

REPORT ON THE STATE OF WATER MANAGEMENT IN THE CZECH REPUBLIC

2001

by December 31, 2001



**Ministry of Agriculture
Ministry of the Environment**





Dear readers,

You hold in your hands the publication “Report on State of Water Management in the Czech Republic in the year 2001,” described in brief as the “Blue Report”.

The competence of the Ministry of Agriculture extends, along with activities in agriculture, food production and forestry, to water management activities and care for water management infrastructure as defined by the newly passed Water Act and Water Supply and Sewer Systems for Public Needs Act. It is our current and important task to progressively implement in practice all the fundamental aspects and requirements of the legal regulations of the European Union, which is particularly demanding both materially and financially in the area of water management.

In order to evaluate the state that has been achieved and to monitor the development over time, it is of use to have relatively simple and clear information material available. And this publication serves this end well, as is confirmed by the interest of the expert and general public every year.

I am pleased that it has been possible to put together a publication which follows on from the similar material for the years 1997 to 2000 and which is traditionally eagerly awaited.



The Blue Report on the state of water management includes overall information about all areas of activity in water management in the course of last year and contains, in particular, a description of the state of the main indicators, which is augmented with development trends for selected areas. It describes the state of surface and underground waters, output of the water management balance, report on rivers, measures for the amelioration of floods, area of public water supply and sewer systems, the protection of water, financial support for investments in water management, legislative measures and international relations.

In cooperation with the Ministry of the Environment, the Ministry of Agriculture has attempted to provide aggregate information following on from the time series and summarised information of both ministries providing the most precise possible overview of all activities included in the system of water management.

I hope that this now traditional publication will also this year represent a source of high-quality information and help satisfy the demand for information in this area.

A handwritten signature in dark ink, appearing to read 'J. Palas', with a stylized, flowing script.

Ing. Jaroslav Palas
Minister of Agriculture of the Czech Republic

Report on the state of water management in the Czech Republic in the year 2001



by December 31, 2001

**Ministry of Agriculture
Ministry of the Environment**



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1

State of surface water and underground water



1.1 HYDROLOGICAL BALANCE

■ In the year 2001 the sum of precipitation was above normal.

In the year 2001 an average of 809 mm of precipitation fell on the territory of the republic, which is 122 % of the norm in comparison with the long-term average for the years 1961 – 1990. Overall there was greater than normal precipitation over the year, with an average of 813 mm in Bohemia and 803 mm in Moravia.

During the calendar year of 2001, 16,184 million m³ of water flowed out from the territory of the Czech Republic. This year was standard in the majority of the republic's river basins in terms of outflow. The annual average flows Q_a corresponded most often to 85 to 120 %, lower annual averages occurred only on the Dyje (79 % Q_a) and Otava (82 % Q_a), whereas there was more water in the Odra (130 % Q_a) and Olše (155 % Q_a). In comparison with the year 2000, there was more water in the year 2001.

In the course of the year 2001 there were several flood situations (largely of local significance) on smaller rivers.

In comparison with the long-term characteristics, the levels of underground water were only 0.03 m higher than the long-term average – they may thus be considered average.

The yield regime for springs was of a similar character. A provisional estimate of the basic outflow in the year 2001 is 8 083 million m³ and represents 103.1 % of the long-term average.

Table 1.1.1 Renewable water resources in the years 1992 – 2000 in millions of m³

Item	Annual values									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Precipitation	48 186	53 391	52 287	61 514	54 890	57 809	56 153	49 291	54 733	63 960
Evapotranspiration	36 159	43 792	37 683	43 950	37 461	39 859	42 750	35 381	40 353	48 537
Annual inflow ¹⁾	492	486	553	645	825	653	541	550	573	761
Annual outflow ²⁾	12 519	10 085	15 157	18 209	18 254	18 603	13 944	14 460	14 953	16 184
Sources										
of surface water ³⁾	3 882	4 554	4 247	5 840	7 086	6 200	4 825	4 875	4 789	6 600
Usable sources										
of underground water	950	980	1140	1400	1 380	1 430	1 330	1 390	1 204	1 440

Source: ČHMÚ

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

²⁾ Annual outflow from the territory of the Czech Republic

³⁾ Designated as flow in main river basins with 95 % safeguarding

1.2 QUALITY OF SURFACE WATER

■ On the rivers which are most significant in terms of water management, a gradual improvement continues to be expressed in the basic indicators of pollution in the quality of surface water as a result of a decrease in the pollutants released.

The results of the evaluation of the quality of surface water for the two years 1991 – 1992 and 2000 – 2001 in the so-called basic classification are given in the appended water quality maps. Overall it can be stated that in the course of the past decade the water quality in rivers has significantly improved.

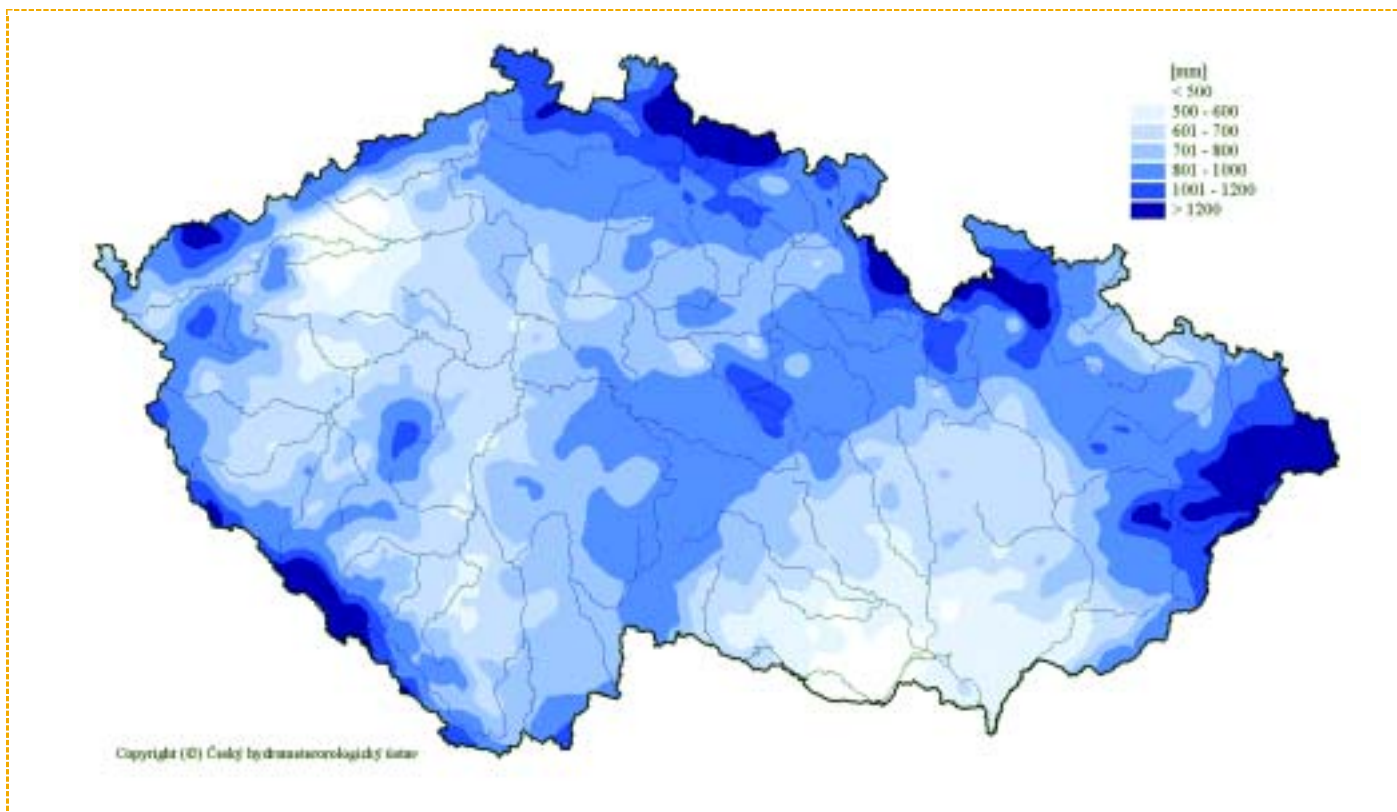
Since 1991 class V water quality (very heavily polluted water) has been eliminated in the main rivers (Elbe, Vltava, Morava and Odra) and on the majority of the

ir significant tributaries. In the two years 2000 – 2001 the main rivers mostly achieved class III quality (polluted water), except for the sections of the Odra downstream of Jičinka, the Vltava downstream of Prague, and the Elbe from Pardubice to Lysá nad Labem, in which there was still heavily polluted water (class IV). There was also a shift in water quality from class V or IV to class III on certain other sections of other rivers (Radbuza, Mže, Úhlava, Berounka, the upper reaches of the Sázava, Tichá Orlice, Loučná, Chrudimka, Moravská Sázava, Bystřice – tributary of the Morava, Oslava and lower section of the Jihlava. Class II water quality (slightly polluted water) has been achieved along approximately half of the length of the Ohře.

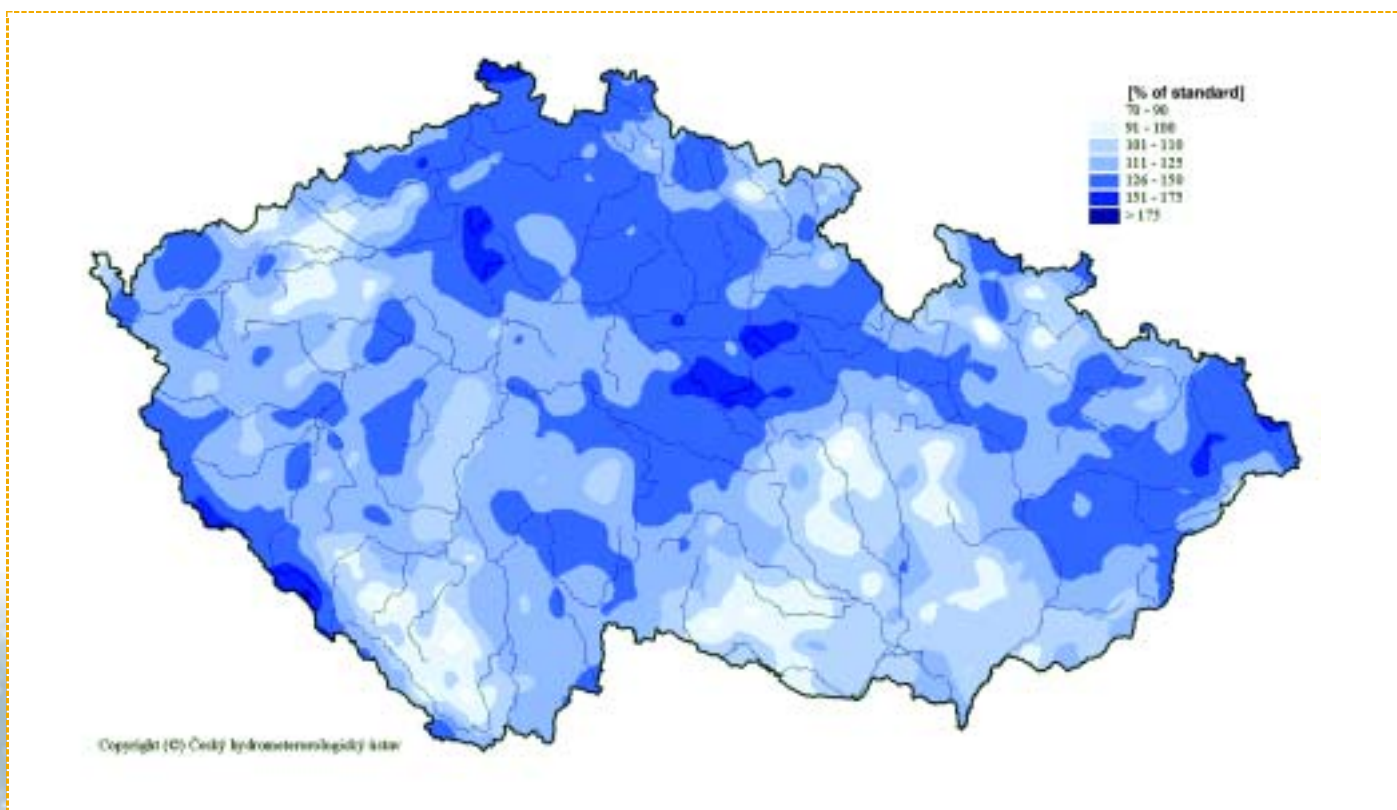


1. State of surface water and underground water

Total precipitation on the territory of the Czech Republic in the year 2001 in millimetres



Total precipitation on the territory of the Czech Republic in the year 2001 in the 1961 – 1990 standard





■ **The implementation of many measures at sources of pollution has resulted in an improvement in water quality, primarily in the basic indicators of pollution, and the implementation of many measures for the elimination of so-called dangerous substances has continued on rivers of the greatest importance in terms of water management.**

The following are considered to be the most important in the group of particularly dangerous and dangerous substances: organic halogen and other compounds, mercury, cadmium, lead and nickel. A specification of the evaluation of the content of dangerous substances in the significant rivers of the Czech Republic is shown in the appended map.

The content of some of these pollutants is gradually being reduced. For example, the content of mercury in the Bílina, which in the past was wholly unsatisfactory in the lower section, has been significantly reduced - by two orders of magnitude since 1991 - by the implementation of measures in the Confederation for Chemical and Metallurgical Production, joint-stock company, Ústí nad Labem. In the profile Bílina - Ústí nad Labem, the quality aims of the EU (annual average of 1 µg/l) have been achieved.

