry of the Environment. The funds for this programme are annually allocated from the state budget. The 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 revitalization measures are to be

implemented, the watercourse administrator, the lessee of land, the state organizations or non-profit organizations (in every instance with the written consent of the owner) or municipalities, associations of municipalities and water supply joint-stock companies. The sub-programme 215 116 focusing on refurbishment of the technical elements and dredging of productive fishponds was terminated, therefore, no project was executed in 2009.

In 2009, the dominant position among the revitalization measures as regards the number of projects was occupied by the sub-programme 215 117 "Construction and Renewal of Waste Water Treatment Plants and Sewerage Systems". The summary (Table 9.2.1) shows that most of the funds of the Programme of Revitalization of River Systems were expended on these projects.

In 2009, the total sum of funds allocated for financing of 34 projects under the Programme of Revitalization of River Systems amounted to CZK 145,336 thousand.

9.3

The State Environmental Fund

The State Environmental Fund of the Czech Republic is a specifically oriented institution which is an important financial resource for support of implementation of measures to protect and improve the status of the environment in its respective compartments. It is one of the basic economic instruments to meet the commitments resulting from international conventions on the environmental protection 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 Coll., on the State Environmental Fund of the Czech Republic, as amended, 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 the provision of financial resources from the fund and annexes to this Directive regulating the terms for the 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 environmental compartments, instalments of loans provided by the fund as well as the respective interest, revenues from the available funds on term deposits and subsidies from the state budget to cover expenditures expended from the Technical Assistance of the EU programmes on their administration. The decisions on use of financial resources of

the State Environmental Fund are taken, by law, by the Minister of the Environment on the basis of recommendations given by the advisory board – the Board of the Fund. These revenues are not included in the state budget.

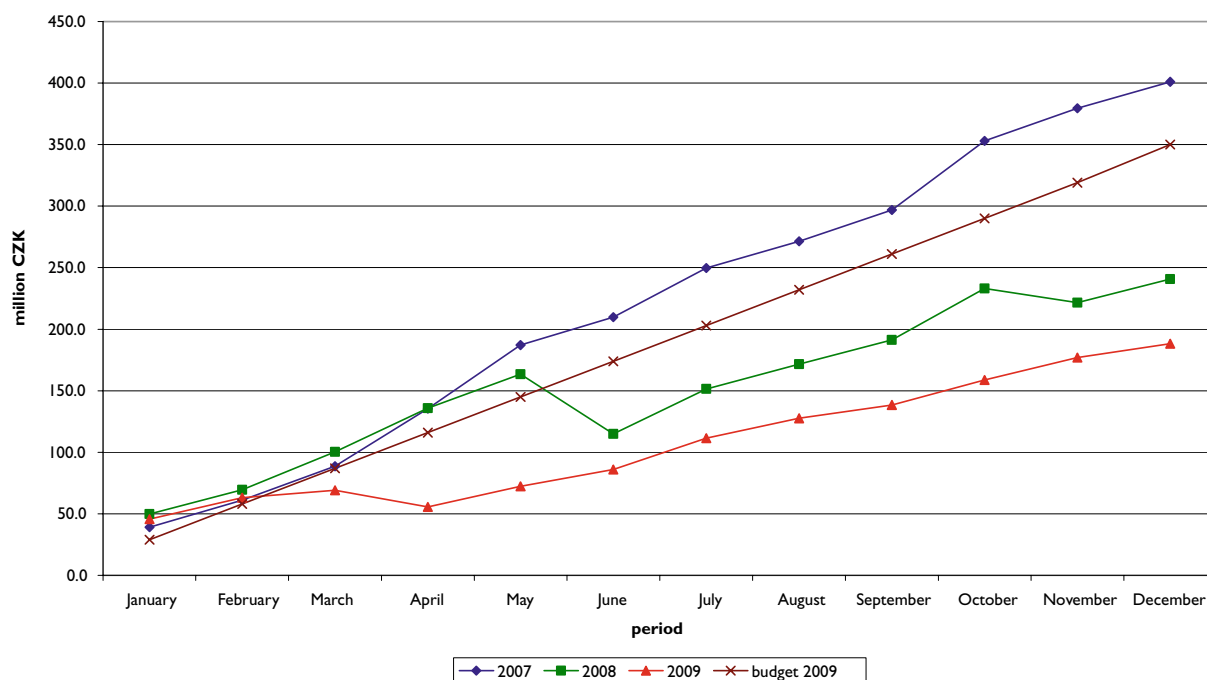
In accordance with the commitments resulting from international conventions and with the State Environmental Policy, the support provided by the State Environmental Fund is directed primarily to the area of water protection, air protection, waste management and the area of nature conservation and the landscape management. The support for 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 Coll., in form of grants, loans and contributions to partial settlement of interest.

The State Environmental Fund represents an important central financial resource which participates in implementing the state environmental policy and the approximation strategy of the Ministry of the Environment. The Fund performs activities which were delegated to it for administration of financial resources granted from the EU

Chart 9.3.1

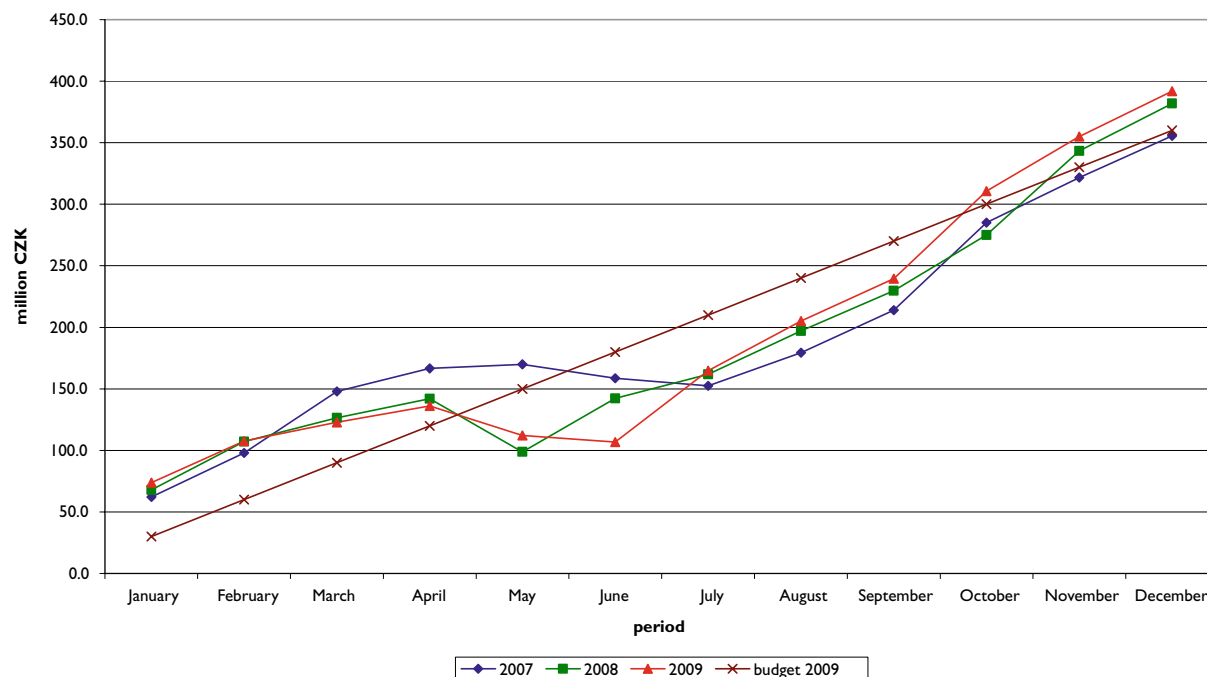
Development of revenues from charges for waste water in the years 2007–2009 in millions of CZK



Source: The State Environmental Fund

Chart 9.3.2

Development of revenues from charges for groundwater in the years 2007–2009 in millions of CZK



Source: The State Environmental Fund

Table 9.3.1**Financial expenditures incurred by the Fund in the year 2009 in thousands of CZK (water)**

	Subsidy	Loan	Expenditures in total
Water in total	445.6	95.2	540.8
of which national programmes	230.4	6.3	236.7
of which Cohesion Fund/ISPA	90.4	60.9	151.3
of which Operational Programme Infrastructure	14.0	7.9	21.9
of which Operational Programme Environment	110.8	20.1	130.9

Source: The State Environmental Fund

*The Žižnětický stream channel capacity expansion in Nýrsko*

for the area of the environment. To perform the delegated activities in administering financial resources from the ERDF and CF funds, the State Environmental Fund exploits resources from the Technical Assistance in accordance with the respective EU regulations. The State Environmental Fund was appointed the Implementing Body for the Cohesion Fund and the Intermediate Body for the Operational Programme Infrastructure (ERDF) and the Operational Programme Environment (CF, ERDF). Within the State Environmental Fund, a department for execution of payments was established, which partly performs the function of the financial department (together with the Accounting Department of the Ministry of the Environment). At present, the financing of investment projects from the European funds is a priority. Under the Operational Programme Environment, the State Environmental Fund will be responsible for expending the amount of over € 5 billion by the year 2013.

In 2009, the total revenues from charges and penalties by the individual environmental compartments amounted to CZK 2,103.7 million. Together with interest on deposits, interest on loans, loan repayments (without loan refunds), revenues from financial settlement, loan refunds for previous years, other revenues, subsidies, sold and settled claims, the total revenues amounted to CZK 2,824.2 million (as of 31 December 2009, the revenue part of the budget thus achieved 138.6% of the scheduled value).

Compared to the year 2008, a lower amount of the collected charges for environmental pollution was put to the fund account. As of 31 December 2009, revenues from charges for environmental pollution (excluding car wrecks) amounted to CZK 1,365.8 million, which compared to the year 2008 (CZK 1,605.5 million) is a decline by CZK 239.7 million. A decline of revenues from charges was largely affected by the overall economic recession in the country.

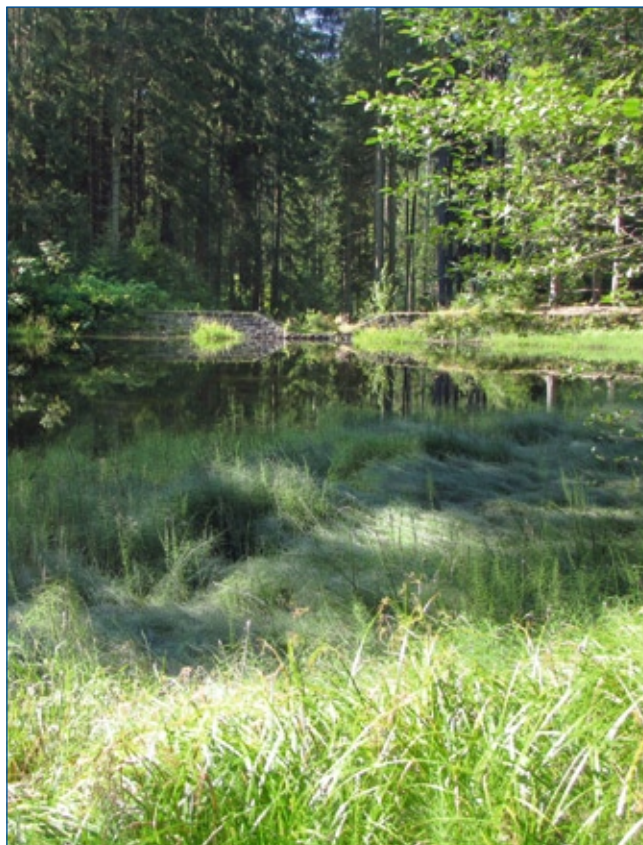
The revenues from charges for waste water discharges to surface waters, compared to the year 2008 (CZK 240.7 million) again declined to the amount of CZK 188.3 million. The collection of

charges thus declined to absolutely the lowest level over the last four years. This situation is caused by the improved quality of treatment of the discharged waters and by increased investments to waste water treatment plants, and also by polluters' possible intentional handling of discharged water which is only randomly tested by control laboratories and measuring groups. Another reason is also an overall decline of industrial production due to the global economic crisis. A number of polluters also make use of the legal opportunity to defer payment of charges due to investments to waste water treatment plants. A long-term year-on-year declining trend in the collection of charges for abstracted groundwater quantities stopped in 2008 and the revenues from this charge slightly increased in 2009. Compared to the year 2008 (the collected amount of CZK 382 million), the amount of CZK 391.9 million was collected in 2009, which is an increase by more than 2.5%. This result was achieved, in particular, due to permanent intensive controls performed by the State Environmental Fund in close cooperation with the Czech Environmental Inspection. The development of revenues from charges is shown in Charts 9.3.1 and 9.3.2.