■ **Microbiological pollution is still a problem on many rivers, the source being municipal sources of waste water.**

Microbiological pollution has a fundamental significance for the requisite standard of water engineering technology for water abstractions, the most important of which are: Vltava - Podolí (waterworks Prague-Podolí), Jizera - Předměřice (waterworks Káraný) and Úhlava - Doudlevice (waterworks Plzeň-Homolka).

■ **The most serious problem remains the eutrophication of surface water in reservoirs.**



Eutrophication occurred in many reservoirs in the year 2001. For example, in the reservoir Římov on the Malš, Lučina on the Mže and the reservoir Lipno I, in the summer there were expressions of heavy eutrophication and high concentrations of humic substances. At the end of the year there was a significant increase in nitrous nitrogen in the reservoir Vrchlice. The increased production of biomass of algae made a significant impact on the quality of water in the Labská reservoir. Problems with eutrophication continued during the summer in other reservoirs: Lipno I, Hracholusky, České Údolí, Brněnská and Nové Mlýny. Several years of aerial liming have had a positive effect on the development of water quality in the Souš reservoir.

■ **The quality of surface water is monitored not only in rivers of water management significance, but also in smaller rivers as part of the monitoring of the Agricultural Water Management Administration.**

In the year 2001 there was an increase in comparison with the previous year in the number of objects in which the exceeding of directives B or C (according to the Methodological Instruction of the Ministry of the Environment of the Czech Republic from 15. 9. 1996 part 2 - Criteria for Pollution of Soil and Underground Water) was detected. But this increase is not significant, and it applies in particular to indicators of ammonium ions, aluminium and mercury. Directives B and C were exceeded by 15 indicators at least once in the year, and the greatest frequency of exceeding is recorded in indicators of chloride, ammonium ions and aluminium, and exceeding for nitrates and fluorides was less frequent. For the other ten indicators, directives B and C were exceeded highly sporadically (2 or 3 times, only atrazin five times). The incidence of indicators exceeding directives B and C is most frequent in the underground water of shallow bores oriented into alluvial rivers.

When comparing the values for quality indicators of underground water with the requirements for drinking water it is possible to note an overall improvement in comparison with the year 2000, and a slight worsening was recorded only for indicators of CHSKMn, ammonium ions and aluminium.

A worsening in comparison with last year was recorded for alpha activity, which rose by 10 % following last year's minimum figure.

1.3 QUALITY OF UNDERGROUND WATER

■ **The quality of underground water has not changed significantly in recent years.**

1. State of surface water and underground water

Quality of water in rivers of the Czech Republic in the years 1991 – 1992



Prepared by the T. G. Masaryk Water Management Research Institute from the data of the Czech Hydrometeorological Institute

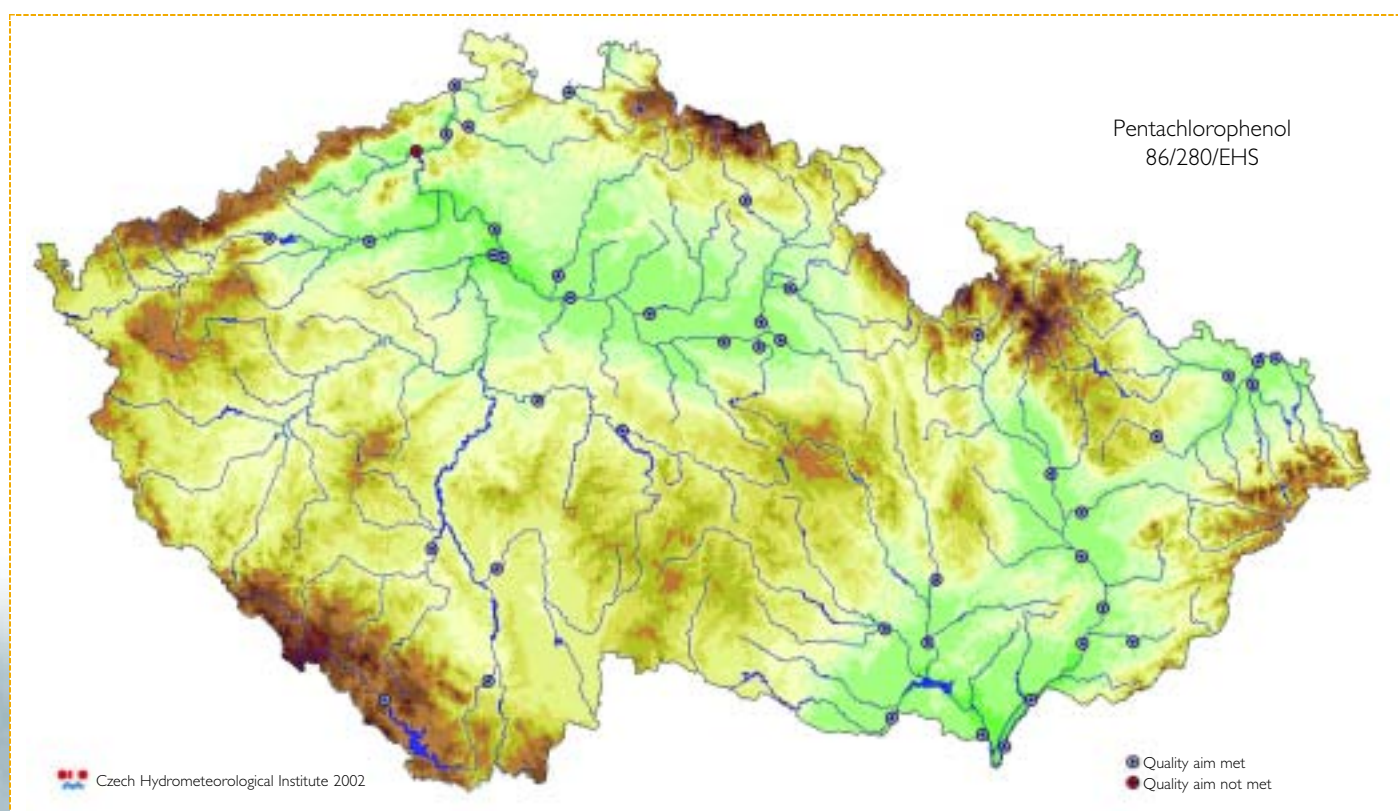
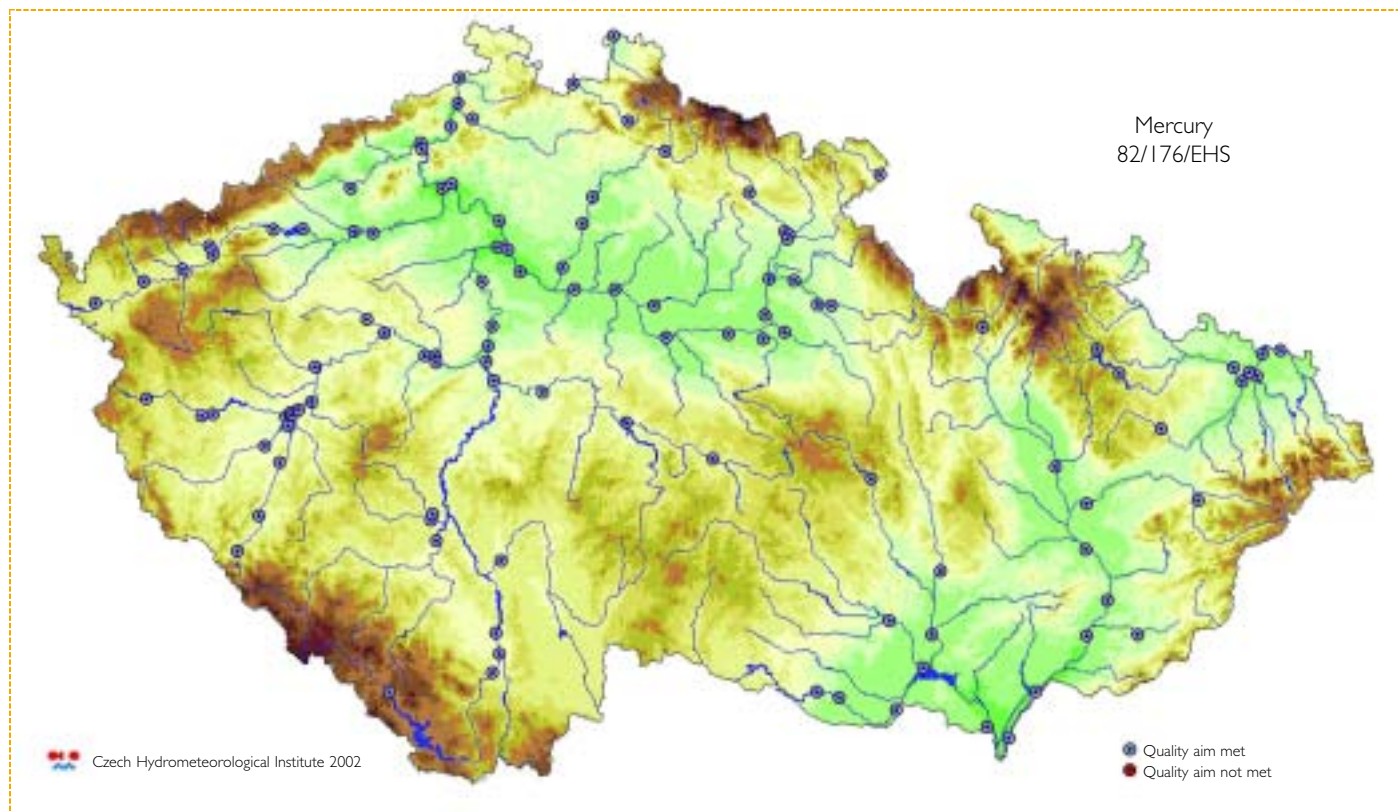
Quality of water in rivers of the Czech Republic in the years 2000 - 2001



Prepared by the T. G. Masaryk Water Management Research Institute from the data of the Czech Hydrometeorological Institute

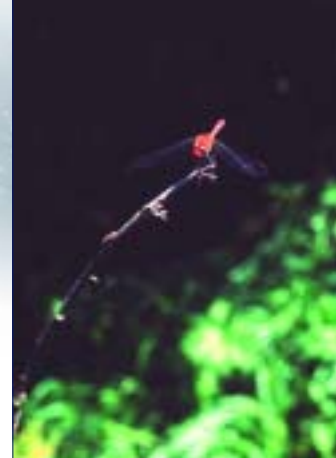


Comparison of average annual concentrations of selected priority pollutants in water in 2001 with quality aims of EU





2 Water management balance – handling of water



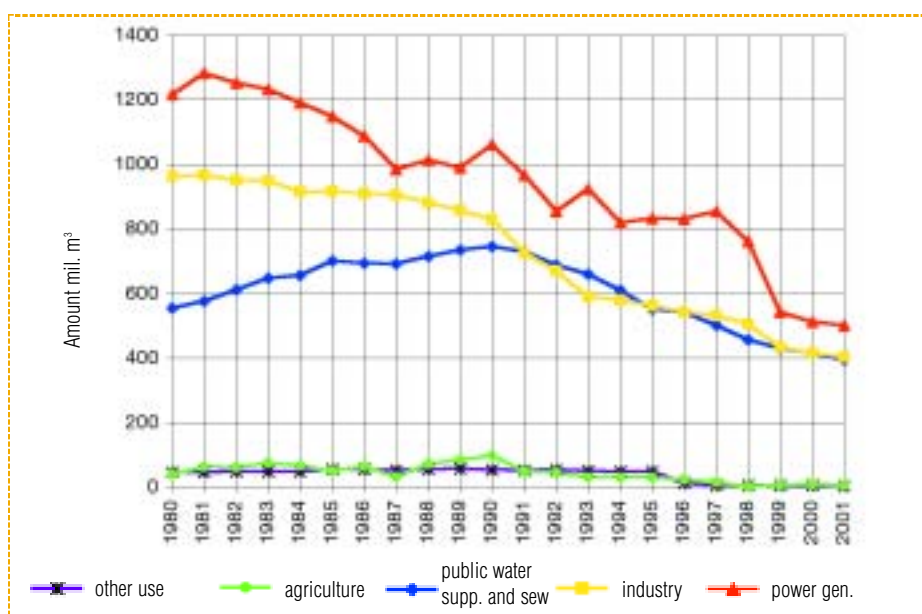
2.1 ABSTRACTIONS OF SURFACE WATER

■ In the year 2001 the overall trend in abstractions of surface water continued to be upward by 3.9 % in comparison with the year 2000.

In the year 2001, 736 abstractions of surface water from rivers and reservoirs totalling 1 309.8 million m³ were recorded as part of the State Water Management Balance.

The structure of recorded abstractions in the year 2001 is given in table 2.1.1. The overall slight upward trend in abstractions of surface water continued in the year 2001 in all river basins with the exception of the river basin of the Morava. An increase in abstractions of surface water for the power generation industry was recorded in comparison with the year 2000 by 229.2 % in the river basin of the Vltava as a result of the trial operation of the power station Temelín, and in the river basin of the Morava by 4.7 %. In the river basin of the Ohře, abstractions for industry increased by 10.3 %. There was no change in the abstractions

Graph 2.1.1 Abstractions of surface water in the Czech Republic in the year 1980-2001



Source: VÚV TGM

for public water supply systems in the river basin of the Morava (growth by just 1.7 %), whereas a slight drop continued for other river basins in comparison with the year 2000. Abstractions in the year 2001 for agriculture were a total of 25.8 % lower than in the year 2000.

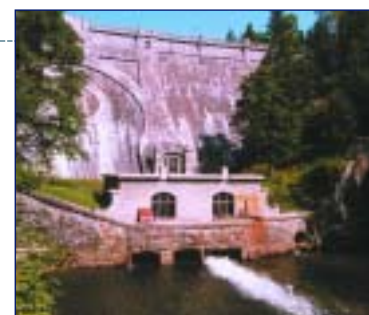


Table 2.1.1 Abstractions of surface water in the year 2001 in millions of m³

River board state company	Group of users											
	Public water supply and sewers		Agriculture		Electricity generation		Industry		Other		Total	
	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number
Elbe	43.7	34	1.9	17	322.5	7	143.7	122	0.2	5	511.8	185
Vltava	176.6	50	0.5	8	7.9	2	83.6	102	3.4	23	272	185
Ohře	61.1	25	0.3	13	65.5	6	52.5	69	0	1	179.4	114
Odra	71.2	15	0	1	6.4	1	97.4	70	0.2	8	175.2	95
Morava	41.9	33	4.3	19	98.5	3	26.1	94	0.5	8	171.3	157
Czech Republic	394.6	157	6.9	58	500.8	19	403.1	457	4.4	45	1 309.8	736

Source: VÚV TGM from information supplied by river board state companies

2. Water management balance – handling of water

2.2 ABSTRACTIONS OF UNDERGROUND WATER

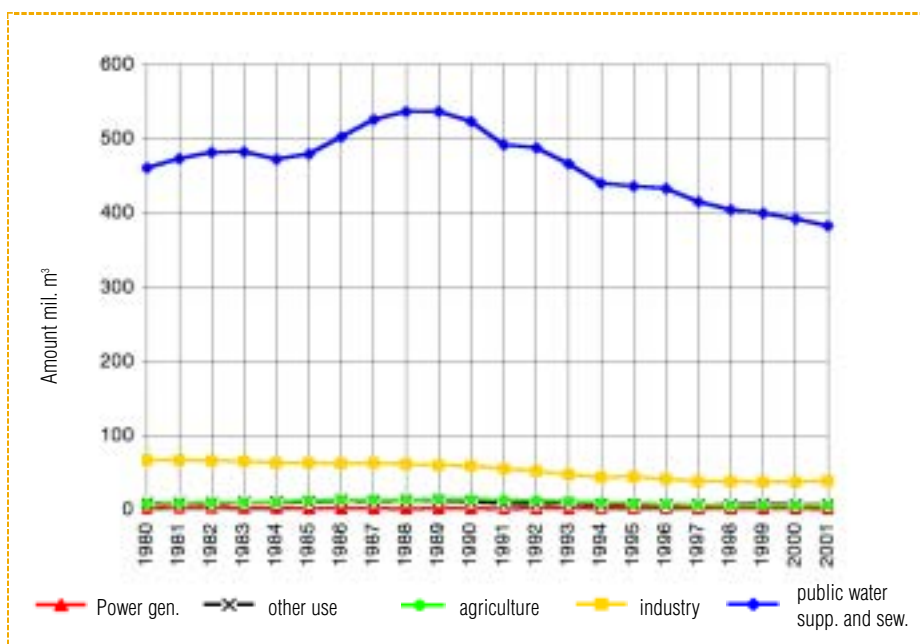
■ There was a drop of 1.7 % in abstractions of underground water in the year 2001 in comparison with the year 2000.

In the year 2001, 2255 abstractions of underground water with a total amount of 433.8 million m³ were recorded as part of the State Water Management Balance.

The structure of recorded abstractions in the year 2001 is shown in table No. 2.2.1.

The amount of abstracted underground water in comparison with the year 2000 dropped slightly in all the river boards. An increase in abstractions of underground water for industry was recorded in the River Board Ohře by 52 %. In the group of other users there was an increase in abstractions in the river boards Morava and Ohře.

Graph 2.2.1 Abstractions of underground water in Czech Republic in the years 1980-2001



Source: VÚV TGM

Table 2.2.1 Abstractions of underground water in the year 2001 (in millions of m³)

River board state company	Group of users											
	Public water supply and sewers		Agriculture		Electricity generation		Industry		Other		Total	
	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number
Elbe	120.5	481	0.8	29	0.8	2	11.2	117	1.3	19	134.5	648
Vltava	35.2	380	1.5	44			9.3	79	1.6	21	47.6	524
Ohře	61.6	268	0.3	5	0.4	1	7.6	45	1.9	13	71.8	332
Odra	27.1	116	0.3	10			2	28	0.6	11	29.9	165
Morava	137.9	373	2.2	68			8.8	124	1.1	21	150	586
Czech Republic	382.3	1618	5.1	156	1.1	3	38.9	393	6.5	85	433.8	2 255

Source: VÚV TGM from information supplied by river board state companies



2.3 DISCHARGE OF WASTE AND MINE WATER

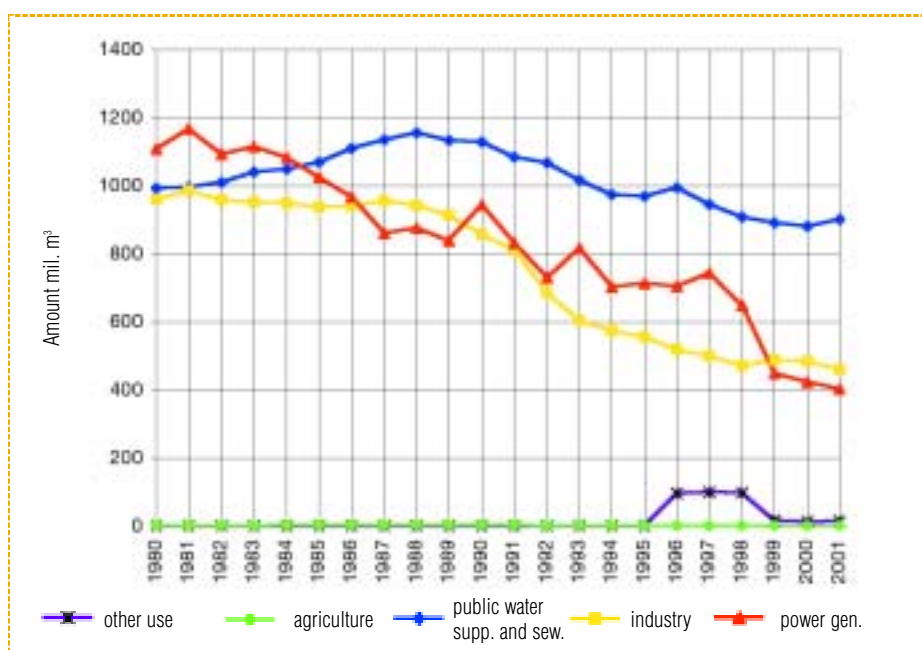
■ The volume of discharged waste and mine water dropped by 1.1 % in comparison with the year 2000.

In the year 2001, 2428 discharges of waste and mine water into surface water totalling 1783.9 mil. m³ were recorded as part of the State Water Management Balance.

The structure of recorded discharges in the year 2001 is recorded in table 2.3.1.

Permanent drops in abstractions and releases justified by restriction of production in industry and power generation and water savings in households are slowly coming to an end.

Graf 2.3.1 Discharges into surface water in the Czech Republic in the years 1980-2001



Source: VÚV TGM

Table 2.3.1 Discharges of waste and mine water into surface water in the year 2001 in millions of m³

Group of users												
River board state company	Public water supply and sewers		Agriculture		Electricity generation		Industry		Other		Total	
	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number
Elbe	165.5	283	0	1	302.4	18	148.5	151	2.7	30	619	483
Vltava	316	510	1.5	8	4.3	2	80.1	123	5.6	42	407.5	685
Ohře	89.4	204	0	1	22.5	13	121.3	178	2.4	18	235.7	414
Odra	127.4	167			4.9	5	81.8	88	3.6	24	217.7	284
Morava	204.2	397	0.1	2	69.3	3	28.7	134	1.6	26	304	562
Czech Republic	902.5	1561	1.7	12	403.4	41	460.4	674	15.8	140	1 783.9	2 428

Source: VÚV TGM from information supplied by river board state companies





3 Administration of rivers



3.1 EXPERT ADMINISTRATION OF RIVERS

- In the year 2001 the extent of expert administration of rivers significant from the aspect of water management remained unchanged in comparison with the previous period.

The decisive administrators of rivers – the river board state companies, Agricultural Water Management Administration, and Forests of the Czech Republic, state company, come within the competence of the Ministry of Agriculture and ensure the management of approximately 95 % of the length of rivers in the Czech Republic. Approximately 5 % of the administration of rivers is shared amongst municipalities, district authorities of military districts and the administration of national parks. Table 3.1.1. gives an overall summary.

- The acquisition value of long-term tangible assets associated with rivers reached a value of CZK 43 billion in the year 2001.



Table 3.1.1 Expert administration of rivers

Category	Administrator	Length of rivers in KM	
		2001	2000
Rivers significant from the water management aspect	River Board Elbe, state company	3 712,7	3 712,7
	River Board Vltava, state company	4 779,3	4 779,3
	River Board Ohře, state company	1 981,0	1 981,0
	River Board Odra, state company	1 202,5	1 202,5
	River Board Morava, state company	3 745,8	3 745,8
	Total competence of Ministry of Agriculture	15 421,3	15 421,3
Small rivers	Agricultural Water Management Administration	35 374,9	34 782,9
	Forests of the Czech Republic, state company	19 628,3	19 804,0
	River Board state companies total	1 835,3	1 830,2
	Overall competence of Ministry of Agriculture	56 838,5	56 417,1
	Other ¹⁾	3 740,2	4 161,6
	Total small rivers	60 578,7	60 578,7
Total rivers		76 000,00	76 000

Source: Ministry of Agriculture

¹⁾ Includes administration of national parks, authorities of military districts, municipalities and other legal persons, for example, mines

The acquisition value of long-term tangible assets associated with rivers reached a value of CZK 43 billion in the year 2001. The specific values of long-term tangible assets in acquisition prices for specific administrators of rivers is shown by table 3.1.2.

- In the year 2001 the legal form of the expert administrators of rivers changed from River Board joint-stock companies to River Board state companies and there was also a change in the state-funded organisation State Amelioration Administration to an organisational unit of the state called the Agricultural Water Management Administration.

Forests of the Czech Republic, state company, was a stable and significant administrator of small rivers in the year 2001,

Table 3.1.2 Acquisition value of long-term tangible assets associated with rivers in billions of CZK

Administrators of rivers in the competence of the Ministry of Agriculture	2001	2002
River Board Elbe, state company	7,88	7,82
River Board Vltava, state company	7,22	7,14
River Board Ohře, state company	7,16	7,25
River Board Odra, state company	4,70	3,23
River Board Morava, state company	6,60	6,55
River Board state companies total	33,56	31,99
Agricultural Water Management Administration	7,59	7,38
Forests of the Czech Republic, state company	2,09	2,05
Total	43,24	41,42

which performs the expert administration of small rivers, especially mountain streams, via six area river administrations.

3. Administration of rivers

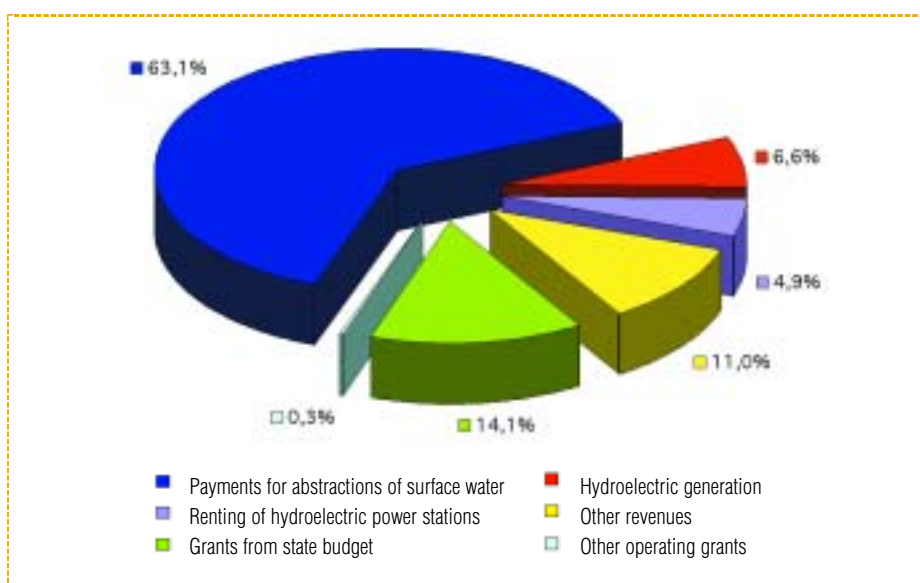
3.2 STATE COMPANIES RIVER BOARDS

The largest amount of the overall revenues of the River Board state companies consists of payments for abstractions of surface water. The structure of revenues of the River Board state companies in the year 2001 is expressed in table 3.2.1 and graph 3.2.1.

■ **The sum of revenues for supplies of surface water for the Czech Republic as a whole last year rose by almost CZK 58 million, and thus reached CZK 1929 million.**

The development in deliveries of surface water at a charge is given in table 3.2.2.