As of 31 December 2009, the total financial expenditures reached the amount of CZK 1,816.0 million, of which CZK 3.3 million were represented by the programme "GIS-Green for Savings" reimbursements. Contracted projects (national programmes, ISPA/ Cohesion Fund, Operational Programme Infrastructure, Operational Programme Environment, excluding GIS) as of 31 December 2009 were granted funds in the total amount of CZK 1,209.7 million. Of that, 8% were represented by expenditures on contracted projects supported by loans in the amount of CZK 96.7 million. The claims for transfers (subsidies) prevailed and were disbursed in the amount of CZK 1,113 million, i. e. 92% of the contracted support. Of that, the disbursed contribution to cover interest on commercial loan amounted to CZK 1.5 million. The decisive percentage (44.7%) of the total financial expenditures on the contracted projects was achieved by water protection projects, in the amount of CZK 540.8 million. Expenditures on the Office of the Fund as of 31 December 2009 amounted to CZK 545.6 million, including expenditures on administration of the EU and GIS programmes. These expenditures are partly refunded to the Fund in the form of subsidy from the state budget and make part of the revenues of the Fund. In 2009, the State Environmental Fund was granted a subsidy amounting to CZK 147.7 million to cover the administration expenditures.

In the area of water protection under the national programmes, the minister of the environment in 2009 issued no new decisions on the granting of support for construction of waste water treatment plants and sewerage systems.

In the area of water protection under the Operational Programme Infrastructure, final project evaluation was completed for 48 projects from the start of the programme until the end of 2009. The proportion of the co-financing of projects from the resources of the European Regional Development Fund (ERDF), for projects where the final evaluation was completed before the end of 2009, amounted to CZK 1,887.1 million, the subsidy from the State



Water Reservoir below Bílý Kříž Hill in the Beskydy Mountains

Environmental Fund amounted to CZK 256.4 million, the loan provided by the Fund amounted to CZK 77.1 million, and the costs of the project documentation which is also paid by the Fund from its own resources amounted to CZK 11.0 million.

In the area of water protection under the Operational Programme Environment, priority axis I – Improving Water Management Infrastructure and Reducing the Risk of Floods, the Ministry of the Environment issued in 2009 in total 270 decisions, with 245 projects falling into the area of support 1.1 Reduction of Water Pollution (of that 5 projects fell into so-called “large projects” and 25 projects fell into the area of support 1.3 “Reducing the Risk of Floods”). The total expenditures including the ISPA – CF resources are shown in Table 9.3.1.

9.4

Financial support from international cooperation and the EU

Also in 2009, water management projects received financial support under a number of programmes. They include, for instance, Interreg

IIIA and Interreg IVC programmes. The programme documentation including the provided and used support from international resources is administered by the Centre for Regional Development in Prague.

The programme Interreg IIIA provides support for measures including structures for the environmental protection and flood prevention, and the programme Interreg IVC is aimed at the environment and risk prevention (natural and technological risks including climate change, water management, etc.).

In 2009, the following projects were completed under the programme Interreg IIIA – cross-border cooperation:

1. In the bilateral project Czech Republic – Austria, the research of self-purification processes in minor heavily degraded watercourses in the area of Weinviertel and South Moravia was completed – the development of the methodology for sustainable measures to improve the quality of waters (the ERDF support in the amount of 83 650 €) and the project Zwingendorf (the ERDF support in the amount of 615 439 €).
2. Two projects of water management nature were executed within the framework of the Czech Republic – Poland cross-border cooperation programme. Namely, the project of improving the Elbe River Basin and the Oder River Basin cleanness, based on enhanced waste water treatment quality in the Czech – Polish borderland (the ERDF support in the amount of 900 827 €) and the project of the protection and rational management of surface waters and groundwaters in the Czech – Polish borderland (the ERDF support amounting to 4 503 275 €) were completed.
3. In total 5 projects were completed within the Czech Republic – Bavaria cross-border cooperation programme. They included the project of cross-border water protection in the Drachensee Basin (the ERDF support in the amount of 92 650 €), the project dealing with the effects of the acidification on soils and water resources (the ERDF support in the amount of 407 150 €), the project dealing with the issues of nutrients and cyanobacteria in the Skalka water reservoir (the ERDF support in the amount of 135 371 €), project of the Czech – German ecological water tourism (the ERDF support in the amount of 583 128 €) and the project dealing with mercury on the tributary to the Skalka water reservoir; the evaluation and draft measures (the ERDF support in the amount of 68 000 €).
4. In 2009, the execution of only 1 project proceeded within the framework of the Czech Republic – Saxony cross-border cooperation programme – the research of possibilities how to minimize the contents of organic harmful substances in drinking water resources in the Krušné hory Mountains. This project was attended to by 5 institutions with differing amounts of the ERDF support (in all instances, the amount of support reached almost 50% of the total costs):
 - Research Institute for Forest and Game Management, Jíloviště-Strnady, public research institution: the ERDF support in the amount of 450 500 €

Table 9.4.1

Summary of approved and registered applications for support from the Rural Development Programme under Measure III. 2.1.1 b) - Regional Department of the State Agricultural Intervention Fund

	Prague	České Budějovice	Ústí nad Labem	Hradec Králové	Brno	Olomouc	Opava	Total	Subsidy in CZK
Approved projects	4	8	4	3	0	2	1	22	484,215,972
Registered projects	67	49	11	25	8	17	4	181	2,881,561,891

- Biological Centre of the Academy of Sciences of the Czech Republic, public research institution: the ERDF support in the amount of 153 000 €
 - Forests of the Czech Republic, s. e.: the ERDF support in the amount of 221 000 €
 - Ohře River Board, s. e.: the ERDF support in the amount of 204 000 €
 - Euroregion Krušnohoří, the Czech part: the ERDF support in the amount of 38 250 €
5. Within the Czech Republic – Slovakia cross-border cooperation programme, also 1 project was completed in 2009 – project of flood control measures and early warning system Říka-Vlára-Váh Rivers (the ERDF support in the amount of 21 920 €).

At present, the programmes for the period 2007–2013 continue to be launched. These programmes include water management issues as well, mainly the programmes of European territorial cooperation (cross-border, supranational and inter-regional cooperation). The Operational Programme for Supranational Cooperation comprises projects **LABEL** – Adaptation to flood risk in the LABe-ELbe river basin and **REURIS** – REvitalization of Urban River Spaces. The Operational Programme for Supranational Cooperation is at present in the stage of approving the first projects and concluding contracts.

The European subsidy programmes include the Rural Development Programme of the Czech Republic for the period 2007–2013. It is a programme document prepared by the Ministry of Agriculture for the granting of subsidies for agriculture and rural development in the years 2007–2013.

The subsidies from the Rural Development Programme are co-financed from the EAFRD and from the state budget of the Czech Republic. The EAFRD support for the period 2007–2013 amounts to 2.8 billion € and the total support including the funds from the state budget of the Czech Republic amounts to 3.6 billion €. The funding for the Rural Development Programme proceeds in the form of pre-financing from the state budget, i. e. all payments to beneficiaries are first effected from national resources.

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

Measure III. 2.1.1 Renovation and development of villages

This measure is aimed at support for small municipalities with the population of less than 2000 PE. The support is intended for the area of water management infrastructure, including improvements in appearance of the municipalities and thus improvements in living conditions and enhancing the attractiveness of the villages for housing, carrying business and relaxation.

Under the project scheme b) public water supply systems, sewerage systems and waste water treatment plants, the applicants for subsidy may be municipalities and associations of municipalities.

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

The eligible expenditures under scheme b) public water supply

systems, sewerage systems and waste water treatment plants, for which subsidies can be drawn, include:

- public water supply systems,
- public sewerage systems and waste water treatment plants,
- supporting systems for the technical infrastructure,
- the subsequent repairs of roads, sidewalks.

All projects falling into the above mentioned Measure and scheme seek to be granted support from the Rural Development Programme for the period 2007–2013, are selected based on the administrative procedure which was approved by the Ministry of the Agriculture and the European Commission.

The applications for the granting of subsidies that were reviewed for eligibility and went through administrative control by the State Agricultural Intervention Fund, are scored by points system according to the predefined Rural Development Programme criteria (national and regional preferential criteria) and ranked based on the number of points in descending order within the individual NUTS 2 regions. In the case of equal score, the time viewpoint is decisive, i. e. applications for subsidy submitted earlier are preferred. Based on the amount of available financial resources for the given measure, they are further sub-divided to regional allocations according to the scheme approved by the Monitoring Committee of the Rural Development Programme, and the applications for support are approved or rejected for funding. As regards the Rural Development Programme and its above listed measures, the applications for support largely exceed the available financial resources.

In October 2009, Call 8 of acceptance of applications for support under Measure III. 2.1.1 under scheme b) public water supply systems, sewerage systems and waste water treatment plants took place, having traditionally been connected with multiple excess of demand by applicants. In this Call 8, under the above mentioned Measure, in total 181 projects with the total financial claim amounting to CZK 2,881.6 billion were registered.

In the previous years, the Ministry of Agriculture usually released the amount for the project approvals with certain percentage of overcommitments, which in the individual rounds of project acceptance allowed to approve a larger number of projects. Nevertheless, the development experienced so far has shown permanently growing interest in European subsidies from the Rural Development Programme and the Ministry of Agriculture is not able, even at a high level of overcommitments, to satisfy all applicants. In Call 8 of acceptance of applications for support, the commitments were set at the level of 115% of annual allocation established in the financial plan for the given measure. At this level of commitments, 22 projects claiming the total amount of CZK 484.2 million were selected and approved.



Špičák Ravine in Klatovy



Aneta Heidrová

76 | 10 years, Kravaře - Kouty basic school, Moravskoslezský kraj region

Legislative measures

10.

10.1

Water Act and implementing regulations

Three acts having effect on the Water Act were published in the Collection of Laws of the Czech Republic and became effective in 2009.

Act No. 157/2009 Coll. of 7 May 2009, on mining waste management and on amendment to selected acts

The adoption of this Act was necessitated by transferring the requirements of the Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC. The Water Act was amended by Part III (Section 27) of the Act for the purpose of subordinating storage sites for mining waste management to the similar regime of storage sites including polluted waters and leakages.

Act No. 227/2009 Coll. of 17 June 2009, amending selected acts in relation to the adoption of the Act on Central Registers

The purpose of this legal regulation (in Part 120 of the Act) was the necessity to respond to the legislative embedding of Central Registers, whose reference data will be used as data sources for public administration authorities. In practice, public administration authorities should not search the reference data values for their needs from different sources but only from Central Registers. The information is communicated once only and subsequently will be reflected in the Central Register and through the Central Register in other public administration information systems.

Act No. 281/2009 Coll. of 22 July 2009, amending selected acts in relation to the adoption of the Rules of the Tax Procedure

The act amending, inter alia, in its Part 98 the Water Act. It responds to the necessary changes relating to the adoption of the Rules of the Tax Procedure which is the main procedural standard of tax law. It harmonizes the basic terms of law, in particular, establishing the term "tax administrator" which, however, continues to be customs authority.

As regards implementing regulations, only Government Order No. 203/2009 Coll., on procedure to assess and claim compensation for damage and procedure to assess amount of compensation in areas designated for controlled flood overflowing was published in the Collection of Laws of the Czech Republic in 2009.

The Government Order implements Section 68, paragraph 2 of the Water Act and provides for procedural steps in handling compensation for damage caused by controlled flood overflowing, including the essentials required to claim for such damage.

In 2009, the Interpretation Committee for the Water Act during its three sessions adopted three interpretations which are published on the website of the Ministry of Agriculture.



Zászkalská Reservoir – reconstruction

10.2

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

In 2009, minor amendment was made to the Act on public water supply systems and sewerage systems, implemented by the Act No. 281/2009 Coll., amending selected acts in relation to the adoption of the Rules of the Tax Procedure. The amendment concerns Section 34, repealing its paragraph 8 including the footnote No. 29b. Decree No. 428/2001 Coll., implementing the Act on public water supply and sewerage systems, was not amended.

In 2009, two meetings of the Interpretation Committee for the Act on public water supply systems and sewerage systems took place. Two interpretations were newly approved.

10.3

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

Ministry of Agriculture

Auditing of the execution of the delegated authority in water management sector were carried out by the Ministry of Agriculture, through the Department for State Administration, Education and Information Systems in the water management sector 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 and 2009 prepared by the Ministry of the Interior.

Audits carried out by the Ministry of Agriculture, in addition to examining water authority operation (such as the matters of the achieved qualifications and practice of personnel, organization of work, material background for work, etc.) focus on due application



of the relevant legal regulations, in particular, the Act No. 254/2001 Coll. on Water and on amendment to certain laws (the Water Act), as amended, the Act No. 274/2001 Coll. on Public Water Supply and Sewerage Systems and on amendment to certain laws (the Water Supply and Sewerage Systems Act) as amended, as well as the related implementing legal regulations. The agenda of water right proceedings is also associated with other fields of administrative law, therefore, the audits were always also examining the compliance with the provisions of the Act No. 500/2004 Coll., Code of the Administrative Procedure, as amended, and with regard to the fact that water authorities carry out the agenda of special building offices, the audits examined also the procedure according to the Act No. 183/2006 Coll., on Land-Use Planning and Building Code (the Building Act) as amended and its implementing legal regulations. In the particular proceedings, the audits are effected by examining the randomly selected documents.