Graph 3.2.1 Structure of yields of river board state companies in the year 2001



Source: River Board state companies

Table 3.2.1 Structure of revenues of River Board state companies in the year 2001 in thousands of CZK

Indicator	River Board Elbe, state company	River Board Vltava, state company	River Board Ohře, state company	River Board Odra, state company	River Board Morava, state company	River Board State companies total
Payments for abstractions of surface water	536 056	408 417	396 878	300 605	287 368	1 929 324
Electricity generation	12 515	53 217	95 774	25 732	15 716	202 954
Incomes from use of damming facilities	24 567	106 280	2 065	151	15 602	148 665
Other income	124 730	79 505	57 809	28 208	46 462	336 714
Grants from the state budget	53 994	41 006	115	140 544	194 773	430 432
Other operational grants	8 179	249	-	-	134	8 562
Revenues – total incomes of River Board state companies	760 041	688 674	552 641	495 240	560 055	3 056 651

Source: River Board state companies

Table 3.2.2 Deliveries of surface water at a charge in thousands of m³

River Board state company	1994	1995	1996	1997	1998	1999	2000	2001
River Board Elbe, state company								
a)	890 818	887 994	863 372	897 063	787 331	572 341	534 300	508 435
b)	62 379	52 857	58 927	55 464	49 710	45 137	43 630	43 279
River Board Vltava, state company								
a)	409 768	394 582	382 786	355 799	324 336	294 550	276 626	264 802
b)	264 935	257 135	250 796	232 545	207 949	192 786	185 072	171 924
River Board Ohře, state company								
a)	229 555	213 257	217 748	214 455	207 855	190 731	176 183	176 403
b)	89 419	81 236	78 533	74 352	71 517	67 185	63 206	60 263
River Board Odra, state company								
a)	257 100	244 247	235 133	215 549	198 122	182 515	175 883	166 799
b)	107 018	96 636	94 109	86 595	77 245	72 108	69 434	66 255
River Board Morava, state company								
a)	222 493	210 279	204 538	201 655	171 842	156 247	141 902	132 680
b)	60 821	46 198	40 925	40 833	38 086	36 499	38 768	39 398
River Board state companies total a)	2 009 734	1 950 359	1 903 577	1 884 521	1 689 486	1 396 384	1 304 894	1 249 119
b)	584 572	534 062	523 290	489 789	444 507	413 715	400 110	381 119

Source: River Board state companies

Note: a) total at a charge, b) of this, for public water supply systems.

Grants represent significant support for the financing of needs within the context of the main activities of the River Board state companies. Table 3.2.3. shows the operating (non-investment) and investment grants of the individual River Board state companies allocated in 2001.

The level of grants for the state companies River Board Morava, Odra and Elbe reflect the need for the renewal of the rivers following the floods of the years 1997, 1998 and 2000. For the state company River Board Elbe and state company River Board Vltava, a significant part of the operating grants consists of a contribution towards the operation of inland waterways.

Table 3.2.3 Grants allocated to River Board state companies in the year 2001 in thousands of CZK

River Board state company	Operating grants	Investments grants	Total grants
River Board Elbe, state company	62 108	176 163	238 271
River Board Vltava, state company	41 255	14 863	56 118
River Board Ohře, state company	115	1 000	1 115
River Board Odra, state company	140 544	32 007	172 551
River Board Morava, state company	194 907	54 110	249 017
River Board total	438 929	278 143	717 072

Source: Ministry of Agriculture from the data of the River Board state companies



An overview of the costs of the River Board state companies in the year 2001 and comparison with the previous year is shown in table 3.2.4.

Table 3.2.4 Costs of River Board state companies in millions of CZK

Type of costs	River Board Elbe, state company	River Board Vltava, state company	River Board Ohře, state company	River Board Odra, state company	River Board Morava, state company	Total River Board state companies
Depreciations						
2000	137.5	140.3	159.1	70.3	97.5	604.7
2001	131.5	142.9	157.4	70.2	106.7	608.7
Repairs						
2000	204.4	151.1	97.3	244.9	215.6	913.3
2001	172.5	145.4	105.0	187.0	158.7	768.6
Materials						
2000	41.1	18.5	18.7	28.5	36.0	142.8
2001	45.2	18.0	21.6	28.9	36.7	150.4
Power and fuel						
2000	27.2	22.0	27.8	4.3	8.0	89.3
2001	28.0	23.1	27.5	4.2	9.2	92.0
Personnel costs						
2000	236.2	204.1	171.3	112.7	178.5	902.8
2001	243.2	214.5	178.2	118.6	190.1	944.6
Services						
2000	95.5	45.0	30.7	36.2	22.8	230.2
2001	95.0	53.6	29.1	33.7	22.6	234.0
Financial costs						
2000	3.9	7.7	0.2	3.5	16.1	31.4
2001	2.5	6.4	0.6	5.3	0.5	15.3
Other costs						
2000	65.1	26.3	14.4	41.9	16.4	164.1
2001	25.0	36.1	20.8	24.8	17.6	124.3
Total costs						
2000	810.9	615.0	519.5	542.3	590.9	3 078.6
2001	742.9	640.0	540.2	472.7	542.1	2 937.9

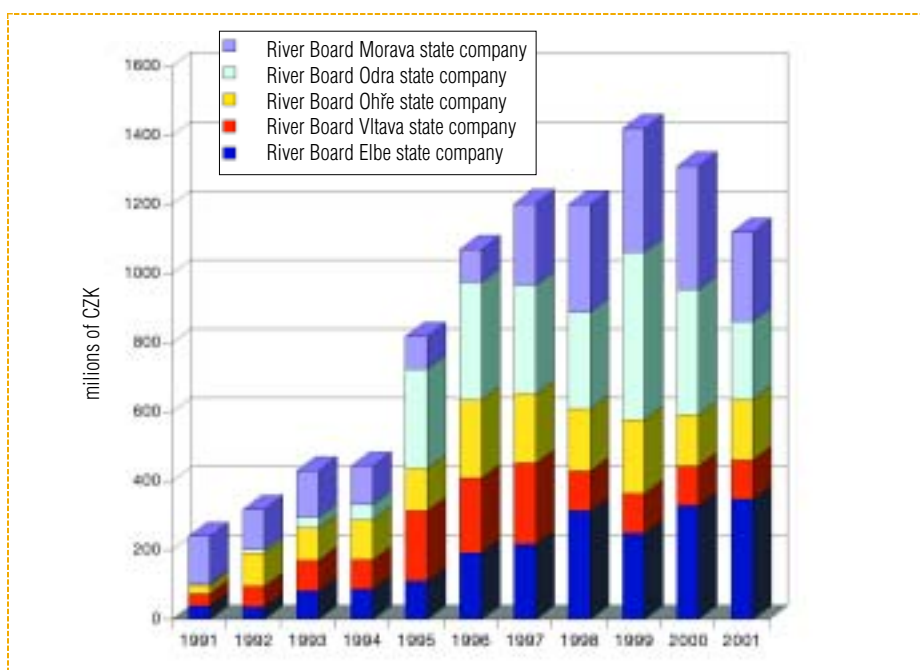
Source: River Board state companies



3. Administration of rivers

Over the last nine years, the River Board state companies have spent CZK 9013 million on investment, as is shown in table 3.2.5 and in graph 3.2.2. The drop in the recent period reflects the fact that the majority of flood damage from the years 1997 and 1998 has already been repaired by the increased investment construction in the past, and the volume of investment construction now expresses the real investment possibilities.

Graph 3.2.2 Development of investment construction of River Board state companies



Source: River Board state companies

Table 3.2.5 Investments by River Board state companies in millions of CZK

River board state companies	1993	1994	1995	1996	1997	1998	1999	2000	2001
River Board Elbe, state company	82.2	87.0	110.1	193.0	216.8	313.4	248.4	328.5	347.1
River Board Vltava, state company	89.2	85.0	203.2	216.4	235.2	115.7	116.3	115.2	114.1
River Board Ohře, state company	92.0	116.0	122.0	225.0	200.0	180.2	212.5	148.2	173.4
River Board Odra, state company	31.7	44.7	289.1	340.2	314.3	279.1	484.4	361.6	226.8
River Board Morava, state company	135.6	111.0	94.0	95.5	236.1	311.0	357.3	356.8	257.8
River Board state companies total	430.7	443.7	818.5	1069.8	1202.4	1199.4	1418.9	1310.3	1119.2

3.3 AGRICULTURAL WATER MANAGEMENT ADMINISTRATION

In the year 2001, the Agricultural Water Management Administration (referred to hereinafter as the AWMA) was granted a total of CZK 77.010 million of non-investment resources out of the state budget for maintenance, repairs and operation of rivers. It was also allocated non-investment financial resources for flood prevention repairs to long-term tangible assets from programme 329 060 in the amount of CZK 5.710 million, from the State Fund for Soil Improvement in the amount of CZK 3.765 million, from the Protection of the Countryside Programme CZK 2.389 million, and for other non-investment

expenses (other contributions, monitoring, ecological programme) CZK 18.800 million. In the year 2001 a total of CZK 107.673 million was allocated to the AWMA.

By far the majority of the financial resources shown was used for maintenance

and repairs of rivers (approximately 75 %) and for other non-investment expenses (approximately 17 %).

A summary of the true use of these financial resources is given by table 3.3.1.

Table 3.3.1 Use of individual financial resources in millions of CZK

Activity	Source	Plan	Reality
Maintenance and repairs of rivers	SFSI	3,765	3,758
	State budget	77,009	76,989
Programme for Care of the Countryside	State budget	2,389	2,345
	State budget	5,710	5,706
Repair of buildings	State budget	18,800	18,794
Other non-investment expenses	State budget		
Total		107,673	107,595

A review of financial resources used in recent years out of the individual financial resources for maintenance and repairs to rivers and waterworks is given in table 3.3.2.

The allocation of the non-investment expenses for rivers, maintenance and repairs to main drainage facilities in the administration of the Land Fund in the administration of AWMA according to the individual regions is shown by table 3.3.3.

■ **Revenues from payments for abstractions of water or from the renting of waterworks and other real estate are insignificant and are from around 8 to 11 million crowns.**

■ **In the year 2001 the elimination of damage caused to rivers in the administration of AWMA by the floods of 1997 continued. The flood damage from the subsequent years is also being eliminated on an ongoing basis.**

Table 3.3.5. gives a summary of the overall costs for the elimination of flood damage in a breakdown according to sources and with a division into investment and non-investment resources.

In the year 2001 AWMA implemented investment construction in the total value of CZK 102.9 million, including a programme of flood prevention measures in the amount of CZK 2.8 million, and it also eliminated flood damage from the year 1997 in the amount of CZK 28.9 million. A summary is given in table 3.3.5.

Table 3.3.2 Coverage of expenses of AWMA for maintenance and repair of rivers and waterworks in millions of CZK

Source for coverage of expenses	1997	1998	1999	2000	2001
Budget of Ministry of Agriculture	71,1	70,8	68,1	77,6	77,0
Programme Care for the Countryside	11,0	6,6	2,5	1,0	2,4
Flood prevention measures				35,2	5,7
Total state budget	82,1	77,4	70,6	113,8	85,1
State Fund for Soil Improvement	7,4	-	1,0	5,6	3,8
Total	89,5	77,4	71,6	119,4	88,9
Elimination of flood damages from the resources of the Land Fund (LF)	54,7	-	-	0	0
Maintenance and repairs of main amelioration facilities from resources of LF	104,1	103,8	79,6	75,9	59,8
Total expenses	248,3	178,2	151,2	195,3	148,7

Source: AWMA

Table 3.3.3 Non-investment expenses for rivers, maintenance and repair of main drainage facilities in the administration of the Land Fund in the year 2001 according to regions in thousands of CZK

Region	Maintenance and repair of rivers	Operation	Elimination of flood damage	Main drainage facilities	Total
Prague	8 784,6	88,4		6 598,6	15 471,6
České Budějovice	12 040,0	389,6		16 679,1	29 108,1
Plzeň	9 488,0	384,3	2 326,7	8 570,9	20 769,9
Ústí nad Labem	5 774,6	399,0		3 238,2	9 411,8
Hradec Králové	10 355,0	259,3		10 964,8	21 579,1
Brno	14 342,1	4 881,5		5 222,6	24 446,2
Ostrava	9 204,8	598,7		8 520,0	18 323,5
Total	69 989,1	7 000,8	2 326,7	59 794,2	139 110,8

Source: AWMA

Table 3.3.4 Elimination of flood damage from the year 1997 in the rivers managed by AWMA in the year 2001 in millions of CZK

Source – programme	Investment costs	Non-investment costs	Total
Programme 329181	0,124	0	0,124
Programme 329184	28,785	0	28,785
Total	28,909	0	28,909

Source: AWMA

Table 3.3.5 Structure of investments and financial sources of AWMA in millions of CZK

Structure of investments	Financial sources	1999	2000	2001
Adjustments to rivers	State budget – Ministry of Agriculture	32,7	32,2	47,2
	Specific purpose fund (substitute recultivation)	2,4	3,6	6,5
	State Fund for Soil Improvement	4,4	-	0,2
Study of drainage conditions	State budget	0	3,8	0
Revitalisation of rivers	State budget	94,4	45,3	17,3
Flood prevention measures	State budget	8,8	33,6	2,8
Elimination of flood damage from 1997	State budget	27,3	27,0	28,9
	European Investment Bank	102,4	36,5	0
Elimination of flood damage from 1998	State budget	12,2	-	0
Total		284,6	182,0	102,9

Source: AWMA

3. Administration of rivers

3.4 FORESTS OF THE CZECH REPUBLIC, STATE COMPANY, REGIONAL RIVER ADMINISTRATIONS

The structure of the financing of administration for small rivers via the regional river administrations and the level of state support for the year 2001 is given in table 3.4.1.

■ In the year 2001 Forests of the Czech Republic, state company, expended CZK 325 million on the administration of rivers.

Out of overall financial expenses of CZK 325.00 million of Forest of the Czech Republic, state company, for the management of small rivers, CZK 162.2 million was expenses of an investment nature, of which CZK 75.5 million came from own resources.

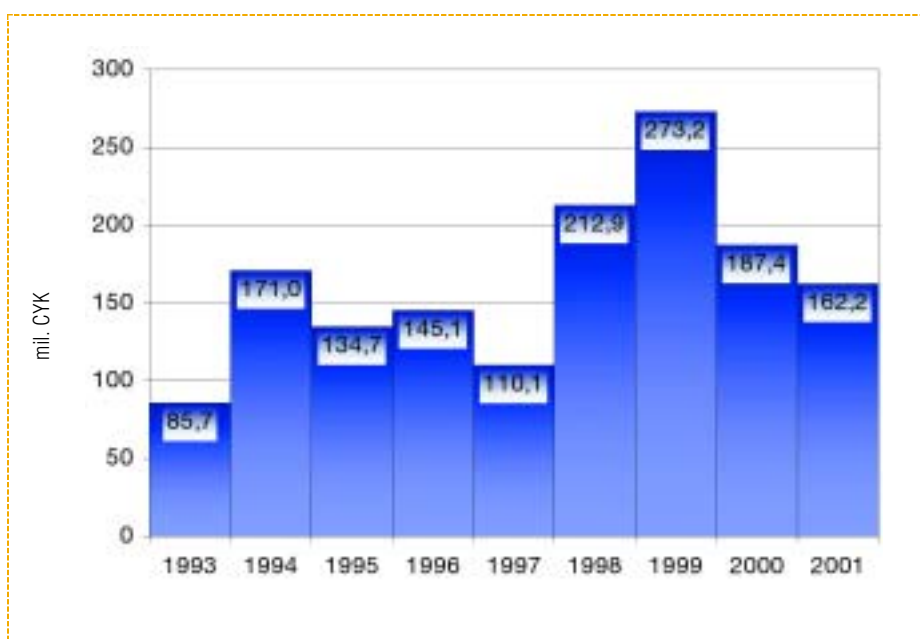
The revenues of Forests of the Czech Republic, state company, for abstractions of surface water are around CZK 8 million per year.

The investments of Forests of the Czech Republic, state company, focussed mainly on preventative steps and, in particular, on the construction and reconstruction of dams of forest streams, mainly in areas affected by floods. Investment expenses in the year 2001 for the elimination of flood damage from the years 1997 and 1998 came to CZK 73.7 million, of which CZK 56.0 million was from own resources.

Tab. 3.4.1 Structure of financing of Forests of the Czech Republic – regional river administrations in the year 2001 in millions of CZK

Forests of the Czech Republic, state company	Own resources	State budget	Of this flood damage from the year 1997		Of this flood damage from the year 1998	
			State budget	Own resources	State budget	Own resources
Investment	75,5	86,7	10,5	48,1	7,2	7,9
Non-investment	130,0	32,8	23,4	82,2	0	0
Total	205,5	119,5	33,9	129,3	7,2	7,9

Graph 3.4.1 Investment expenses for rivers administered by Forests of the Czech Republic, state company, in millions of CZK



Source: Forests of the Czech Republic, state company



The development of the volume of investment resources in recent years is shown by graph 3.4.1., and the development of resources used for repair and maintenance is shown by graph 3.4.2.

3.5 WATERWAYS

The Elbe-Vltava waterway is of strategic importance to the Czech Republic. On the 171 km Czech section of the Elbe from Střekov to the port in Chvaletice and on the 70 km section of the Vltava from its confluence with the Elbe in Mělník to the port Radotín in Prague, navigation is ensured by a continuous sequence of weirs, even during the lowest flow rates.

The 40 km regulated section of the Elbe between Střekov and the state border with Germany represents a barrier to the full use of this waterway.

■ **In order to improve the navigation conditions on the Elbe in this section, in the year 2001 preparation continued on the construction of two low navigation degrees, these being Prostřední Žleb and Malé Březno.**

In the year 2001, documentation was completed for town planning proceedings and EIA documentation was prepared and sent for comment to Germany and the Free State of Saxony. On 19.11.2001 there was a public discussion of the EIA. The Ministry of the Environment has adopted a dissentient opinion to the intention described in the EIA document.

■ **In the year 2001, the repair, maintenance and operation of the Elbe-Vltava waterways was supported by the Ministry of Agriculture out of the state budget with an amount of CZK 91 million.**

Graph 3.4.2 Expenses for repair and maintenance of rivers managed by Forests of the Czech Republic, state company



Source: Forests of the Czech Republic, state company

■ **As part of the programme for renewal and reconstruction, modernisation and construction of waterways, work to the value of CZK 292.2 million was carried out in the year 2001.**

In the year 2001, the State Transport Infrastructure Fund provided a grant in the amount of CZK 280.7 million for this work, of which the River Board Elbe, state company, and River Board Vltava, state company, received CZK 170 million.





4 Measures to ameliorate harmful impacts of water, in particular floods



4.1 ELIMINATION OF FLOOD DAMAGE AND IMPLEMENTATION OF FLOOD PREVENTION MEASURES

■ Work continued on the elimination of flood damage and the implementation of flood prevention measures.

In order to eliminate the flood damage from the year 1997, in the year 2001, a grant was provided by the state to the River Board Morava, state company, River Board Odra, state company, River Board Elbe, state company and AWMA in the amount of CZK 378.783 million. It involved 57 investment and 65 non-investment projects.

In order to eliminate the flood damage from the year 1998, in the year 2001 the state provided grants for 2 investment projects to the River Board Elbe, state company in the amount of CZK 21.812 million.

In the year 2001, a total of 87 projects were completed, of which 35 were projects of an investment character by which the renewal and reconstruction of 35.2 km of rivers, 30.8 km of protective embankments, 3 retaining reservoirs with a volume of 91.9 thousand m³ and 2 weirs were carried out, and there were also 52 projects of a non-investment character, mainly repairs in 78.9 km of rivers, 1 weir and 1 large stage.

During the implementation of flood prevention measures of an investment character, only one uncompleted project of AWMA was subsidised from the state budget with a grant of CZK 2.8 million. The

other project of the AWMA and river board state companies were either financed out of own resources or put on hold and will continue in the year 2002 with the use of a loan from the European Investment Bank, the use of resources from state financial assets and own resources of the investors (see hereunder).

In the year 2001, grants were provided for flood prevention measures of a non-in-

vestment nature, i.e., repairs, maintenance and the operation of existing facilities, in the amount of CZK 80.648 million to the River Board Morava, state company, River Board Elbe, state company, River Board Odra, state company and AWMA.

With the gradual elimination of damage caused by the catastrophic floods of the year 1997, 1998 and 2000, in recent times there has been an acceleration of activities



4. Measures to ameliorate harmful impacts of water, in particular floods



for ensuring effective preventative anti-flood measures. State support in this area is concentrated in the programme of the Ministry of Agriculture "Flood Prevention". This subsidy programme is comprised of independent implementation and study sub-programmes.

Within the context of the study sub-programmes, support is given in particular to a study of drainage conditions in the individual river basins, including evaluation of the effectiveness of the proposed measures (see chapter 4.2.) and studies for the designation of flood areas (see chapter 4.3.).

■ **Conditions have been created for securing financial resources for the Flood Prevention Programme (329 060) in the years 2002 - 2005.**

The financing of the first stage of the implementation of the Flood Prevention Programme for the years 2002 – 2005, which utilises the merging of national and foreign financial sources in the form of a loan in the ratio of 1:1 from the European Investment Bank, was approved. The second stage in the years 2006-2010 should follow on from the first stage.

National financial sources, which are a precondition for gaining and utilising a loan in the amount of 60 million euros, consist of resources from State Financial Assets, the investors' own resources and partially resources from the state budget, and the overall volume of these resources is CZK 2.15 billion for the years 2002-2005. Along with the loan resources from the European Investment Bank, it is possible to implement flood-prevention measures in a total volume of CZK 4.15 billion.

4.2 STUDY OF DRAINAGE CONDITIONS AND DESIGNATION OF FLOOD TERRITORY

■ **The study of the drainage conditions proposes variants of flood prevention measures, evaluates**

their effectiveness and designates the flood territory.

In the year 2001 studies were prepared for the drainage conditions of the rivers Opava through the city of Krnov (km 69.0 – 78.2) in the basin of the Odra, as was the first stage of the study of the drainage conditions of the river Jizera (km 0.0 – 143.0) in the basin of the Elbe, where the administrator of the river has contributed to its financing.

The administrators of significant rivers also used their own resources to finance the most urgent projects, such as the completion of the second stage of the study of drainage conditions of the river Elbe (km 0.0 – 117.0), the aforementioned 1st stage of the study of the drainage conditions of the river Jizera (km 0.0 – 143.0) in the basin of the Elbe, a study of the drainage conditions of the Ostravice (km 0.0 – 23.0), the Moravice (km 0.0 – 10.0) and the completion of the 2nd stage of the study of the drainage conditions of the Podolský stream (km 0.0 – 7.5) in the basin of the Odra and the completion of the 2nd stage of the drainage conditions of the river Třebůvka (km 0.0 – 45.4) in the basin of the Morava.

In the year 1999-2001 the old flood territories along approximately 1500 km of significant rivers were redefined or recalculated.

In the year 2001 the preparation of flood territories was paid for out of the own resources of the administrators of rivers along the river Sázava (km 100.0 – 218.0) in the basin of the Vltava, the Karviná stream (km 0.0 – 6.0) and the Jičinka (km 0.0 – 10.4) in the basin of the Odra, the Morava (km 272.7 – 312.0), and the 2nd stage of the study of the flood territory of the river Svitava (km 0.0 – 94.0) and the Moravská Sázava (km 0.0 – 51.8) in the basin of the Morava ■





5 Public water supply systems and sewers



5.1 DRINKING WATER SUPPLY

■ In the year 2001, public water supply systems supplied 87.3 % of the population with drinking water

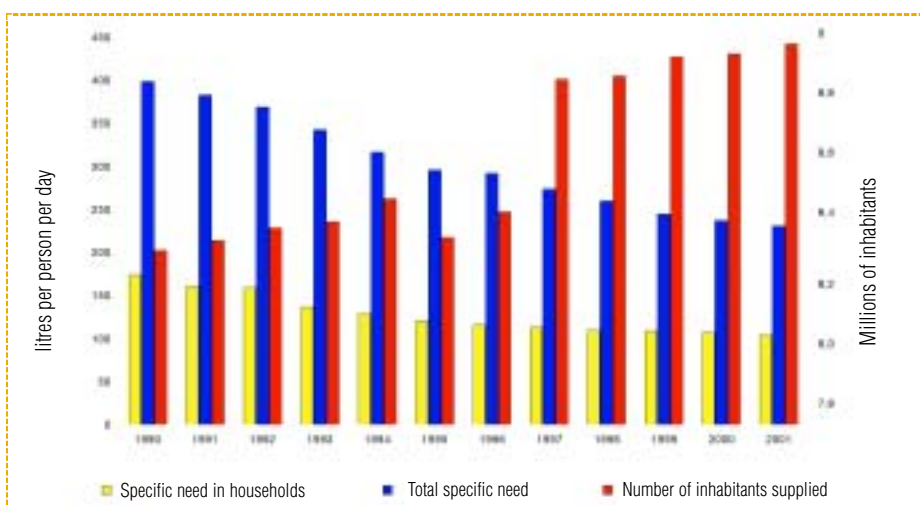
In the year 2001, a total of 8.98 million inhabitants (i.e., 87.3 % of the total number of inhabitants of the Czech Republic) were supplied from public water supply systems. A total of 753.8 mil. m³ of drinking water was produced in all public water supply systems. Losses of drinking water for the main operators reached 182.6 mil. m³, i.e. 25.1 % of the water produced intended for implementation.

■ The trend of the fall in the volume of drinking water produced and specific need per one inhabitant has not yet stopped.

The development in the number of inhabitants supplied and the specific amount

of water invoiced in the years 1990 – 2001 is documented by graph 5.1.1.

Graph 5.1.1 Development in the number of inhabitants supplied and the specific needs of water invoiced in the years 1990 – 2001



Source: Czech Statistical Office, VÚV TGM

Table 5.1.1 Supply of water from public water supply systems in the years 1989 and 1995 – 2001

Indicator	Unit of measurement	Year							
		1989	1995	1996	1997	1998	1999	2000	2001
Inhabitants (median state)	Thousands of inhabitants	10364	10331	10316	10304	10295	10283	10273	10287
Inhabitants really supplied with water from public water supply systems	Thousands of inhabitants	8537	8860	8868	8866	8879	8936	8952	8981
	%	82,4	85,8	86,0	86,0	86,2	86,9	87,1	87,3
Water produced from public water supply systems	mil. m ³ / year	1251	958	944	887	843	800	778	754
	%	1,0	76,6	75,5	70,9	67,4	63,9	62,2	60,3
Total water invoiced	mil. m ³ / year	929,4	655,9	631,4	604,0	579,9	564,2	554,1	535,6
	%	1,0	70,6	67,9	65,0	62,4	60,7	59,6	57,6
Specific need from water produced ¹⁾	l/per capita /day	401	296	292	274	260	245	237	231
	%	1,0	73,8	72,8	68,3	64,8	61,1	59,1	57,5
Specific amount of total water invoiced ¹⁾	l/per capita /day	298	203	195	187	179	173	169	164
	%	1,0	68,1	65,4	62,8	60,1	58,1	56,7	54,9
Specific amount of water invoiced for households ¹⁾	l/per capita /day	171	121	116	113	110	109	107	104
	%	1,0	70,8	67,8	66,1	64,3	63,7	62,6	60,7
Loss of water per 1 km of systems ¹⁾	l / km /day	16842	16367	16801	14159	12149	10704	9706	9141
Loss of water per one supplied inhabitant ¹⁾	l /per capita /day	90	90	93	79	71	63	60	57

Source: Czech Statistical Office. Note: ¹⁾ information for water supply and sewerage systems of the main operators

5. Public water supply systems and sewers

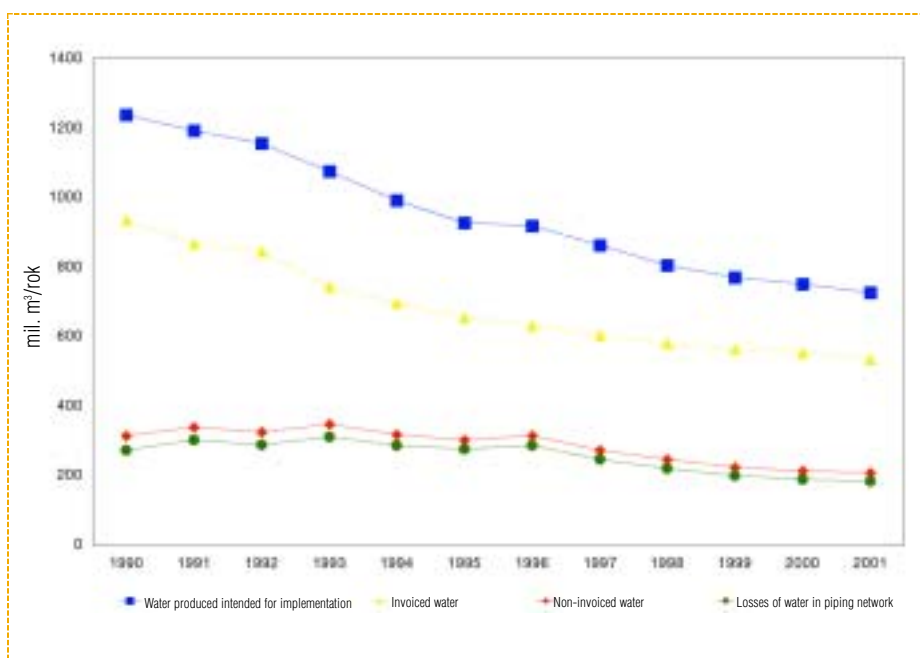
The development of the other indicators characterising the production and development of drinking water since 1990 is clearly shown in graph 5.1.2.