The audits examining the execution of the delegated authority monitor the legality of this activity. This is corresponded to by the

Table 10.3.1
Audit of the execution of state administration, carried out by the Ministry of Agriculture at Regional Authorities and the City Council of Prague in 2009

Region	Audit date
Liberecký	27 January 2009
Pardubický	24 February 2009
Moravskoslezský	26 March 2009
Vysočina	28 April 2009
Jihočeský	19 May 2009
Magistrát hl. m. Prahy	25 June 2009
Karlovarský	30 June 2009
Zlínský	21 October 2009

Source: MoA

scope of the audits of the individual components guaranteeing legality in activities of water authorities – for instance, correct application of legal regulations in general, compliance with the relevant competence legal provisions, due conduct of administrative proceedings, compliance with administrative time-limits, provision of source documents for decisions in compliance with the Code of Administrative Procedure, the possibility to review the content of a decision, carrying out the technical and safety surveillance of hydraulic structures, etc.

Table 10.3.2
Audit of the execution of state administration, carried out by the Ministry of Agriculture at water authorities of municipalities with extended authority in 2009

Municipality	Audit date
Municipal Office Telč	4 August 2009
Municipal Council Jihlava	4 August 2009
Municipal Office Pacov	5 August 2009
Municipal Office Jindřichův Hradec	5 August 2009
Municipal Office Ivančice	26 August 2009
Municipal Office Rosice	26 August 2009
Municipal Office Slavkov u Brna	27 August 2009
Municipal Office Šlapanice	27 August 2009
Municipal Office Litovel	1 September 2009
Municipal Office Konice	1 September 2009
Municipal Office Svitavy	2 September 2009
Municipal Office Moravská Třebová	2 September 2009
Municipal Office Praha I	15 September 2009
Municipal Office Praha 12	15 September 2009

Source: MoA

Based on the audits that were carried out it can be stated that the execution of the delegated authority by regional authorities in the water management sector maintains its high level. The permanently improving approach of regional authorities in providing the methodological guidance for water authorities in their jurisdiction has to be pointed out. This statement can also be confirmed by the fact that no measures to remedy the situation were imposed in any of the audits. The most frequent shortcomings were identified in the application of the relevant provisions of the Code of the Administrative Procedure. The identified irregularities, nevertheless, did not make the issued decisions unlawful and after a matter-of-fact discussion the responsible staff members accepted the interpretations and procedures guaranteeing that the identified shortcomings will not recur.

At the level of water authorities of municipalities with extended authority, the audits were carried out randomly, in accordance with the effort of the Ministry of Agriculture to contribute, mainly through the methodological guidance, to improvements in the level of execution of state administration in the water management sector and ensure trouble-free and uniform practice of water right proceedings. The highly positive feedback from the audits confirms their correct targeting, which helps to deepen mutual communication at all levels of the administrative hierarchy. Beneficial as well is the acquaintance with the regional water right issues and findings in the field of application of legal regulations under the authority of the Ministry of Agriculture. These findings allow to flexibly respond to possible application difficulties or irregularities of legal regulations through launching the legislative process to remedy them.

The audits of water authorities of municipalities with extended authority confirmed the long-term trend of improving 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. In spite of that, nevertheless, most of the identified irregularities were largely of formal and procedural nature and repeatedly occurred to a larger or smaller extent practically in all of the authorities. Similarly to the regional authorities, the shortcomings were mainly identified in the application of the new Code of the Administrative Procedure. Furthermore, conditions referred to in statements and opinions of the participants in the proceedings and the respective bodies were insufficiently incorporated into the conditions of the decision. The audits revealed the fact that the quality of work of the water authorities of municipalities with extended authority is often limited by personnel and material

equipment. The higher level of the administrative proceedings is usually observed at larger water authorities, better equipped with personnel and material background, although this may not always be the case. In smaller municipalities, the delegated authority is sometimes executed by only one person responsible for several fields of administration, in some cases even including the separate authority. It has to be emphasized, nevertheless, that despite these problems the audits revealed no case of insufficient execution of the state administration.

The audit results are used for the potential legislative or methodological activities. The water management sector also organized a work meeting with water authorities and quarterly meetings with the heads of water management departments of the regional authorities. These events are aimed at educating and making water authorities staff members acquainted with the current water management issues. The audit findings also serve as a basis to prepare concepts of the methodological presentations. In this way, the audit findings are almost immediately applied in the methodological guidance for subordinate water authorities.

The audit results show that despite the above mentioned minor shortcomings the execution of the state administration in 2009 in the water management sector at all levels of water authorities can be assessed to be of high quality and again fully meeting the requirement for adherence to not only the basic principles of public administration which can be called public service.

Ministry of the Environment

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

In 2009, similarly to the years before, the Department of Water Protection organized work meetings with water authorities and the Czech Environmental Inspectorate. The purpose of this event was to make water authorities staff members acquainted with the current issues of water protection and the activities of the Department of Water Protection. Staff members of the Department of Water Protection of the Ministry of the Environment participated, whenever possible, also in other training workshops and meetings organized by the individual regional authorities.



The Lužická Nisa River in Machnín



Adam Budník

80 | 10 years, Za Mlýnem basic school, Přerov, Olomoucký kraj region

Priority tasks, programmes and key documents in water management

II.1

Planning in the field of waters

In 2009, first River Basin Management Plans were prepared and published, in accordance with Section 13 of the Directive 2000/60/EC of the European Parliament and the Council of 23 October 2000, establishing the framework for the Community activities in the field of water policy (Water Framework Directive).

The territory of the Czech Republic belongs to three international river basins: the Elbe River Basin, the Oder River Basin and the Danube River Basin. In accordance with the main principle of the Water Framework Directive which consists in joint coordinated approach to the protection of waters by the states that are situated in the given international river basin district, the states in these river basins agreed to prepare one joint river basin management plan within the International Commissions for the Protection of Waters.

The international plans for the Elbe River, the Oder River and the Danube River basin districts comprise the jointly prepared part A with summary information at the international level and part B – i. e. plans prepared by the individual states at the national level.

The international Elbe River, Oder River and Danube River basin district management plans are a tool to achieve the objectives set down by the Water Framework Directive. Based on the identified status of waters, environmental objectives and measures for achieving them were defined. As the important groundwork to prepare the draft measures served the identified significant problems in water management and steps to resolve them, agreed at national and international levels.

Parts A of the international river basin management plans are made available to the public on the following websites:

International Commission for the Protection of the Elbe River	www.ikse-mkol.org
International Commission for the Protection of the Oder River against Pollution	www.mkoo.pl
International Commission for the Protection of the Danube River	www.icpdr.org

At the end of 2009, the councils of the individual regional authorities approved the first planning cycles of the river basin district management plans, prepared pursuant to Section 25 of the Water Act, as amended by the Act No. 20/2004 Coll. and in accordance with the Water Framework Directive requirements.

River basin district management plans meet in the Czech Republic the basic level of compiling river basin management plans (according to the territories delimited by the national legislation for administration of river basins). They served to prepare the summary Plans of National Parts of the International Elbe River, Oder River and Danube River Basin District Management Plans and jointly constitute the so-called part B – the national level for the international river basin district management plans.

Eight river basin district management plans – The Upper and Middle Elbe River Basin District Management Plan, The Upper Vltava River Basin District Management Plan, The Berounka River Basin District Management Plan, The Lower Vltava River Basin District Management Plan, The Ohře River and the Lower Elbe River Basin District Management Plan, The Oder River Basin District Management Plan, The Morava River Basin District Management Plan and The Dyje River Basin District Management Plan were prepared in 2004–2009 by the River Boards, s.e. in cooperation with the respective regional authorities and the central water authorities.

Figure II.1
Eight river basin district management plans



Source: River Boards, s.e.

River basin district management plans are conceptual documents, summarizing the information on the current status of water bodies in river basin districts and setting down the particular objectives with focus on:

- achieving the good status of the aquatic environment,
- preventing impairment of the status of the aquatic environment,
- support for sustainable use of waters,
- reducing the effects of extreme discharge stages (floods and droughts).

The plans include the measures to achieve the above listed objectives by 2015.

A significant role in preparing the river basin district management plans was played by the specialists community as well as the general public, which helped to form, through consultations or active involvement in working groups established for the individual river basin district management plans, the final drafts of these plans.

In February 2009, the drafts of river basin district management plans, modified on the basis of comments made by the public, were submitted to the central water authorities and the central administration authority for land planning to be given their standpoints. In April 2009, the modified river basin district management plans were approved by the respective regional authorities. In July 2009, the final drafts of river basin district management plans, along with the statement of the Ministry of the Environment on the plans' conception effects on the environment – the so-called SEA (Strategic Environmental Assessment), were submitted to the councils of the regional authorities for approval. All river basin district management plans were then within the statutory period pursuant to the Water Framework Directive, i. e. by 22 December 2009, approved by all councils of the regional authorities and the Czech Republic thus met its commitments ensuing from this Directive.

The adoption of the river basin district management plans started the actual implementation of the Water Framework Directive, whose ambitious objective is the achievement of the good status of water bodies by the end of 2015, or within the following two 6-year planning cycles, during which it will be necessary to implement those measures that already at present are deferred mainly due to financial reasons. The measures proposed in the first planning cycle are to be implemented by the end of 2012 and, every three years a summary report on their implementation and on the status of water bodies in the individual river basin districts will be submitted to the government of the Czech Republic. By the end of 2015, within the second planning cycle, reviews and updates of the particular measures will be performed.

The Programmes of Measures in river basin districts attend to the requirements of the individual EC directives in the field of water protection and to the identified significant problems. Specific and general measures have been proposed for the particular surface water and groundwater bodies. Specific measures primarily focus on point pollution sources, the improvements of the hydromorphological conditions of watercourses through the revitalizations and eliminating the migration barriers or making them passable, measures to eliminate contaminated sites, measures to reduce or stop inputs of especially hazardous substances to waters, and measures to reduce the contamination of waters by nitrates from agricultural sources. For these measures, financial costs and real available financial resources were specified. General measures are proposed to regulate the pollution from area sources, measures to prevent and reduce the impacts of accidental pollution.

The prepared Programme of Measures respects the priorities of the Czech Republic in attending to the main significant problems of water management and includes, among others, measures to meet the conditions specified in connection with the granting of the so-called transition period for reaching the compliance with the



The Fishpassing facilities – the Bulhary Dam

requirements of the Directive 91/271/EC, on urban waste water treatment.

The approved river basin district management plans are available to the public in paper form at the relevant regional authorities and river basin administrators (the River Boards, s. e.) whose territorial competence the plan in question falls into, and in the electronic form on the portal of the public administration and also on websites of the individual River Boards, s. e.

11.2

Development plans for water supply and sewerage systems

The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic, prepared pursuant to Section 29, Subsection 1, Letter c) of the Act No. 274/2001 Coll., on public water supply and sewerage systems and on amendments to certain related laws, as amended, is placed on the website of the Ministry of Agriculture. For the approved and effective Development Plans for Water Supply and Sewerage Systems in the Regions of the Czech Republic, the Ministry of Agriculture continued to issue statements on the proposed changes in the technical solutions for drinking water supply and waste water drainage and treatment.

The National Development Plan for Water Supply and Sewerage Systems in the Czech Republic is 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.

The 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 follows up with other strategic documents and departmental policy documents and also respects the requirements resulting from the relevant EC regulations.

The National Development Plan for Water Supply and Sewerage Systems in its general part defines the framework objectives, main principles and the state policy principles to ensure 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 synthesis of 14 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 in some of the Regional Development Plans for Water Supply and Sewerage Systems were produced to 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 a framework for building up the state administration information systems 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.

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

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

The Regional Development Plans for Water Supply and Sewerage Systems (similarly as there will be the National Development Plan for Water Supply and Sewerage Systems) are the basis for producing land use planning documentation, specified in the next paragraph, pursuant to the Act No. 183/2006 Coll., on land use planning and building code, as amended, for the activities of the municipal councils in municipalities with extended authority (water authority), the building authorities and the activities of municipalities with independent 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 that 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 regulation 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, owners and operators of water supply and sewerage systems as well as by both specialists community and the general public.

In 2009, the Ministry of Agriculture continued to issue its statements on the proposed changes in the technical solutions for 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 statements and the increase in the last four years is as follows: 302 statements in 2006, 423 statements in 2007, 597 statements in 2008 and 612 statements in 2009 were issued by the Ministry of Agriculture.