■ **The greatest proportion of inhabitants supplied from the public water supply system in 2001 was in the capital, Prague (100 %), and in the Karlovy Vary district (99 %), the lowest proportion was in the Vysočina district (72.0 %) and in the Central Bohemia district (72.5 %).**

■ **Water supply networks were extended by 1 448 km.**

- The length of the water supply network increased by 1 448 km and reached 54 736 km (without connections).
- The number of water connections increased by 28 785 to 1 396 297
- The length of water supply connections increased by 1 859 km and reached 14 730 km.
- The capacity of the water supply systems increased by 1 113 l/s to 69 585 l/s.

Graph 5.1.2 Development of values for volume of water produced intended for implementation, invoiced, not invoiced, and losses of water in the pipe network in the years 1990 - 2001



Source: Czech Statistical Office, VÚV TGM

Table 5.1.2 Supply of inhabitants, production and delivery of water from public waterworks in the year 2001

District, region	Citizens		Water invoiced		
	Inhabitants truly supplied with water from public water supply systems	Proportion of inhabitants supplied with water out of the overall number	Water produced from public water supply system	total	Of this, for households
	(number)	(%)	(thous. m³)	(thous. m³)	(thous. m³)
Capital, Prague	1 174 000	100,0	151 697	90 808	59 071
Central Bohemia district	820 300	72,5	48 733	42 291	27 443
South Bohemia district	584 800	92,8	43 418	31 992	19 695
Plzeň district	451 600	81,6	37 941	28 393	16 848
Karlovy Vary district	303 200	99,0	27 390	19 842	12 591
Ústí district	786 650	95,2	73 622	49 701	31 922
Liberec district	357 300	83,0	36 576	21 192	14 113
Hradec Králové district	480 200	86,6	37 359	25 933	16 212
Pardubice district	466 300	91,5	33 634	25 714	15 466
Vysočina district	374 800	72,0	23 237	19 877	11 151
South Moravia district	999 500	88,2	73 122	56 155	35 823
Olomouc district	526 500	82,0	39 366	26 719	16 067
Zlín district	478 500	80,1	34 052	25 763	15 483
Moravian-Silesian district	1 177 300	92,2	93 655	71 243	47 456
Czech Republic	8 980 950	87,3	753 802	535 623	339 341

Source: Czech Statistical Office

Note: including water supply systems not included in statistical survey



5.2 COLLECTION AND TREATMENT OF COMMUNAL WASTE WATER

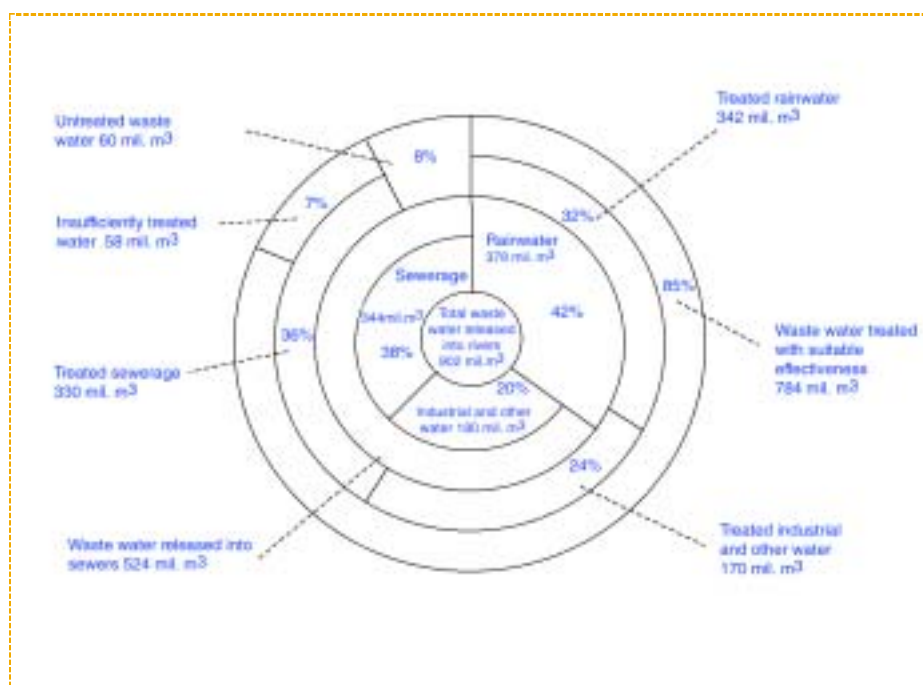
■ Three quarters of the inhabitants of the Czech Republic live in houses connected to the public sewer system.

In the year 2001, 7.71 million inhabitants lived in houses connected to the public sewers. A total of 570.7 mil. m³ of waste water was released into the public sewers. Out of this amount 95.5 % of waste water was treated (without the inclusion of rainwater), which represents 544.8 mil. m³. Trends of development in public sewers and the treatment of waste water over the longer term are documented by table 5.2.1 and graph 5.2.1 and graph 5.2.2.

The amount of waste water released into rivers classified according to its origin and level of pollution is given by graph 5.2.1



Graph 5.2.1 Structure of released waste water in the year 2001 (main operators in survey of state statistics)



Source: Czech Statistical Office, VÚV TGM

Table 5.2.1 Collection and treatment of waste water from public sewers in the years 1989 and 1995 - 2001

Indicator	Unit of measurement	Year							
		1989	1995	1996	1997	1998	1999	2000	2001
Inhabitants (median state)	thous. of inhab.	10 364	10 331	10 316	10 304	10 295	10 283	10 273	10 287
Inhabitants living in homes connected to the public sewers	thous. of inhab.	7 501	7 559	7 566	7 573	7 657	7 666	7 685	7 706
	%	72,4	73,2	73,3	73,5	74,4	74,6	74,8	74,9
Total waste water released into the public sewers (excluding rainwater)	mil. m ³	877,8	649,7	615,6	628,5	620,0	592,2	576,0	570,7
	%	100,0	74,0	70,1	71,6	70,6	67,5	65,6	65,0
Treated waste water including rainwater ¹	mil. m ³	897,4	866,3	903,4	842,5	818,9	814,6	808,8	841,4
Total treated waste water excluding rainwater	mil. m ³	627,6	581,4	555,9	571,5	566,1	562,9	546,1	544,8
	%	100,0	92,6	88,6	91,1	90,2	89,7	87,0	86,8
Proportion of treated waste water, excluding rainwater	%	71,5	89,5	90,3	90,9	91,3	95,1	94,8	95,5
Proportion of treated water to untreated water, excluding rainwater	-	2,51	8,51	9,31	10,00	10,50	19,20	18,30	21,21

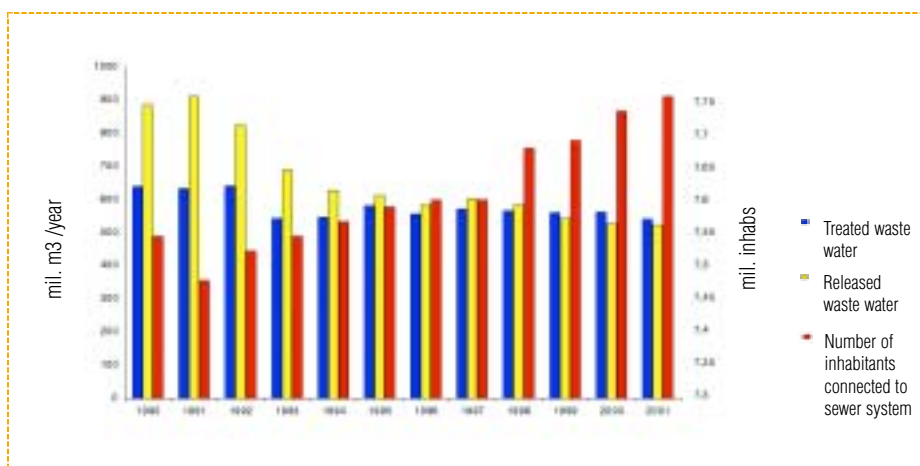
Source: Czech Statistical Office

Note: *) data for water supply and sewerage systems of main operators

5. Public water supply systems and sewers

- The lowest proportion of inhabitants connected to the sewers is in the Central Bohemia District.

Graf 5.2.2 Development in number of inhabitants living in houses connected to public sewers, released and treated waste water in the years 1990 – 2001



Source: Czech Statistical Office, VÚV TGM

Table 5.2.2 Number of inhabitants living in houses connected to public sewers and amount of released and treated waste water in the year 2001 in the individual districts

District, region	Inhabitants living in houses connected to public sewers		Waste water released into public sewers	Treated waste water, excluding rainwater	
	Total	% of total number of inhabitants	Total	Total	Proportion
	(number)	(%)	(thousand m ³)	(thousand m ³)	(%)
Capital, Prague	1 167 500	99,4	103 791	103 791	100,0
Central Bohemia district	588 200	52,0	42 396	42 139	99,4
South Bohemia district	529 200	84,0	41 375	36 628	88,5
Plzeň district	392 500	70,9	29 302	28 902	98,6
Karlovy Vary district	292 700	95,5	19 147	18 746	98,3
Ústí district	662 500	80,1	44 337	36 750	82,9
Liberec district	277 900	64,5	18 237	14 234	78,1
Hradec Králové district	400 800	72,3	28 447	26 225	92,2
Pardubice district	326 300	64,0	23 790	22 856	96,2
Vysočina district	330 500	63,4	17 850	17 560	98,4
South Moravia district	850 400	75,1	53 387	52 910	99,1
Olomouc district	407 900	63,5	27 728	26 857	96,9
Zlín district	451 700	75,6	33 456	31 766	92,2
Moravian-Silesian district	1 028 100	80,6	87 409	82 442	94,3
Czech Republic	7 706 200	74,9	570 652	541 806	94,8

Source: Czech Statistical Office

Note: including water supply systems not included in the statistical survey



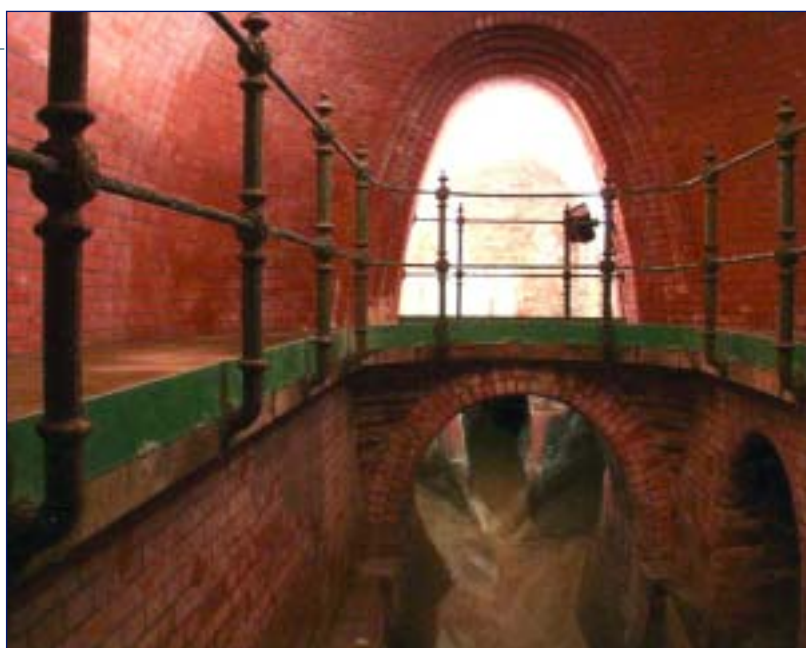
5.3 WATER SUPPLY AND SEWERAGE CHARGES

- **Water supply and sewerage charges increased on average by 6.1 % in comparison with the year 2000.**

In the year 2001, average water supply charges in the Czech Republic, including VAT, calculated according to implementation prices were CZK 19.06/m³ and the average sewerage charges, including VAT, were CZK 15.95/m³.

The limit values of the sum of water supply charges and sewerage charges in the year 2001 were min. CZK 16.61 /m³ and max. CZK 50.65 /m³. The average price was CZK 35.007 /m³.

In the year 2001, the price differences in the individual regions with regard to the average for the Czech Republic (100 %) varied from 42 % to 56 % for the lowest prices and from 136 % to 176 % for the highest prices. ■





6 Pollution of water and protection of water



6.1 POINT SOURCES OF POLLUTION

■ **The production of pollution in the year 2001 did not change significantly in comparison with the year 2000, the pollution released decreased further.**

In the year 2001, the production of pollution, i.e., the amount of pollution contained in waste water before its treatment, did not change significantly in comparison

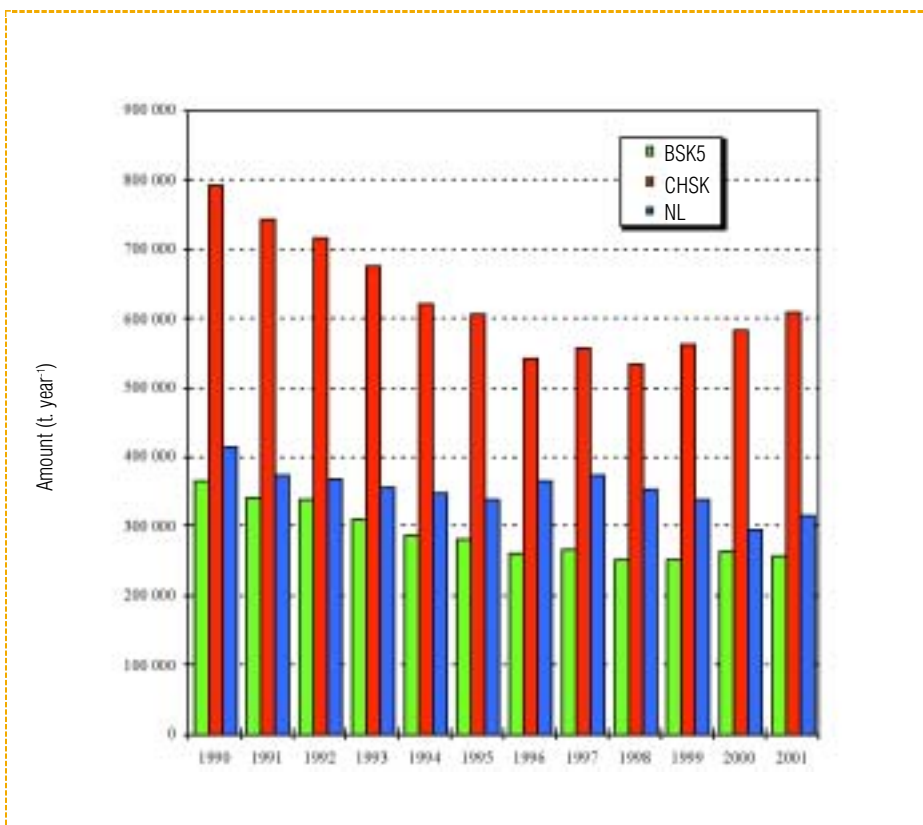
with the year 2000. The development of pollution produced from 1990 is documented by graph 6.1.1

In the year 2001, the trend in the reduction of released pollution continued. Pollution contained in waste water released into surface water in comparison with the year 2000 dropped in these indicators: BSK₅ by 3 589 t (18.6 %), CHSK_G by 7 127 t (8.7 %) and NL by 3 071 t (10.3 %). There was a significant drop in released pollution as a result of the operation of new and reconstructed waste water treatment plants (referred to hereinafter as (WWTP) completed in the year 2000

or 2001, the intensification of old WWTP and the connection of parts of certain sewer systems to WWTP. The development of the released and charged pollution since 1990 is shown in graph 6.1.1.

In industry there was a significant drop in pollution released from the paper mills Assi-Domän Sepap – Frantschach Pulp & Pa, a.s. in Štětí (by 74 t BSK₅ and 2 074 t CHSK_G) and at JIP – Papíren Větrní, a.s. (by 82 t BSK₅). On the other hand, a greater amount of pollution was released in 2001 than in 2000 from Aliachem Synthesia, a. s., Pardubice (by 235 t BSK₅ and 733 t CHSK_G) and at OP papírny, s.r.o. in Olšany (by 68 t BSK₅ and 150 t CHSK_G).

Graph 6.1.1 Pollution produced 1990 - 2001



Source: VÚV TGM Praha from data supplied by river board state companies

In the communal sphere there was a significant reduction in pollution in these cities: Prague (by 608 t BSK₅), Přerov (by 431 t BSK₅), Prostějov (by 216 t BSK₅), Karviná (by 105 t BSK₅), Frýdek – Místek (by 97 t BSK₅). As a result of the connection of more waste water to the WWTP in Ústí nad Labem, the amount of pollution released from this city has dropped by 787 t BSK₅.

Public sewers contributed 50.6% to the total amount of waste water released into rivers.



6. Pollution of water and protection of water



The proportion for public sewers in terms of the amount of pollution released was BSK_s 65.5 %, CHSK 56.4 % and NL 54.6 %.

■ **In the year 2001, as a result of the operation of waste water treatment plants there was a drop in pollution produced in the indicators BSK_s by 94 %, CHSK_c by 87.8 % and NL by 91.6 % and in comparison with 1990 there has been a drop in released pollution in the indicators of BSK_s by 89.4 %, CHSK_c by 81.6 %, NL by 85.5 % and RAS by 33 %.**

In the years 1990 – 2001 there was also a reduction in the amount of specific organic substances and heavy metals released, for example, the amount of mercury fell from approximately 2.5 t to less than 0.5 t. There was also a significant drop in macronutrients (nitrogen, phosphorous). The

overall amount of phosphorous fell by 37 % and the amount of inorganic nitrogen fell by 24.5 %.

6.2 BROAD AREA POLLUTION

The proportion of broad area sources of pollution (especially agriculture, atmospheric deposits and rainwash) is significant, especially for pollution by nitrates and acidification, but less so for phosphorous, and it varies in the different parts of the Czech Republic.

■ **In the year 2001 a draft plan for the designation of vulnerable areas was drawn up.**

Approximately 43 % of agricultural land, which represents 36 % of the surface of the Czech Republic, should be in vulnerable

areas according to directive 91/676 of the Council of the EU concerning protection of water from pollution by nitrates from agricultural sources. In addition, the Krušné hory mountains were dealt with in detail from the aspect of acidification, and for the entire territory of the Czech Republic basins of the 4th order which are vulnerable to erosion from the aspect of washing out of phosphorous were dealt with.

6.3 ACCIDENT POLLUTION

In the year 2001, the Czech Environmental Inspectorate (CEI) recorded 163 cases on the territory of the Czech Republic of accident pollution or threatening of water quality, of which 34 were cases in underground water.







7. Financial support for investments of public water supply and sewerage systems and improvements in the state of the countryside

7.1 FINANCIAL SUPPORT OF THE MINISTRY OF AGRICULTURE

■ In the year 2001, the state supported the development of the infrastructure of water supply and sewerage systems via the programmes of the Ministry of Agriculture with CZK 700.0069 million.

As part of the programme "Construction and Technical Renewal of Water Supply Systems and Water Treatment Plants" a total of 90 projects with investment costs above CZK 5 million were supported in the year 2001 and a total of CZK 421.861 million was provided.

Under the programme "Construction and Technical Renewal of Sewer Systems and Waste Water Treatment Plants", 32 projects were supported in the year 2001. A total of CZK 278.208 million of support was provided for them.

■ The year 2001 saw the start of utilisation of the loan provided by the European Investment Bank in the amount of EUR 100 million for the reconstruction, improvement, modernisation and expansion of water management systems. CZK 222 million was utilised out of the EIB loan on three new projects and 9 projects continued from the year 2000.

They were the following projects:

Waste Water Treatment Plant Vyškov – intensification	36,369
Waste Water Treatment Plant Hodonín – intensification	35,000
Reconstruction of Waste Water Treatment Plant Turnov	27,000
Waste Water Treatment Plant Rokycany	26,213
Waste Water Treatment Plant Havlíčkův Brod - intensification	20,979
Sewer System and Waste Water Treatment Plant Přelouč	2,705
Sewer System and Waste Water Treatment Plant Dačice	4,224
Water Treatment Plant Štítary	13,439
Group water supply system Ivančice - Rosice	10,260
Group water supply system Škvorec - Tuklaty - Břežany II - Rostoklaty	18,083
Water supply system Syrákov	5,250
Supply of drinking water to border areas of districts Kutná Hora and Kolín	22,587
Total	222,109

Table 7.1.1 State financial resources provided under the programmes of the Ministry of Agriculture 329 030 and 329 040 in millions of CZK

Form of support	Water supply systems and water treatment plants	Sewer systems and waste water treatment plants	Ministry of Agriculture total
Repayable financial assistance	137,952	80,722	218,674
Grants	283,909	197,486	481,395
Total	421,861	278,208	700,069

The greatest volume of financial resources (18%) in the year 2001 was sent to the Olomouc district.

For the year 2002 it is assumed that pursuant to the provisions of section 45 of the Water Supply and Sewer Systems Act (Act No. 274/2001 Coll.), revenues from privatisation totalling CZK 2 billion will start to be used for the support of financial construction and technical renewal of water supply systems and water treatment plants, waste water treatment plants and sewers. Along with the use of the loan of the European Investment Bank, this will make it possible to increase state support



7. Financial support for investments of public water supply and sewerage systems and improvements in the state of the countryside

for investment construction provided in this area by the Ministry of Agriculture to the level of 1997, i.e., approximately to CZK 1.3 billion in the form of a grant and CZK 1 billion in the form of a loan.

7.2 STATE ENVIRONMENTAL FUND

■ In the year 2001 support from the State Environmental Fund (SEF) for the protection of water reached CZK 1 604.335 million (grants CZK 948.475 million, loans CZK 655.860 million) and increased by 42% compared with the previous year.

The greatest volume of financial resources (19.8 %) was sent to the Central Bohemia District.

Support implemented in the year 2001 is given in table 7.2.1

The most significant recipients of support to the end of the year 2001 were the city of Bechyně (sewer system and waste water treatment plant CZK 40.3 mil. – grant CZK 18.3 mil., loan CZK 22.0 mil.), Rakovník (expansion of waste water treatment plant CZK 25.9 mil. – grant CZK 3.9 mil., loan CZK 22.0 mil.), Rudolfov (sewer collector R-Rudolfov CZK 24.6 mil. – grant CZK 12.3 mil., loan CZK 12.3 mil.), Volyně (sewer collector and expansion of waste

Table 7.1.2 Development of state support for construction of water supply systems, water treatment plants, sewer systems and waste water treatment plants within the context of the Ministry of Agriculture in millions of CZK

	1997	1998	1999	2000	2001
State budget of this	2 154	1 648	1 718	1 340	700
repayable financial assistance	838	435	473	422	219
Grants	1316	1213	1245	918	481
EIB	0	798	568	60	222
Total support	2 154	2 446	2 286	1 400	922

water treatment plant CZK 24.5 mil. – grant CZK 8.8 mil, loan CZK 15.7 mil.), municipality of Dolní Dunajovice (completion of waste water treatment plant and sewer system CZK 26.9 mil. – grant CZK 19.6 mil., loan CZK 7.3 mil.) a Ratiboř (sewer system and waste water treatment plant CZK 25.4 mil. – grant CZK 8.4 mil., loan CZK 17.0 mil.).

In the year 2001, 169 affirmative Decisions on Support for construction of waste water treatment plants were issued with a total value of CZK 2711 mil. (the overall costs for the implementation of the individual projects is CZK 3945 mil.), and the possibility was thus created for the disposal of pollution in the amount of 7 343.51 t CHSK and 3 537.70 t of insoluble substances per year.

The granting of definitive support in the course of the year 2001 for 73 projects applied to the reduction of pollution in the amount of 420.8 t CHSK, 2 935.5 t BSK, and 4 882.4 t of insoluble substances.

The preparation of the SEF was initiated as the implementation agency of the tool



of ISPA, and in the year 2001 22 applications for support for water protection projects were registered.

7.3 FINANCIAL SUPPORT OF THE MINISTRY OF THE ENVIRONMENT

■ Programme for revitalisation of river systems.

■ In the year 2001, support for the implementation of measures was provided in the form of specific purpose grants in a total amount of CZK 239.759 million.

The programme for the revitalisation of river systems (PRRS) is formulated as a programme for the renewal, stabilisation and care of the water system of the countryside with the aim of creating conditions for the renewal of ecological stability and permanently sustainable use of the country; by the end of the year 2001, mo-

Table 7.2.1 Overall support of SEF implemented in the year 2001

Subject of support	Grant		Loan		Total support	
	CZK mill.	Share (%)	CZK mill.	Share (%)	CZK mill.	Share (%)
Entrepreneurial subjects						
– legal person	13,682	1,44	47,225	7,20	60,907	3,80
Civil associations	0,345	0,04	0,638	0,10	0,983	0,06
Churches	2,419	0,25	0	0,00	2,419	0,15
Non-profit-making and similar organisations						
Municipalities	14,183	1,50	6,908	1,05	21,091	1,31
Municipalities	853,583	90,00	581,793	88,71	1 435,377	89,47
Public budget	32,479	3,42	19,295	2,94	51,774	3,23
Grant-funded organisations	31,669	3,34	0	0,00	31,669	1,97
Established organisations	0,115	0,01	0	0,00	0,115	0,01
Total	948,475	100,00	655,860	100,00	1 604,335	100,00

re than one thousand measures had been implemented with the support of the programme.

The types and number of revitalisation measures supported in the year 2001 from the PRRS is shown clearly in table 7.3.1.