11.3

Programmes and measures to reduce surface water pollution

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

The Programme to Reduce Surface Water Pollution by Hazardous Harmful Substances and Especially Hazardous Harmful Substances was adopted by the Czech Republic Government Resolution No. 339 of 14 April 2004. This resolution established the obligation to prepare every two years, beginning with the year 2006, the information on the progress in implementation of the programme and submit it to the Government as a part of the Report on the Status of Water Protection. With regard to the Government Resolution No. 770 of 2007, however, at present the report concerned is the Report on Water Management in the Czech Republic in 2009. The commitment to prepare the Programme is based on Article 6 of the Directive of the European Parliament and of the Council (2000/60/EC of 23 October 2000, establishing a framework for Community action in the field of water policy. It was transposed to Section 38, Subsection 5 of the Act No. 254/2001 Coll., on water and on amendment to certain laws (the Water Act), as amended.



The Úpa River in Česká Skalice

The programme is effective for the entire territory of the Czech Republic for the period between 14 April 2004 and 31 December 2009, it concerns substances or groups of substances hazardous to the aquatic environment (or through the aquatic environment), listed in Annex I to the Water Act. The programme specifies the main measures relating to the protection of waters and other measures not immediately relating with the protection of waters but, finally contributing to their protection.

Especially hazardous harmful substances

The discharges of waste waters containing especially hazardous harmful substances, listed in Annex I to the Water Act and specified in part C of Annex I to the Government Order No. 61/2003 Coll., on indicators and values of permissible pollution of surface waters and waste waters, on requirements for permits to discharge waste waters to surface waters and to sewerage systems and on vulnerable areas, as amended by the Government Order No. 229/2007 Coll., to surface waters and sewerage systems may only be performed if permitted by the water authority (Section 38, Subsection 3 of the Act No. 254/2001 Coll.). Permissible values of pollution indicators for waste waters with the contents of especially hazardous harmful substances, for sectors of industry and types of production listed in Annex I, part C of the Government Order No. 61/2003 Coll., had to be complied with as at the date of the accession of the Czech Republic to the EU, for certain sectors of industry or uses as at the date of 31 December 2009. The following text describes the status for the years 2008–2009 for each of especially hazardous harmful substances, the discharges of which from the pollution sources are relevant.

In the Czech Republic there exist approximately 80 important economic entities or their plants that by the activity according to the SCEA fall within the scope of part C of Annex No. I to the Government Order No. 61/2003 Coll.

The most significant sources of mercury pollution include plants engaged in the chemical production (amalgam electrolyzers in two plants), refining of metals and hazardous waste disposal. In the majority of cases, the most advanced technological processes are applied in

the facilities and slight exceedances of emission standards occur only sporadically. Small mercury pollution sources include, in particular, stomatological facilities, reaching the number of approximately 6,000 registered in the Czech Republic. As at 31 December 2005, all these stomatological workplaces were furnished with amalgam separators showing the efficiency of at least 95%. There is an ongoing process of replacing the electric facilities containing mercury by facilities not containing this hazardous substance.

The discharges of cadmium, according to part C of Annex No. I to the Government Order No. 61/2003 Coll. concern particularly plants engaged in metallurgy of cadmium and nonferrous metals, production of negative accumulator mass or Ni-Cd galvanic cells, production of fertilizers and in surface finishing, in total 10 significant plants. In the majority of cases, the most advanced technological processes are applied in the facilities. In two of them, technologies without the production of waste waters are used. As regards cadmium plating, used by 50% of the plants in question, emission standards expressed in grams of the discharged cadmium relative to the quantity of processed cadmium are not complied with. This is particularly given by a very small quantity of cadmium consumed in the process of electroplating (generally first kilogrammes per year). The discharges of waste waters containing cadmium are fully in compliance with water management permits. Cadmium pollution of waste waters further occurs in the locations where this hazardous substance appears as an admixture in raw materials used or in the contaminated sites (for example, the Příbram area). Significant quantities of cadmium compounds are also used in glass industry (for glass-staining), however, the discharges of waste waters to surface waters occur to the minimum extent only. Every year, the consumption of cadmium and its compounds for surface finishing of metals gradually declines, and cadmium using plants in glass industry are gradually restricted or closed.

The only significant source of tetrachloromethane, hexachlorobenzene and hexachlorobutadiene pollution of waters is the production of tetrachloroethene and tetrachloromethane by perchlorination. Exceedances of the emission standards set by the Government Order No. 61/2003 Coll. do not occur. The Integrated Pollution



Register mentions emissions of hexachlorobenzene in wastes only. As regards tetrachloromethane, emissions to the air are registered, as regards hexachlorobutadiene, emissions in wastes are registered.

Chloroform in significant quantities is used as organic solvent in the pharmaceutical production (only two producers in the Czech Republic). Exceedances of the emission standards set by the Government Order No. 61/2003 Coll. do not occur. Trichloromethane is further used as solvent in organic synthesis for the production of adamantane in the pilot plant apparatus. The Integrated Pollution Register mentions emissions of this substance in both waters and wastes.

The production of 1,2-dichloroethane proceeds in the only plant in the Czech Republic. In the period 2008–2009, emission standards set by the Government Order No. 61/2003 Coll. were complied with. With regard to the earlier unsatisfactory situation, the pollution monitoring frequency has been changed since 2005 and daily measurements are performed. From the production plant premises, this hazardous substance is also discharged via the remediation waters. Further, 1,2-dichloroethane is used for the production of other substance than vinylchloride. In the technological process, no waste waters are produced. To the limited extent, 1,2-dichloroethane is used as solvent in the pharmaceutical production.

The production of tetrachloroethene proceeds in the only plant in the Czech Republic, using the TETRA-PER technique – the manufacturing unit designed for the production by the method of thermic chlorination of propylene in excess chlorine. The latest technological procedures are used in this facility. In the period 2008–2009, emission standards set by the Government Order No. 61/2003 Coll. were complied with. Further, tetrachloroethene along with trichloroethene are used in significant quantities especially as solvent and degreasing agent before surface finishing of metals by approximately 50 plants. Permits to discharge waste waters with the contents of trichloroethene or tetrachloroethene were granted to approx. 30% of plants, especially where waste waters are produced from the regeneration of sorbent fillings capturing these hazardous substances from the exhausted air in the working environment. Most of the plants handling the trichloroethene or tetrachloroethene solve or have already resolved the problems of sites contaminated by these substances. The emission standards set by the Government Order No. 61/2003 Coll. for the discharges of waste waters containing the hazardous substance are being complied with. The pollution is monitored using the AOX indicator. The formation of trichloroethene in the production of tetrachloroethene and tetrachloromethane using the perchlorination cannot be excluded, the emission standards for the contents of tetrachloroethene in waste waters from this production are complied with. In the period 2008–2009, the use of trichloroethene or tetrachloroethene to degrease metals was finished in a number of plants. From year to year, the consumption declines and these substances remain to be used in the cases where technological substitution for other environmentally acceptable degreasing agents is not possible. The Integrated Pollution Register states only leakages of these substances to the air and their contents in wastes (a declining trend).

Hazardous substances

With regard to the extent of hazardous substances, they are not individually discussed. The discharges of waste waters containing hazardous substances are also subject to permits granted by the water authority. The electronic registration of the selected data from the effective administrative decisions falls within the cognizance of Regulation No. 7/2003 Coll., on Water Right Evidence, as amended by Decree No. 619/2004 Coll., Decree No. 7/2007 Coll. and Decree No. 40/2008 Coll. The obligation of water authorities to include in this electronic registration also all earlier issued decisions was extended until 31 December 2009. The central database of water right evidence is maintained by the Ministry of Agriculture.



The Dyje River – Nové Mlýny Reservoir

Audits performed for management of hazardous substances

In 2008, in total 125 companies handling hazardous substances were audited and in 11 cases administrative procedures on measures and sanctions were commenced. Penalties were imposed in 4 cases only, in the total amount of CZK 110,000.

In 2007, in total 68kg of Hg, 6kg of Cd and 41,800kg of AOX contained in discharged waste waters were charged for; in 2008 then 47kg of Hg, 4kg of Cd and 58,000kg of AOX. The Czech Environmental Inspectorate in cooperation with the regional authorities and integrated inspection bodies, pursuant to the Act No. 59/2006 Coll., on the major accident prevention, audited in 2007 in total 138 entities (43 falling within group A, 95 falling within group B). In 2008, in total 152 entities were subjected to audit (42 falling within group A, 110 falling within group B). Since 2000, when the Act on the major accident prevention became effective, six major accidents by course of this law have occurred. With regard to the quantities of leaked substances, the number of persons injured and the fact that no environmental damage occurred, other emergency events were not accidents by course of the Act No. 59/2006 Coll.

Legislative measures relating to the protection of waters

At the end of 2008, in the Official Journal of the EC there was published a new Directive 2008/105/EC, on environmental quality standards in the field of water policy, which becomes an important tool from the viewpoint of the protection of waters against priority hazardous substances. This Directive specifies the so-called environmental quality standards for 33 priority pollutants and 8 other pollutants which thus became a basis for the chemical status assessment of surface waters. The Directive amends the list of priority hazardous substances and specifies other requirements, such as to avoid rising trends of pollution in the sediments and biota for the priority substances showing significant bioaccumulation properties.

In summer 2009, the Directive 2009/90/EC was adopted and published, pursuant to the Directive 2000/60/EC establishing technical specifications for the chemical analysis and water status monitoring.

The transposition of both directives into the national legislation is under way. In the national legislation, the field of the protection of waters is governed, in particular, by the newly passed Act No. 167/2008 Coll., on prevention and remedying environmental damage and on amendment to certain laws, and the Government Order No. 103/2003 Coll., on the establishment of vulnerable areas and on the use and storage of fertilizers and farmyard manure, crop rotation and implementation of erosion control measures in these areas, as amended by the Government Order No. 219/2007 Coll. and the Government Order No. 108/2008 Coll.

Integrated Prevention and Integrated Pollution Register

The operators of the installations falling under the force of the Act No. 76/2002 Coll., on integrated pollution prevention and control, as amended, and which were put into operation before 30 October 2000, had the obligation to ensure the integrated permit as at the date of 31 October 2007. The new installations must have the integrated permit as at the date of their putting into operation. This permit also includes conditions for the management of hazardous and especially hazardous substances, which must not be less strict than conditions specified by specific acts. The information, in more detail, is presented on the website www.irz.cz.

Since 2008, the field of the Integrated Pollution Register (following up with the EC regulation No. 166/2006/EC) is regulated by a separate piece of legislation, the Act No. 25/2008 Coll., on integrated pollution registry and integrated system of fulfilment of reporting duties in the field of the environment and on amendment to certain laws, and by the implementing Government Decree No. 145/2008 Coll., establishing the list of pollutants and threshold values and data required for reporting to the Integrated Pollution Register. Both legal regulations, following up with the EC regulation on the European Pollutant Release and Transfer Register encompass the scope of the data required to be reported to the Integrated Pollution Register from the reporting year 2009.

The programme for reducing pollution of surface waters suitable for the life and reproduction of fish and other aquatic fauna

The Government Decree No. 71/2003 Coll., establishing surface waters suitable for the life and reproduction of indigenous fish species and other aquatic fauna and on the assessment of the quality status of these waters, as amended by the Government Decree No. 169/2006 Coll., 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 enhance the protection of these waters against pollution and improve their quality in a manner making 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, the relevant bodies developed the Programme for Reducing Pollution of Surface Waters which are or are to become permanently suitable for the life and reproduction of indigenous fish species and other aquatic fauna. This programme was included in the Government Decree No. 169/2006 Coll., in the form of a list of salmonid and carp waters failing to meet the limit indicator values. To ensure the implementation of this programme, guidance (Journal of the Ministry of the Environment, Chapter II, Volume I6) was prepared, containing an account of the individual investment measures, measures to assess the status of selected surface waters and control measures for the individual waters failing to meet the limits (327 measures in total).

The Programme for Reducing Pollution of Surface Waters was terminated 5 years after the accession of the Czech Republic to the EU, i. e. as at the date of 1 May 2009. The programme included 81 stretches selected on the basis of the evaluation of the monitoring in the period 2001–2002. The stretches failed to meet the permissible quality indicators set by the Government Decree No. 71/2003 Coll. As at the date of the programme termination, in total 36 stretches listed in the Government Decree No. 169/2006 Coll. continued to fail to meet the limits set for salmonid and carp waters. Based on the

evaluation of implementation of the scheduled investment measures it can be stated that not less than 59% of the construction projects were fully completed. The projects under construction reached the total level of 75%. Should unfavourable weather conditions not occur and all scheduled measures will be completed, the quality of water for a part of these stretches should improve in a degree allowing to meet the permissible limits. For 10 river stretches (for example, the Daníž River, the Trkmanka River, the Rusava River, the Bílina River) it can be assumed that compliance with the permissible limits will continue to be questionable.

Construction projects for water quality protection completed in 2009

As regards the most important projects relating to the sources of pollution produced by the municipalities with the population of more than 2,000 PE, the following waste water treatment plants were completed in 2009:

New municipal waste water treatment plants (in total 27,129 PE): Hustopeče u Brna (9,900 PE, N, DN, chemical removal of phosphorus), Ostravice (4,000 PE, N, DN, chemical removal of phosphorus), Benešov nad Ploučnicí (4,000 PE, N, DN, chemical removal of phosphorus), Dolní Kounice (2,600 PE, N, DN, chemical removal of phosphorus), Kobylí (2,420 PE, N, DN, chemical removal of phosphorus), Jablunka BOKAN (2,200 PE, N, DN), Libáň (2,009 PE).

Furthermore, the existing municipal waste water treatment plants were reconstructed or extended in 2009

The existing municipal waste water treatment plants: Brno (630,000 PE, N, DN, chemical removal of phosphorus), Otrokovice (103,342 PE, N, DN, chemical removal of phosphorus), Hodonín – Stage IV (90,000 PE, N, DN, chemical removal of phosphorus), Holešov – Stage II (54,000 PE, N, DN, chemical removal of phosphorus), Trutnov (52,000 PE, N, DN, chemical removal of phosphorus), Jičín (43,750 PE, N, DN, chemical removal of phosphorus), Vsetín – Stage III (41,667 PE, N, DN, chemical removal of phosphorus), Choceň (27,666 PE, N, DN, chemical removal of phosphorus), Strážnice (27,666 PE, N, DN, chemical removal of phosphorus), Šternberk (25,600 PE, N, DN, chemical removal of phosphorus), Mikulov (24,850 PE, N, DN, chemical removal of phosphorus), Bzenec (22,607 PE, N, DN, chemical removal of phosphorus), Tachov (18,150 PE, N, DN, chemical removal of phosphorus), Veselí nad Moravou (16,000 PE, N, DN, chemical removal of phosphorus), Stříbro (13,333 PE, N, DN), Břeclav (13,290 PE, N, DN, chemical removal of phosphorus), Lednice (12,000 PE, N, DN, chemical removal of phosphorus), Valtice (9,700 PE, N, DN, chemical removal of phosphorus), Mošnov (9,691 PE, N, DN), Holice (9,000 PE, N, DN, chemical removal of phosphorus), Slavičín – Hrádek (8,045 PE, N, DN, chemical removal of phosphorus), Pohořelice (6,000 PE, N, DN, chemical removal of phosphorus), Lomnice nad Popelkou (5,500 PE, N, DN, chemical removal of phosphorus), Velké Pavlovice (5,400 PE, N, DN, chemical removal of phosphorus), Podivín (5,250 PE, N, DN, chemical removal of phosphorus), Ratiškovice (4,500 PE), Holubice (2,700 PE), Kardašova Řečice (2,670 PE, N, DN), Výšovice (2,344 PE, N, DN, chemical removal of phosphorus), Velehrad (2,096 PE, N, DN, chemical removal of phosphorus).

The existing industrial waste water treatment plants: Cutisin Jilemnice (31,737 PE, N, DN, chemical removal of phosphorus), Moravosmalt Brodek u Přerova (6,000 PE, N, DN, chemical removal of phosphorus).

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 Coll., as amended), which are aimed at reducing the risk of nitrogen leaching to surface waters and groundwaters.

In accordance with the Government Order No. 103/2003 Coll., the Action Programme is promulgated each time for the period of four years. This order regulates "the use and storage of fertilizers and farmyard manure, crop rotation and implementation of erosion control measures in vulnerable areas". Based on the monitoring and assessment of the effectiveness of Action Programme I, the new research knowledge and the analysis of comments made by the European Commission, Action Programme II was prepared and promulgated to be effective as of 4 April 2008.

Since 2009, discussions with the European Commission as regards the setting of Action Programme II concerning compliance with the requirements of the Nitrate Directive have been under way. What is to be specified, are conditions for storage of farmyard manure, possibilities of fertilization of steep lands and also fertilization limits for individual crops are to be refined. Once the discussions with the European Commission are terminated, the Action Programme II will be revised and, where appropriate, amendment to the Government Order will be prepared.

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 fertilizers and farmyard manure is prohibited.

- b) Specification of the minimum capacity of farmyard manure storage facilities allowing to store farmyard manure during the period when manuring is prohibited (in the Czech Republic, this is based on general legal regulations; from the year 2014 on, the required capacity of farmyard manure storage facilities will have to be large enough for six-month production).
- c) Reduction of the application of fertilizers and farmyard manure, corresponding to the principles of proper farming with regard to the soil and climate conditions (soil class and type, land slope, temperatures, precipitation). The establishment of maximum fertilization limits for the individual crops.
- d) Methods of land use and management (on sloping, waterlogged, flooded and frozen land and in the vicinity of waters).

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

11.4 WATER INFORMATION SYSTEM of the Czech Republic

In 2009, the Ministry of Agriculture and the Ministry of the Environment continued to implement the interdepartmental project called Public Administration Information System – WATER, which was officially launched in 2005. The main objective of this interdepartmental project remains the effort to provide to the specialists community and the general public sufficient volume of credible



and relevant information on 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 performed in 2009.

The project implementation under the authority of the Ministry of Agriculture was originally scheduled for the years 2005–2010. In 2008, the timely provision of inputs for technical implementation beyond the scope of the scheduled assignments allowed to shorten the total implementation period of the project and the project tasks under the authority of the Ministry of Agriculture thus were completed in mid 2009, without any change of the total project price. In 2009, the project was evaluated and the preparation was started for the project phase II, under the authority of the Ministry of Agriculture, which is scheduled for the years 2011–2015.

In 2009, the Water Management Information Portal website was extended to include four basic folders as follows:

- Current Information,
- Public Administration Information System Records,
- Planning in the Field of Waters,
- The Project of Public Administration Information System – WATER.

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

As regards the “Current Information” folder; no substantial changes were made in the individual applications in 2009. During the year, again only a few minor design changes were made to improve the presentation and make the search of the required information easier; not only during flood situations.

As regards the “Public Administration Information System Records” folder; the Ministry of Agriculture in cooperation with river basin administrators participated in 2009 in the implementation of the following project tasks which were planned and subsequently successfully carried out within the scheduled deadlines. The key part of

work again concerned primarily building up the Central Watercourse Register. The watercourse layer of the Central Watercourse Register, available on a scale of 1:50000 and 1:10000, is the basic structural and linking register of the Public Administration Information System – WATER and is used for other territorial links of the effects in other registers and for the subsequent update of watercourse layers in the related public administration information systems. In the course of 2009, works on building up the Central Watercourse Register (CEVT 10) under the authority of the Agricultural Water Management Administration and the Forests of the Czech Republic, s. e. were terminated, 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. Furthermore, the data sources for the establishment of the Central Watercourse Register data store were analyzed and prepared, lists of watercourses whose administration determining is in conflict with another administrator were prepared, and the proposal of how to attend to the issues of the residual layer of watercourses was prepared. The technology of provision of updated watercourse axes (by web service) was developed, on the basis of journal table which registers, among others, also the time of update and thus allows on-line incremental acquisition of watercourses including their geometry. The extension of the application functions was started in order to put into operation the application superstructure which interconnects all of the five distributed regional records of watercourses of the River Boards, s. e. and allows their use in one application in the uniform user environment.

In the application called the Register of Hydraulic Structures for Water Management Land Improvements, the work continued to integrate the descriptive part to the territorially linked effects of the hydraulic structures for water management land improvements, and also to upgrade the user interface with regard to search functions.

As regards the “Planning in the Field of Waters” folder; available are River Basin District Management Plans, the preparation of which is the responsibility of the relevant River Boards, s. e. in cooperation with the respective regional authorities and in cooperation with the central water authorities for eight river basin districts. The main outputs produced by river basin district management plans (status

assessment for surface water and groundwater bodies and measures designed to achieve the objectives specified in the plans) can be found in the folder "Interactive Map", where the tasks for surface waters and groundwaters are prepared. Furthermore, the specific information on individual water bodies and measures are available.

Within the framework of the interdepartmental project of the Public Administration Information System – WATER, the Ministry of the Environment is authorized 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 by the Czech Hydrometeorological Institute in cooperation with the River Boards, s. e. and the Agricultural Water Management Administration).

In the Journal of the Ministry of the Environment (Volume XIX, Chapter 12. Ministry of the Environment, Prague, December 2009), through the notification by the Department of Water Protection the new "Register of Groundwater Zones", prepared in 2006, was established with the legal effect from 1 January 2010.

In accordance with Regulation No. 391/2004 Coll, Section 31, at the end of 2009 the "Register of Status of Water Bodies" and the "Register of the Ecological Potential of Heavily Modified and Artificial Water Bodies" were completed. Pursuant to the above mentioned Regulation, these Registers have to be kept from 1 January 2010.



The Fishpassing facilities in Veselí

In the course of 2009, the "Register of Flood Plain Areas" was updated based on the received information on the newly defined flood plain areas.

Other registers, within the framework of the Public Administration Information System – WATER kept by the Ministry of the Environment, are up-to-date for the year 2009.

The respective applications continue to be made available to the public on the Water Management Information 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 Czech Republic's reporting to the EU

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

The Council Directive 91/271/EEC, on urban waste water treatment, in Article 15 imposes the obligation to monitor:

- a) discharges from urban waste water treatment plants,
- b) amounts and composition of sludges disposed of to surface waters,
- c) waters subject to discharges from urban waste water treatment plants and direct discharges in cases where it can be expected that the receiving environment will be significantly affected.

The above mentioned data for the years 2007 and 2008 were submitted to the WISE through the ReportNet infrastructure as at the date of 1st June 2009.

The reporting pursuant to the Council Directive 76/160/EEC, concerning the quality of bathing water

The report on the implementation of the Council Directive 76/160/EEC of 8 December 1975, concerning the quality of bathing water (under the authority of the Ministry of Health), was prepared still in accordance with the above mentioned Directive which, however, was substituted in 2006 by the new Directive 2006/7/EC, concerning the management of bathing water quality. The report on the quality of water used for bathing of persons and its most important characteristics for the recreational season 2009 was submitted to the European Commission in December 2009. On a yearly basis, the report after the processing of the results is placed on the portal of the European Commission http://ec.europa.eu/water/water-bathing/index_en.html.

In the Czech Republic, recreational waters used for open air bathing of persons are divided into open air bathing pools and surface waters used for bathing of persons (so-called bathing areas).

The most frequent problems of water quality are associated with the mass presence of cyanobacteria, which at certain bathing sites led to the prohibition of bathing. In the bathing season 2009, due to excessive presence of cyanobacteria, bathing was prohibited at 8 bathing sites in the Czech Republic (of that 3 open air bathing pools and 5 bathing areas). As the limit values for the "cyanobacteria" indicator, the Czech Republic accepted the recommendation of the World Health Organization (WHO), i. e. three-level assessment of water quality, with ban on bathing issued in case that the presence of water bloom is visually detected.

During the 2009 bathing season, no ban was put on bathing for the reason of unsatisfactory quality of water.



Jiří Beran

90 | 11 years, Štítý basic school, Olomoucký kraj region

International cooperation in the field of water protection

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 groundwater zones crossing the state borders in accordance with the UN ECE Convention on Protection and Use of Transboundary Watercourses and International Lakes, and in accordance with the Water Framework Directive and other Directives of the European Community.

The cooperation within the framework of UN ECE covers most of the aspects of protection of the quality and quantity of waters. The Convention on Protection and Use of Transboundary Watercourses and International Lakes in its Article 9 assumes that the riparian states sharing the same waters shall enter into bilateral or multilateral agreements or other arrangements, which is met by the cooperation of the Czech Republic within transboundary waters and integrated river basins. Thanks to the Protocol on Water and Health having become effective, this cooperation also includes the aspect of the population health protection against diseases transmitted by water.

Convention on Protection and Use of Transboundary Watercourses and International Lakes

The Czech Republic has been a party to the UN ECE Convention on Protection and Use of Transboundary 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 assessment of water status, flood control, adaptation to climate change, protection of waters against accidental pollution from industrial sources, support for international cooperation on transboundary watercourses and in integrated international river basins as well as to the field of water and human health.