The greatest number of measures and financial resources in the year 2001 went on the renewal and construction of reservoirs, which are most frequently operated by municipalities and natural persons. The revitalisation is carried out almost exclusively by budget funded and grant funded organisations.

Municipalities had the greatest proportion for the implementation of revitalisation measures (49.7 % of all financial resources) and natural persons (29.6 %).

■ Programme of minor water management ecological constructions.

■ In the year 2001, the support provided exceeded CZK 329 million.

The aim of the programme for minor water management ecological constructions is to improve the environment through financial support for the collection and treatment of waste water in smaller municipalities. The subject of provision of financial resources in the year 2001 was the construction or reconstruction of sewer systems and waste water treatment plants in municipalities with from 500 to 2000 equivalent inhabitants (in the event of exceptional interest in the protection of nature, from 300 equivalent inhabitants).

In the year 2001, support totalling CZK 329.076 mil. was supplied from the programme for a total of 116 projects, of which 69 were unfinished projects in the amount of CZK 251.571 mil. (grants CZK 148.332 mil., repayable financial assistance CZK 103.239 mil.). Grants totalling CZK 77.505 mil. were provided to 47 municipalities for newly initiated constructions.

Table 7.3.1 Types of measures supported from the PRRS in the year 2001

Types of measures	Number of measures	Grants mill. CZK
a – revitalisation of natural functions of rivers	31	25,9
b – foundation and revitalisation of ecological stability elements associated with river regime	30	52,4
c – revitalisation of country's retention ability	148	145,1
d – reconstruction of technical elements and dredging of productive fishponds	5	5,4
e – construction of root treatment plants. establishment of artificial. wetlands	2	2,1
f – removal of transverse obstacles in rivers	3	8,9
Total	219	239,8

7. 4 FINANCIAL SUPPORT FROM INTERNATIONAL SOURCES

In the year 2001, many investments of a water management nature were also supported from foreign sources. Under the PHARE – LSIF programme, EUR 7 million (approximately CZK 240 million) was provided in Brno for the reconstruction of the sewer system. A total of EUR 1.3 mil. (approx. CZK 44 mil.) was provided from the PHARE – CBC programme for projects focussing on the collection and treatment of waste water. Out of these, for example, the project Třebíč – expansion of waste water treatment plant – region Vlára – was supported, as was the construction of a sewer system and the alteration of the waste water treatment plant, Klatovy – reconstruction of waste water treatment plant. Mariánské Lázně - sewers.

All projects were at the same time cofinanced from national sources (own re-

sources of investors and support from the state budget).

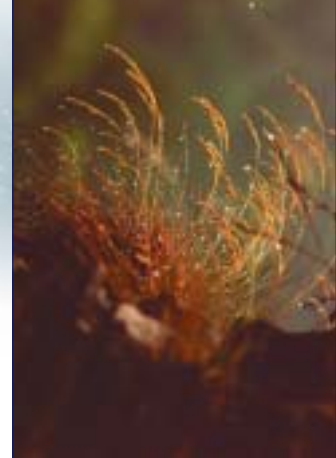
Under the programme Renewal of the Countryside, in the year 2001 25 projects of a water management nature were implemented (renewal, modernisation, and reconstruction of water supply systems and waste water treatment plants in small municipalities), and a total of an extra CZK 17 mil. was provided from the programme PHARE-CBC in addition to the grants of the Ministry For Local Development totalling CZK 6 mil.

Money from the loans of the European Investment Bank was used to support the construction of water supply systems, water treatment plants and waste water treatment plants in a total amount of CZK 222 million and for the reconstruction of embankments on the left bank of the river Morava in Bohuslavice – Vitošova in the amount of CZK 4.8 mil.





8. Legislative measures



8.1 WATER ACT

■ **On 28th June 2001, the Parliament of the Czech Republic passed the Act on Water and Amendments to Certain Acts.**

The law was declared on 25th July 2001 in the Collection of Legislation in part 98 under ref. No. 254/2001 Coll., and became effective on 1st January 2002, with the exception of the provisions of section 20, paragraph 1 concerning records of selected waterworks in the cadastral register of real estate, which becomes effective as of 1st January 2007 and with the exception of the provisions of section 135 valid on the date of the declaration of the law, which is an authorisation to utilise financial resources transferred to a special account of state financial assets for the payment of essential costs for the completion of the renewal of rivers and water management facilities destroyed during the disastrous floods of 1997, 1998 and 2000 and which also makes it possible to start implementing systematic preventative measures for flood protection.

Although the Water Act takes over the basic framework of the previous legal regulation, it does bring with it many new elements in connection with the altered conditions and approximation of European legal regulations, especially the so-called Outline Guidelines of Water Policy.

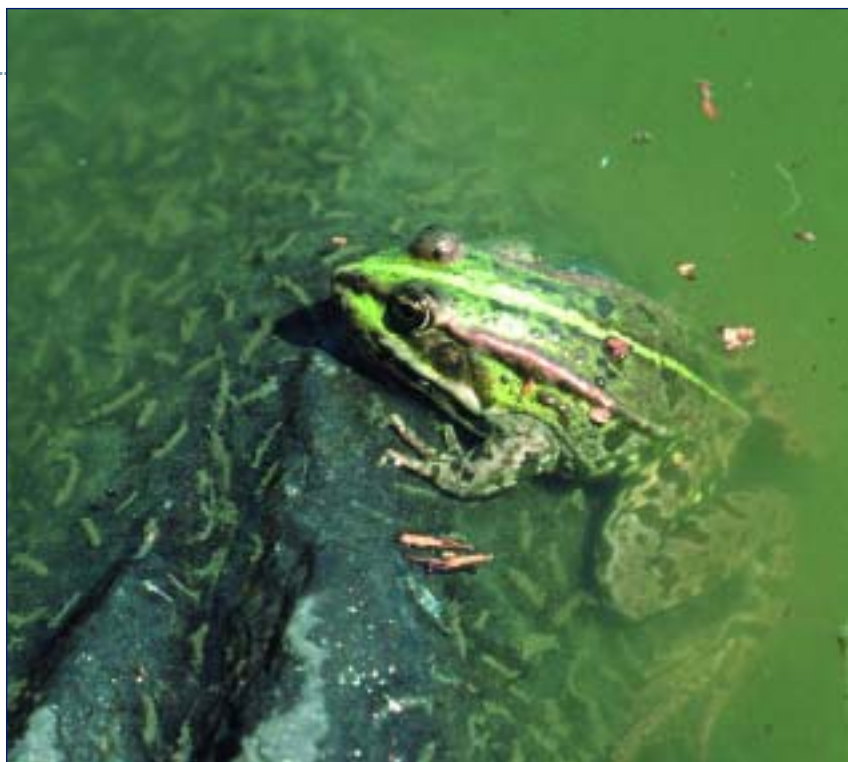
After designating the purpose and subject of the act and defining basic terms, the Water Act deals with rights to water and the legal nature of water; and it deals with the handling of water; including the prin-

ciples of the use of surface water for navigation, and permission, consent and expressions on the handling of surface and underground water; permission for certain activities and construction permission for waterworks; it designates the fundamentals of water-legal record keeping and the entry of data into the cadastral register of real estate. It also deals with the ascertaining and evaluation of the state of surface and underground water in relation to the information system of public administration.

The regulation of planning in the area of water and protection of water conditions and water sources is fundamental. The part applying to rivers and their beds and the management of rivers and the management of river basins is also based on new principles. The act also deals with the issue

of waterworks, their protection and use and the duties of owners, especially in relation to technical-safety supervision of waterworks. There is a detailed regulation of flood protection and the issue of fees. The act also deals with the performance of state administration and sanctions for the breach of the duties arising therefrom.

The provision of section 135 is of fundamental significance for initiating a higher level of investment construction in water management as it allows the transfer of financial resources from privatisation yields in the amount of CZK 2.5 billion to a special account of state financial assets for an increase in the currently allocated financial resources for covering essential expenses for the renewal of riverbeds and water-



8. Legislative measures

works in state ownership damaged as a result of the flood disasters of the years 1977, 1978 and 2000 and for the partial financing of the programme of flood prevention measures on rivers and water management facilities.

8.2 ACT CONCERNING WATER SUPPLY AND SEWER SYSTEM FOR PUBLIC USE

■ On 10th July 2001, the Parliament of the Czech Republic passed the Act Concerning the Water Supply and Sewer Systems for Public Use and Concerning the Amendment of Certain Acts.

The act was announced on 2nd August 2001 in the Collection of Laws in part 104 under No. 274/2001 Coll. and became effective on 1.1.2002.

After the designation of the purpose and subject of the law and the designation of basic terms, the Water Supply and Sewer Systems Act deals with the issue of plans for the development of water supply and sewer systems ensured by district authorities pursuant to the unified methodology prepared by the Ministry of Agriculture and operational and asset records. It deals with the operation of water supply and sewer systems, including the rights and duties of the owner and operator of a water supply or sewer system, and it designates the general technical requirements for the construction of water supply and sewer systems and water quality. The law also regulates the basic conditions of deliveries, measuring and prices of delivered water and waste water (one new item introduced is the possibility of a two-part form for water supply and sewerage charges) and it designates the principles for dealing with crisis situations and public services such as the protection of water supply systems and sewers. In the given area, the competence of bodies of state administration is dealt with and there is a designation of the basic duties of their individual de-

grees. The act also designates sanctions for the non-performance of duties arising therefrom and contains basic provisions for the protection of consumers and a technical and economic audit of water supply and sewer systems.

Due to the preparation coordinated in terms of time with the preparation of the new Water Act, there are close relationships and links between many of the provisions of these acts, for example in the area of state administration, permission, release of waste water, monitoring of water quality, rights to quality of sources of water for manufacturing water intended for human consumption etc.

In a manner similar to that of the Water Act, pursuant to provision 45 the Water Supply Systems and Sewers Act also enables a significant strengthening of state sup-

port for the construction of water supply and sewer systems, which is made possible by the transfer of financial assets from privatisation yields in the amount of CZK 2.5 billion to a special account of state financial assets for the partial financing of this construction.

8.3 IMPLEMENTING REGULATIONS FOR WATER ACT

The Water Act contains forty authorisations to issue implementing regulations.

■ In the year 2001, a total of four sub-judicial regulations were issued by the Ministry of Agriculture for a total of ten authorisations,



■ **Notice No. 431/2001 Coll., concerning the content of the water balance, the method of its compilation and information for the water balance.**

The notice is issued for section 22 of the Water Act; it designates the content of the water balance, the method of its compilation, the scope and method of the notification of data about abstractions of surface water, abstractions of underground water, release of waste water or mine water into surface water or underground water, the use of natural healing springs or sources of natural mineral water and waters which are reserved minerals, and about data concerning the damming or accumulation of surface water by waterworks. The compilation of the water balance is subject to the regular collection and processing of data. The notice designates the details of the notification of data for the water balance from liable subjects by a definition of notification in the form of the printed forms shown in their appendices Nos. 1 to 5.

The output data of the water balance serves for the performance of public administration according to the water act, and in particular it designates the bases for permitting the handling of surface or underground water (section 8), for planning in the field of water (sections 23 to 26) and for the administration of river basins (section 54) and for a summary evaluation of the state of surface and underground water and the submission of reports concerning its state.

Data and output from the water balance will be stored in the public administration information system [section 22, paragraph 3, letter b) of the Water Act]. The data serves for checking selected data concerning the amount of waste water released and the release of pollution into surface water or underground water submitted by polluters to water-law authorities pursuant to the implementing regulation for section 91, 92 and 94 of the Water Act.

■ **Notice of the Ministry of Agriculture No. 432/2001 Coll., concerning documents of applications**

and concerning decisions or expression and concerning the particulars of permissions, consents and expressions of a water-law authority.

The notice is issued for section 115 of the Water Act in order to improve and unify the performance of state administration for the area of the use and protection of water, which is today mostly carried out by district authorities and which will be transferred from district authorities to reputed municipalities as part of the reform of public administration, where it is possible to anticipate problems at the beginning of their competence during the performance of state administration at the level of first instance decision making.

The notice designates the documents which the applicant will submit to the wa-

ter-law authority in cases of applications for permission to handle surface or underground water; permission for certain activities and building permits for waterworks. The notice also specifies the particulars of permission, consents and expressions issued according to the Water Act for applications passed to a water-law authority. The relevant examples of applications are in the appendix to the notice.

The Act Concerning Water and Amendments to Certain Acts (the Water Act), Act No. 254/2001 Coll., becoming effective, resulted in the cancellation of, inter alia, notice No. 28/1975 Coll., which designated water management courses and their river basins and which designates a list of rivers which are significant from the water management aspect and the cancellation of notice No. 176/1999 Coll., which designates a list of border rivers constituting the state border.



■ **Notice of the Ministry of Agriculture No. 470/2001 Coll., which designates a list of important rivers and the method of carrying out activities associated with the management of rivers.**

The notice is issued for section 47 and 48 of the Water Act. The notice designates a list of important rivers. The list of 620 rivers of water management significance, 73 water management flows or sections thereof and 397 border rivers, compiled pursuant to the old regulations was processed into one list of important rivers which contains a total of 800 rivers with a length of 15,400 km.

The notice also designates the general duties of administrators of rivers beginning with monitoring of the state of river beds, the designated frequency of control inspections, description of the method of care for river beds and waterworks in the beds of rivers essential for ensuring the functions of the river. It also describes the method of maintenance of river beds and the duty of administrators for the operation and maintenance of water works. Apart from that specified, it imposes upon the administrators of rivers the duty to create conditions allowing authorised handling of water for other subjects as well and the duty to cooperate during the liquidation of emergencies on a river.

The notice also specifies a list of particulars which an application for the designation of the administrator of a small