On 10 – 12 October 2009, the 5th session of the parties to the UN ECE Convention organized every 3 years took place in Geneva. During this session, several important documents were adopted, such as “Guidance for the Implementation of the UN ECE Convention”, which contains an overview of the requirements necessary for the ratification, describes the benefits and obligations resulting from membership and provides technical solutions ensuring the compliance with the particular Convention Articles. In connection with this document, the session adopted the decision on preparing the mechanism to support the implementation and audits of implementation of the Convention. The next adopted document of crucial importance is the “Guidance for Adaptation to Climate Change in the Field of Waters”. The session also attended to the topic of floods in the transboundary context and cooperation in this field and adopted the document called “Transboundary Flood Risk Management in the UN ECE Region”. Not less important was the discussion on payments for ecosystem services in integrated management of water resources. The session recommended to verify these principles in pilot projects and included this topic into the work programme for the years 2010–2012. The session took a decision on the preparation of the “Assessment of Status of Transboundary Waters, International Lakes and Groundwaters” for the purposes



Orlik Reservoir – physical model

of the 7th Conference “The Environment for Europe”, which will take place in 2011 in Astana, where one of the two main topics will be sustainable management of waters and water ecosystems. Significant support for this work is provided by the International Centre for Water Assessment which, based on the decision taken by the session, will be relocated for the period 2010–2012 from the Dutch RIZA Institute to the Slovak Hydrometeorological Institute. The session took a decision on the work schedule for the period 2010–2012 and agreed upon its funding

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 Czech Republic has been a party to the Protocol since 2001. The Protocol entered into force in 2005; the drafts of the documents containing the rules for the preparation of the Protocol objectives, control mechanisms and reporting were prepared in 2009. A survey of diseases transmitted by water was conducted in the individual countries – parties to the Convention, based on which it was found out that greater attention should also be paid to small sources. Documents integrating the issues of surveillance of diseases transmitted by water for the entire UN ECE region were prepared.

In connection with the need of response to climate change, the preparation of the document “Water Supply and Drainage in Extreme Weather Events” proceeded in 2009 with the aim to present the document at the 5th Ministerial Conference “Health and the Environment” in Parma in 2010. The Committee for compliance checking agreed upon joint rules of procedure and rules of communication with the public.

12.2

International cooperation on transboundary waters

Pursuant to Article 14 of the Government Directive for concluding, national proceeding, implementing and terminating international agreements, adopted

by the Government Resolution No. 131 of 11 February 2004, the minister of the environment not later than the end of January submits to the members of the Government the information on the documents relating to agreements on cooperation on transboundary waters concluded during the elapsed calendar year.

Thirty per cent of the state border of the Czech Republic are constituted by watercourses. Cooperation on transboundary 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, or directly by the authorized government representatives appointed for cooperation on transboundary waters.

In 2009, the Ministry of the Environment in cooperation with the Ministry of Agriculture, the Ministry of the Interior, the Ministry of Finance, the Ministry for Regional Development, the Ministry of Transport, the Ministry of Industry and Trade, the Ministry of Health and the Ministry of Foreign Affairs ensured the implementation of the following agreements on cooperation on transboundary waters:

- Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters of 16 December 1999;
- Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters of 7 December 1967, in effect from 18 March 1970;
- Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Transboundary Waters in the Field of Water Management of 12 December 1995;

- Convention between the Government of the Czechoslovak Republic and the Government of the People's Republic of Poland on Water Management on Transboundary Watercourses of 21 March 1958.

The implementation of these agreements allows to:

- arrange regulations of transboundary watercourses so that it may be performed by the party having better technical conditions for that,
- perform interstate cashless settlement of costs of the completed regulations allowing to avoid further impairment of unfavourable foreign trade balance for the Czech Republic,
- prevent pollution of transboundary watercourses,
- negotiate with the neighbouring states water management measures of all types on transboundary watercourses, which contributes to the practical designs of these measures and thus their effective operation, etc.

Water management measures are implemented on the basis of discussions and approvals within the works performed by the respective watercourse administrators under the authority of the Ministry of Agriculture. If water management measures relate to construction projects executed under the authority of other ministries (such as the Ministry of Transport), the implementation of such measures proceeds within the respective construction projects. The costs of international relations are included in annual plans of the individual cooperating ministries. Project preparations, flow rate measurements and water quality analyses are performed within routine activities of the responsible organizations and these works would be necessary to be performed also to meet the domestic needs of the Czech Republic. The costs aroused by the necessity to conduct bilateral negotiations and agree upon the technical documentations reach only the minimum extent. The analogical share of costs of study and project works is borne also by the other party.

In 2009, within the framework of these agreements, the below mentioned meetings of the bilateral commissions for transboundary waters with the Slovak Republic, the Republic of Austria, the



The Desná River – part of the Malý Waterfall

Federal Republic of Germany and meetings of the government representatives of the Czech Republic and the Republic of Poland for cooperation on transboundary watercourses took place.

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

The 9th session of the Czech-Slovak Commission for Transboundary Waters, established on the basis of the "Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters" that was signed and became effective on 16 December 1999, was held in Tatranská Štrba in the Slovak Republic from 9 June to 11 June 2009. During its 9th session, the Czech-Slovak Commission for Transboundary Waters discussed the matters relating to regulation and maintaining of transboundary watercourses, international approvals of construction work and final accounts of works on transboundary waters, maintaining the purity of transboundary waters, hydrology, navigation issues, border issues, water management studies and planning. In its 9th session the Czech-Slovak Commission for Transboundary Waters approved the reports on working groups' activities for the year 2008 and the plans of work for the year 2009. The next, 10th session of the Czech-Slovak Commission for Transboundary Waters will be held from 25 May to 27 May 2010 in Prague.

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

The 17th session of the Czech-Austrian Commission for Transboundary Waters took place in Krems in Austria from 22 June to 26 June 2009. The purpose of this session of the Czech-Austrian Commission for Transboundary Waters was to discuss the individual areas of mutual cooperation in water management on transboundary waters in accordance with the "Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters" of 7 December 1967 and effective as of 18 March 1970. During its 17th session the Czech-Austrian Commission for Transboundary Waters discussed the matters relating to regulation and maintaining of transboundary watercourses, international approvals of construction work and final accounts of works on transboundary waters, maintaining the purity of transboundary waters, hydrology, navigation issues, border issues, water management studies and planning. The Czech-Austrian Commission for Transboundary Waters also updated the "Directive for Early Warning System on Czech-Austrian Transboundary Waters". The next, 18th Session of the Czech-Austrian Commission for Transboundary Waters will be held from 7 June to 11 June 2010 in Nové Hradky in the Czech Republic.

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

The 12th session of the Czech-German Commission for Transboundary Waters was held in Weiden in the Federal Republic of Germany from 14 October to 15 October 2009. The purpose of this session was to discuss and approve the results of the 11th session of the Standing Committee Bavaria and the 11th session of the Standing Committee Saxony.

The Czech-German Commission for Transboundary Waters further discussed other relevant issues of cooperation on transboundary waters, concerning especially the principles for direct cooperation of the relevant authorities and expert workplaces, Lists of Transboundary Waters, points of cooperation with the Standing Czech-German Border Commission and implementation of the Water Framework Directive on transboundary waters.



The Vltava River – Slapy Reservoir

Under Point 3 of the Protocol "Implementation of the Water Framework Directive on Transboundary Watercourses" the Czech-German Commission for Transboundary Waters became acquainted in detail with further steps to be taken in this field within the Standing Committee Saxony and the Standing Committee Bavaria, and under Point 4 of the Protocol "New Calculation of Head-Water Level of the Rauschenbach Reservoir Retention Area, Transboundary Watercourse S 153" the Commission discussed further steps to be taken in attending to amendment to the existing "Agreement between the Government of the Czechoslovak Socialist Republic and the Government of the German Democratic Republic on arrangements of certain joint issues related to the construction and operation of water reservoir in the Flöha stream valley near Rauschenbach", in the form of supplement to this Agreement. Under Point 5 of the Protocol "Cooperation with the Standing Czech-German Border Commission", the Czech-German Commission for Transboundary Waters in the border section with the Free State of Saxony discussed the request to return the transboundary watercourse S 3 Bílý potok/Weißbach in border section I to the original position and the request to return the transboundary watercourse S 86 Krínice/Kirnitzsch in the border section VI to the position according to the documentary border description.

Under Point 7 of the Protocol, the Commission again dealt with the objective of financing and building the Elbe River stationary emergency profile in the boundary profile 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 Federal Republic of Germany.

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

The 12th meeting of the representatives of the Governments of the Czech Republic and the Republic of Poland for cooperation in the field of water management on transboundary waters took place at Hrubá Skála in the Czech Republic from 18 November to 20 November 2009. During this meeting, the results of activities of the individual joint working groups for the period from the 10th meeting of the government representatives were discussed and approved. The work was focused on planning of water management on transboundary waters, cooperation in the field of hydrology, hydrogeology and flood control, regulations of boundary and transboundary watercourses, water supply and land improvements in border areas, protection of transboundary watercourses against pollution, issues of the implementation of the Water Framework Directive on the Czech-Polish transboundary waters and measures



The Černá Ostravice River in Frýdek-Místek

implemented on transboundary watercourses to stabilize the state border. The individual working groups were assigned tasks in the respective fields of cooperation and work plans for the next period were approved. The matters discussed included, among others, the issues relating to flood control measures for the town of Bohumín and the transboundary stretches of the Petruška and the Opava Rivers, the concept of future reducing flood risks to the Upper Opava River by means of the Nové Heřminovy water reservoir, mutual exchange of hydrometeorological and hydrogeological data and cooperation of warning systems, the works and projects executed to regulate transboundary watercourses and other water management measures carried out on these watercourses, assessment of water quality monitoring, establishing the Czech-Polish transboundary water bodies, and the issues of the impact of Turów mine operation on surface waters and groundwaters.

Prior to the meetings, the drafts of the Protocols within the national process of commenting were forwarded to the heads of the relevant central public administration authorities with request for their standpoints. After the discussions, the Protocols signed by the respective government representatives were again submitted for comments at the national level.

The results of the individual commissions' meetings are presented in the respective Protocols from these meetings. During the meetings, no problems preventing the adoption of the individual Protocols occurred. In 2009, the minister of the environment approved the Protocol from the 9th session of the Czech-Slovak Commission for Transboundary Waters (held from 9 June to 11 June 2009 at Tatranská Štrba in the Slovak Republic) and the Protocol from the 17th session of the Czech-Austrian Commission for Transboundary Waters (held from 22 June to 26 June 2009 in Krems, the Republic of Austria). The Protocols from the 12th session of the Czech-German Commission for Transboundary Waters (held from 14

October to 15 October 2009 in Weiden, the Federal Republic of Germany) and from the 12th session of the representatives of the Governments of the Czech Republic and the Republic of Poland for cooperation in the field of water management on transboundary watercourses (held from 18 November to 20 November 2009 at Hrubá Skála in the Czech Republic) were approved by the minister of the environment in January 2010.

It can be stated that cooperation on transboundary waters significantly contributes to maintaining good relations with the neighbouring states. The Czech delegation at the above mentioned meetings was headed by Eng. Karel Bláha, CSc., deputy minister of the environment, the representative for water management issues with the neighbouring states, who was appointed to this function by the Prime Minister of the Czech Republic on 4 September 2007.

The Protocols from the bilateral discussions on cooperation on transboundary waters are available at all interested departments and kept by the Ministry of the Environment. The results are also available on the website www.mzp.cz/cz/voda.

12.3

International cooperation in the field of water protection in the integrated Elbe River, Danube River and Oder River Basins

International cooperation of the Czech Republic in the field of water protection is carried out primarily within international commissions for the protection of the integrated Elbe River, Danube River and Oder River Basins, based on the “Agreement on the International Commission for the Protection of the Elbe”, the “Convention on Cooperation for the Protection and Sustainable Use of the Danube River” and the “Agreement on the International Commission for the Protection of the Oder River against Pollution”. Through these activities, the Czech Republic also contributes to the necessary protection of the North Sea, the Black Sea and the Baltic Sea, and participates in the coordinated implementation of the EC Directives in these international river basins.

In 2009, in accordance with Article 13 of the Water Framework Directive, all commissions proceeded to complete the respective international river basin management plans.

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 water-related ecosystems, the programmes of water quality measuring and monitoring, 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 improving flood control measures. From 28 April to 29 April 2009, the International Elbe Forum took place in Ústí nad Labem, where the draft of the International Elbe River Basin District Management Plan was presented and discussed. Since 1988, the International Commission for Protection of the Elbe participates in preparing and implementing the Magdeburg Workshop on protection of waters which is a significant international expert and scientific event in the Elbe River Basin. This workshop has become a platform for the ex-

change 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 two years 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 International Commission for Protection of the Elbe in its 22nd session which took place in Hradec Králové from 20 October to 21 October 2009, approved part A of the International Elbe River Basin District Management Plan. This Plan was made available to the public on the website of the International Commission for Protection of the Elbe in December 2009. In addition, the International Programme of the Elbe Monitoring 2010 was approved. The International Commission for Protection of the Elbe was informed about the progress in implementing the Directive 2007/60/EC, on the assessment and management of flood risks, and also the issues of concentrations of haloethers in the Elbe were discussed. In more detail, the information on the International Commission for Protection of the Elbe is available at www.ikse-mkol.org.

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

The Agreement on the International Commission for Protection of the Oder River against Pollution is implemented through the International Commission for Protection of the Oder River against Pollution. Its activity in the year 2009 was discussed at the 12th plenary session of the International Commission for Protection of the Oder River against Pollution, held from 3 December to 4 December 2009 in Wrocław. The reports presented at this session included reports on the activities of the individual working groups aimed primarily at compiling the final International Oder River Basin District Management Plan in accordance with Article 13 of the Water Framework Directive. The activities of the working groups were also focused on the establishment of the Geoportal of the International Commission for Protection of the Oder River against Pollution (GIS-WFD-RBD Oder), the preparation of the concept of international monitoring sites in the Oder River Basin (module "International Measuring Sites" – IMS Oder), the completion of the joint list of pollutants specific to the Oder River; the monitoring of the implementation of the Action Programme of Flood Control in the Oder River Basin, on the update of powers for "Floods" working group with regard to the tasks resulting from the implementation of the EC Flood Directive, on the completion and publication of the International Warning and Alert Plan for the Oder River; including the Communication Plan, on international accident exercises in the field and the work on special Czech-German-Polish dictionary.

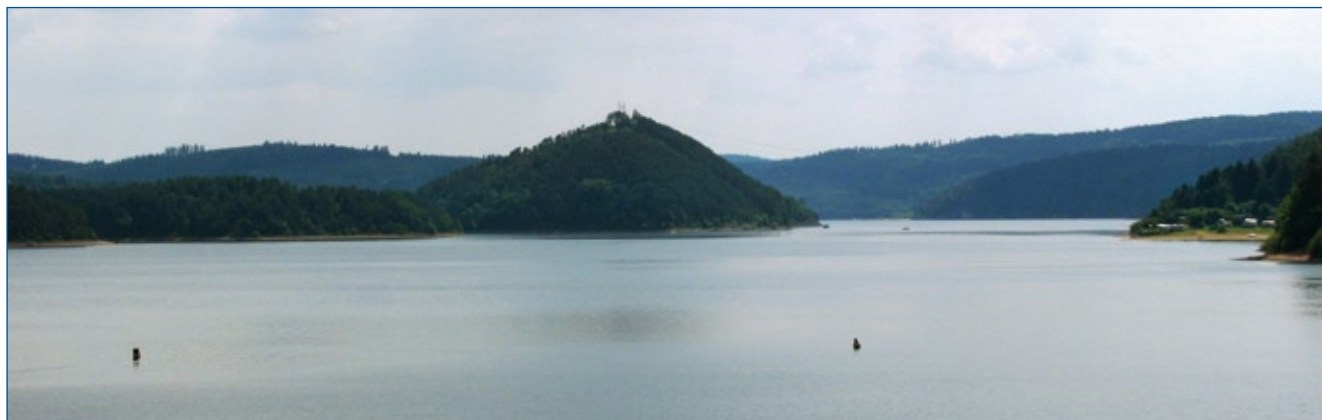
In 2009, the Agreement on Amendment to the Agreement on the International Commission for Protection of the Oder River against Pollution was ratified by the Czech and Polish parties. The amend-

ment was made in connection with the EC withdrawal from the Agreement on the International Commission for Protection of the Oder River against Pollution. Detailed information on the activities of the International Commission for Protection of the Oder River against Pollution is available on the website www.mkoo.pl.

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

The 12th session of the International Commission for Protection of the Danube River took place from 10 December to 11 December 2009 in Vienna under the presidency of Slovakia. The session was attended by the delegations of all 15 parties to the Convention (the EU, eight Member States of the EU and six Non-Member States of the EU), chairmen of the individual expert groups, representatives of observer organizations and the Commission Secretariat staff members. The International Commission for Protection of the Danube River approved the auditors' report for the previous period, the budget and the membership fees for the next period. The Commission discussed the work of the individual expert groups aimed especially at the fulfilment of the Water Framework Directive requirements and the completion of the International Danube River Basin District Management Plan and the related Programmes of Measures (Danube River Management Plan) and its discussing with the public. The Danube River Management Plan is available on the website www.icpdr.org/participate. The activities relating to flood control and coordination of preparing the implementation of the Directive on the assessment and management of flood risks (2007/60/EC) were presented. Actions to organize the Ministerial Conference on the adoption of the Danube River Management Plan (February 2010) and the workshop on further orientation of the International Commission for Protection of the Danube River (April 2010) were agreed. The issues of financing audits of the laboratories and intercalibration exercises within the entire Danube River Basin were discussed. The delegation of Hungary presented their vision of the Danube Strategy which is planned to be implemented in the period of Hungarian presidency of the EU. The participants of the 12th session of the International Commission for Protection of the Danube River were informed about the progress achieved in cooperation with the navigation sector and other commissions for protection of large rivers, in particular in South Africa and China.

In 2009, the general public in all Danube countries already for the sixth time celebrated the "Danube Day" on 29 June – the day of signing the "Convention on Cooperation for Protection and Sustainable Use of the Danube River". These festivities include the international competition in arts called "Young Artists for the Danube River". Celebrations in the Czech part of the Morava River Basin are organized by the Union for the Morava River in cooperation with the Ministry of the Environment, the Ministry of Agriculture and the Morava River Board, s. e. In more detail, the information on the activities of the International Commission for Protection of the Danube River is available on the website www.icpdr.org.



Orlik Reservoir



Sabina Máchová

96 | 11 years, Na Stínadlech basic school, Teplice, Ústecký kraj region

Research and development in water management

13.

13.1

Research and development in the competence of the Ministry of Agriculture

In 2009, the Ministry of Agriculture under the research projects financed the special-purpose research and development in the field of water management by the amount of almost CZK 43 million.

In 2009, the funds to support water management R&D amounted in total to CZK 42,900 thousand. The R&D projects launched in 2007 were funded by the amount of CZK 5,605 thousand, the R&D projects launched in 2008 were granted support amounting to CZK 24,766 thousand and the R&D projects launched in 2009 were granted support amounting to CZK 812,529 thousand. In 2009, in total 8 new R&D projects tackling the issues of water management were launched. R&D projects are primarily aimed at soil and water protection in sustainable development of the agricultural sector; landscaping, revitalization and protection of cultural landscape, forests and water bodies, rationalization of water management and tackling the impacts of climate change.

An overview of the individual R&D projects in progress is shown in a summarized form in Table 13.1.1. Publicly accessible data on these projects are available on the website of the Council for Research and Development at www.vyzkum.cz in the Central Register of R&D Projects. The information on the results of the R&D projects is also available on the same website in the Information Register of R&D Results. Other information on the research and development in the field of water management can also be 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 also include sub-programmes, thematic scopes or priorities relating to water management issues.



The Kamenice River in Horská Kamenice

The National Research Programme (provided by the Ministry of Agriculture) includes a thematic programme called "Competitiveness in Sustainable Development", and a sub-programme called "Utilization of Natural Resources". The priorities of this sub-programme include the development of water treatment and waste water treatment technologies and improvements in 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).

In 2009, the Research Institute for Soil and Water Reclamation, public research institution started the work under research scheme No. MZE0002704902, Integrated Systems of Soil, Water and Landscape Protection and Use in Agriculture and Rural Development. Under this scheme, the chapters relating to water management received support in the amount of CZK 13,185 thousand.

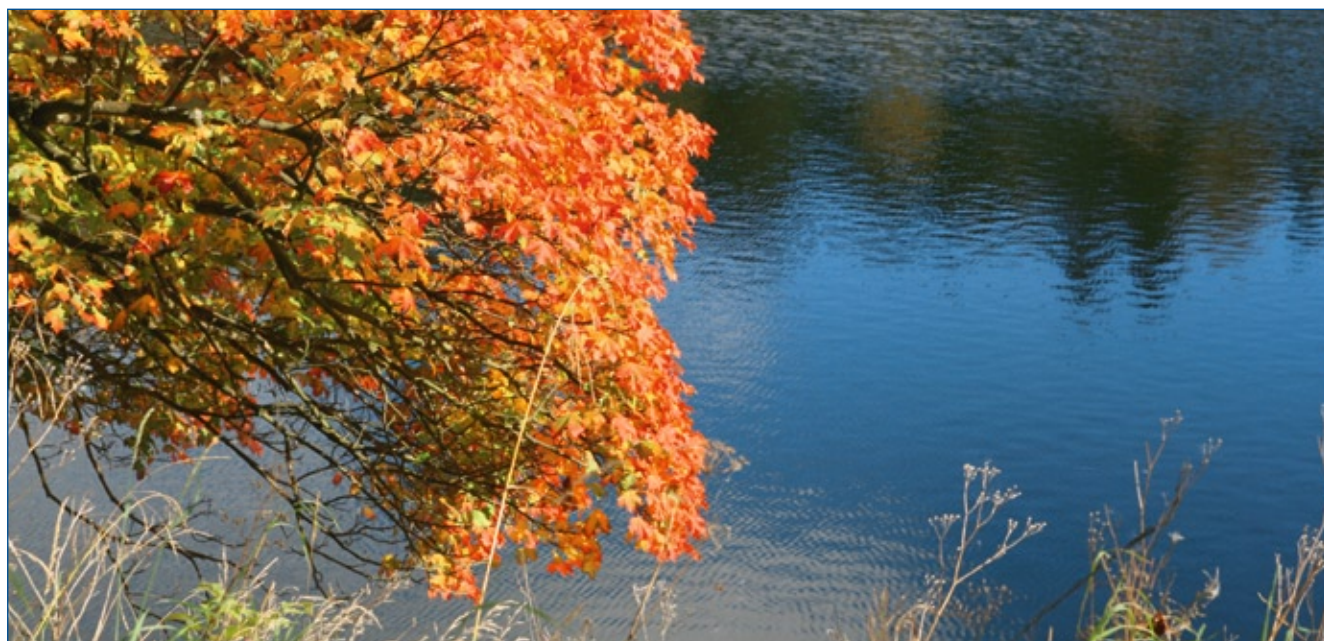


Table 13.1.1

Research and development projects in the field of water management financed from the budget chapter of the Ministry of Agriculture in 2009

project No.	name of the project	from – to	coordinator	funds (thousands of CZK)
QH71015	Minimization 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	1,865
QH71201	Reliability and safety of water management structures in changing climate conditions	1 May 2007 – 31 December 2011	Czech Technical University in Prague	1,397
QH72085	Differentiation of erosion control measures according to soil erodibility and rain erosivity	1 May 2007 – 31 December 2011	Czech Agricultural University in Prague	1,137
QH72203	Proposal of support for appropriate agricultural technologies and definition of indicators for the assessment of ecological and retention functions of soils and landscape	1 May 2007 – 31 December 2011	Research Institute of Agricultural Economics	1,206
QH81012	The use of aeration technologies for the reduction of cyanobacteria resting phases 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	1,551
QH81046	Optimization of the bio-manipulation effect of predatory fish in ecosystems of water reservoirs	1 January 2008 – 31 December 2012	Biology Centre of the Academy of Sciences of the Czech Republic, public research institution	1,467
QH81170	Multidisciplinary evaluation of impacts of special territorial protection of hydrologically important areas in the Czech Republic	1 January 2008 – 31 December 2012	Czech Agricultural University in Prague	1,567
QH81200	Optimization of water regime in the landscape and increasing its retention capacity through application of compost from biologically degradable waste on arable land and permanent grassland	1 January 2008 – 31 December 2012	Research Institute of Agricultural Engineering, public research institution	2,188
QH81223	Proposals to increase reliability and safety of flood control dikes in changed climate conditions	1 January 2008 – 31 December 2010	Czech Technical University in Brno	945
QH81326	New cultivation technologies in potato production aimed at higher efficiency of fertilization and water protection	1 January 2008 – 31 December 2012	Potato Research Institute Havlíčkův Brod	1,240
QH81331	Research of adaptation measures to eliminate the impacts of climate change in the regions of the Czech Republic	1 January 2008 – 31 December 2012	T. G. Masaryk Water Management Research Institute, public research institution	1,330
QH82078	Water retention in floodplains and possibilities of its enhancing	1 January 2008 – 31 December 2011	Institute of Systems Biology and Ecology of the Academy of Sciences of the Czech Republic, public research institution	2,400
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	1,516
QH82089	Non-production function of soils in the Czech Republic in relation to their production function, their assessment and their influence on soil, water and landscape protection	1 January 2008 – 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	760
QH82090	Changes in soil properties due to grassing, afforestation or in the long-term abandoned arable land, with impacts on soil, water and landscape protection	1 January 2008 – 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	712
QH82095	The impact of land use type location on runoff and wash loss of selected substances	1 January 2008 – 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	2,038
QH82096	Development of conceptual model for generation of groundwater vulnerability synthetic maps and its comparison with model DRASTIC	1 January 2008 – 31 December 2012	Research Institute for Soil and Water Reclamation, public research institution	2,272
QH82098	Analysis of changes in land use in source areas of agricultural area pollution using remote sensing data	1 January 2008 – 31 December 2011	Research Institute for Soil and Water Reclamation, public research institution	544
QH82106	Reclamation as a tool for landscape water regime function regeneration after opencast brown coal mining	1 January 2008 – 31 December 2012	University of South Bohemia in České Budějovice	1,744
QH82117	Environment friendly and effective fishpond management with maximum utilization of current trophic potential and maintaining good quality of water and fish production	1 January 2008 – 31 December 2012	University of South Bohemia in České Budějovice	2,492
QH91247	Possibilities of mitigation of current impacts of climate change through enhanced accumulation capacity in the Rakovnícký stream catchment area (pilot project)	1 January 2009 – 31 December 2011	T. G. Masaryk Water Management Research Institute, public research institution	2,053
QH91257	Socio-economic analysis of impacts of climate change in relation to water management in the Czech Republic – the effectiveness of costs of water management services and tools for their regulation	1 January 2009 – 31 December 2011	T. G. Masaryk Water Management Research Institute, public research institution	1,813
QH92034	Identification of infiltration areas in selected river basins by means of water vegetation stress	1 January 2009 – 31 December 2011	Research Institute for Soil and Water Reclamation, public research institution	2,071
QH92073	Mountain forests – basic ecosystems influencing water balance, floods and drought periods in the landscape	1 January 2009 – 31 December 2011	Research Institute for Forest and Game Management, public research institution	807
QH92086	Methodology of drafting and implementing infiltration and capture measures within rehabilitation of hydrological conditions and land use in the landscape	1 January 2009 – 31 December 2011	Czech Agricultural University in Prague	1,458
QH92091	Optimization of reclamation and remediation methods for landscape units devastated by mining, with emphasis on protection of waters and ecological stability	1 January 2009 – 31 December 2011	Czech Agricultural University in Prague	1,521
QH92298	System of nature friendly erosion control and flood control measures and its optimization in the process of land consolidation	1 January 2009 – 31 December 2011	University of South Bohemia in České Budějovice	1,306
QI91C008	Optimization of drafting of technical erosion control measures	1 June 2009 – 31 December 2013	Research Institute for Soil and Water Reclamation, public research institution	1,500
Total				42,900

Source: MoA

During the first year of the research scheme execution (2009–2013) by the Research Institute for Soil and Water Reclamation, public research institution, within the experimental river basin situated in the crystalline complex in the Czech Republic, the detailed (continual) monitoring of the quality and quantity of surface waters, drainage waters and groundwaters was optimized and compared with the point (discrete) monitoring. Point monitoring significantly underestimates losses of mainly solid substances and phosphorus especially in the situations of increased water levels. The quantification of both approaches applied and the application of different methods to delimitate the critical source areas of P and N substances within the river basin in relation to the represented soils, crops and agricultural management will facilitate in the next years to gain knowledge allowing to formulate practical recommendations for reducing area sources of agricultural pollution in the landscape under different rainfall-runoff conditions.

To reduce still high levels of nitrate contamination of drainage waters, the monitoring is focused on the efficiency of the denitrification ground straw filter which already for the third year, despite its minor mechanical defect, continues to eliminate year-round in average 90% of the nitrate nitrogen.

The sequestration of carbon in agricultural soils through certain soil tilling techniques (such as protective cultivation) may contribute to mitigation of carbon releases into the atmosphere. In the Research Institute for Soil and Water Reclamation, public research institution, land parcel experiments focusing on the assessment of the quantity and lability of soil organic carbon in sediments from differently cultivated lands are conducted. The results of analyses of organic carbon in soil show the positive effect of application of agrotechnical erosion control measures to reduce the contents of carbon in sediments.

Furthermore, experiments using treated waste water from waste

water treatment plants for small agglomerations for irrigation of fast-growing woody plants (*Salix viminalis*) are conducted in relation to potential threats to the quality of groundwater; accretions of fast-growing woody plants and potential changes in agrochemical properties of soils.

In relation to the represented crop type (forest land, arable land, grassland) and intensity of farming, the contents of risk-posing substances in soils and soil solution in the field conditions are monitored. Potential risk-posing elements (As, Cd, Cu, Pb, Zn), persistent organic pollutants (the contents of polycyclic aromatic hydrocarbons and DDT, including metabolites) are analyzed and also the contents and the quality of primary organic matter are monitored.

13.2

Research and development in the competence of the Ministry of the Environment

In 2009, the main research institution in the competence of the Ministry of the Environment, dealing with the issues of water protection was the T. G. Masaryk Water Management Research Institute, public research institution. Another institution dealing with important research projects or participating, to a large extent, in these projects was the Czech Hydrometeorological Institute.

The year 2009 was the fifth year of the implementation period of research scheme No. MŽP0002071101 – “Research and Protection of Hydrosphere – research of relations and processes in the aquatic compartment of the environment, with particular focus on the

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 2009

Project No.	Name of the project	From – to	Coordinator	Funds (thousands of CZK)
SP/1c2/121/07	Maps of flood risks in the Czech Republic	2007–2011	T. G. Masaryk Water Management Research Institute, public research institution.	3,273
SP/1c4/16/07	Research and implementation of new flood and runoff prediction tools in the framework of ensuring flood prediction and warning system in the Czech Republic	2007–2011	Czech Hydrometeorological Institute	2,274
SP/2e7/229/07	Anthropogenic pressures on the status of soils, water resources and water ecosystems in the Czech part of the international Elbe River Basin	2007–2011	T. G. Masaryk Water Management Research Institute, public research institution	15,199
VZ-MZP0002071101	Research and Protection of the Hydrosphere – research of relations and processes in the aquatic compartment 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	54,147
SP/2e7/67/08	Identification of anthropogenic pressures in the Czech part of the international Oder River Basin	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution.	6,430
SP/2e7/73/08	Identification of anthropogenic pressures on the qualitative status of waters and water ecosystems in the Morava River and the Dyje River Basin Districts	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	11,143
SP/1b7/124/08	Negative anthropogenic pressures on the Bílina River Basin (Czech Republic)	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	2,972
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	3,745
SP/2e7/50/08	Assessment of the indication power and ecological characteristics of benthic macro-invertebrates – a contribution to the implementation of the WFD– EC in the Czech Republic	2008–2009	Masaryk University in Brno	1,326
SP/2e7/58/08	Identification of parameters influencing bathing water profiles with respect to the environment	2008–2010	T. G. Masaryk Water Management Research Institute, public research institution	2,445
Total				102,954

Source: MoE

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. In 2009, the Ministry of the Environment was responsible for the execution of scientific and research projects in the field of water management (including related areas) under the programme of the Government Council for Research and Development. These projects are shown in Table 13.2.1.

In 2009, the Ministry of the Environment continued to fund research project No. SP/1c2/121/07 – "Maps of Flood Risks in the Czech Republic", which is based on elaboration of partial issues to complete the so far used or proposed methods of risk assessment of flood plain areas and the proposal for effective fulfilment of the obligations of the Czech Republic resulting from the Directive 2007/60/EC on flood risk evaluation and management. In 2009, the project focused on the verification of applicability of current data sources for effective description of threat, vulnerability, assessment of potential damage and expressing flood risks. This was conducted along with update and verification of partial methodologies for potential damage assessing and flood risk expressing. The vectorization of the individual drawings of land-use planning documentation of municipalities in the pilot basins of the Lužnice River and the Nežárka River continued. The source documents were used to be incorporated into a map of flood risks on the basis of matrix for individual municipalities in the pilot basin. Field investigation in the remaining part of the pilot basin of the Lužnice River from the town of Tábor as far as confluence with the Vltava River was carried out.

Project No. SP/1c4/16/07 – "Research and implementation of new flood and runoff prediction tools in the framework of ensuring flood prediction and warning system in the Czech Republic" focused in 2009 on research of the influence of inputs of assembly systems for probabilistic weather forecast on hydrological modelling. The project further focused on the development of a methodology for long-term probabilistic hydrological predictions, the assessment of probabilistic prediction outputs applicability in water management practice, the development of a robust method of estimating runoff from torrential rains, the development of methods to determine and measure snow cover parameters with regard to the needs of flood prediction and warning system, and the compilation of flood risk guide for the needs of flood control bodies and the public.

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 Elbe River Basin" focuses on the identification of pressures 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 communities of aquatic organisms. The objective of the project is basic research in the issues of the transport of nutrients in the river basin, uncertainties in flow modelling, the use of stable isotopes for the description of the hydrological regime in the river basin including the quality, the modelling of behaviour of the radionuclides in watercourses, the impact of the pollutants on fish, the behaviour of fish in watercourses and their natural reproduction. With regard to the scope of the issues dealt with, this project is divided into a series of separate special blocks. Other research institutions participating in this project include the Research Institute of Fish Culture and Hydrobiology of the University of South Bohemia, the Czech Geological Survey and the Czech Technical University in Prague, the Faculty of Civil Engineering. The project execution is scheduled until the year 2011.

Project No. SP/2e7/73/08 – "Identification of anthropogenic pressures on the qualitative status of waters and water ecosystems in the Morava River and the Dyje River Basin Districts" was launched in 2008 and is scheduled until 2010. The general objective of this project is to identify the anthropogenic pressures on the status of soils, 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. The execution of this research project is carried out by the T. G. Masaryk Water Management Research Institute, public research institution, branch in Brno, and the subsidy is provided by the Ministry of the Environment. With regard to a wide scope of the scientific tasks dealt with, the project is further divided into eight partial tasks.

Project No. SP/2e7/67/08 – "Identification of anthropogenic pressures in the Czech part of the international Oder River Basin" was launched in 2008. The objective of this project scheduled for the years 2008–2010 is to identify anthropogenic pressures on the status of soils, the quality of waters and on the change in the habitat of water ecosystems on the basis of the evaluation of the results of both the basic and applied research. The project also focuses on the assessment of the effectiveness and usefulness of nature-friendly flood control measures, on the analysis of the percentage of area sources and diffuse sources of the overall pollution of waters and on the assessment of the impact of fish culture intensification (fish farming). The major role in the execution of this project is played by the T. G. Masaryk Water Management Research Institute, public research institution, branch in Ostrava. With regard to the multidisciplinary nature of this research project, four more scientific and research institutions participate in the project execution. The 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 habitats in the Czech part of the international Oder River Basin.

Project No. SP/1b7/124/08 – "Negative anthropogenic impacts on the Bílina River Basin (Czech Republic)" was launched in 2008. The general objective of this project is to contribute to the knowledge, protection and improvement of the environment in the Bílina River Basin. The project is aimed at the assessment of the contamination of ecosystem components in the Bílina River Basin by foreign substances and their interaction. The project benefit primarily consists in particular specification of the main risk sources 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 Bílina River along 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" will be completed in 2010. The objective of the project is to assess the current and potential future extremity of hydrological drought on the territory of the Czech Republic, on the basis of hydrological series observed and series simulated for climate change conditions.

Project No. SP/2e7/58 – "Identification of parameters influencing bathing water profiles with respect to the environment" is aimed at establishing the flow of data and information on bathing waters and their evaluation, with regard to provision of the information to the public and the EU and in respect of preparing the drafts of measures to improve the status of these waters.

In 2009, the execution of the project No. SP/2e7/50 – "Assessment of the indication power and ecological characteristics of benthic macro-invertebrates – a contribution to the implementation of the WFD–EC in the Czech Republic" was terminated. This project dealt with the identification of valence characteristics of taxons in the conditions of watercourses minimally affected by anthropogenic pressures and the shifts of these characteristics in the contaminated environment, including specification of their indication power which is a prerequisite for the assessment of ecological status of waters. The project results are of major significance to the identification and assessment of the level of anthropogenic pressures on water pollution. The project output includes a compilation of valence characteristics of benthic macro-invertebrates in the river system in the Czech Republic for the purposes of the correct set up of the monitoring of waters.

List of acronyms in text

AOX	absorbable organically bounded halogens
BOD ₅	biochemical five-day oxygen demand
CEB	Council of Europe Development Bank
CEVN	Central Register of Water Reservoirs
CEVT	Central Register of Watercourses
CF	Cohesion Fund
COD _{cr}	chemical oxygen demand
CSN	Czech State Standard
DDD	1,1-dichloro-2,2-bis(p-chlorophenyl) ethane
DDE	2,2-bis(p-chlorophenyl) 1,1-dichloroethylene
DDT	1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane
DIS	dissolved inorganic salts
DN	denitrification
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EIB	European Investment Bank
ERDF	European Regional Development Fund
EU	European Union
FAD	flood activity degree
ISPA	Instrument for Structural Policies for Pre-Accession
MoA	Ministry of Agriculture

MoE	Ministry of the Environment
N	nitrification
N _{-inorganic}	inorganic nitrogen
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (sectoral classification of economic activities according to Eurostat)
OECD	Organization for Economic Co-operation and Development
PAH	polycyclic aromatic hydrocarbons
PBDE	polybrominated diphenylethers
PCB	polychlorinated biphenyls
PE	population equivalent
Q _A	long-term annual average flow
Q _M	long-term monthly average flow
R&D	research and development
SCEA	sectoral classification of economic activities of the Czech Statistical Office
s. e.	state enterprise
SS	solid substances
VTG	vitellogenin
WFD	Water Framework Directive
WHO	World Health Organization



Notes:

Notes:



Notes:

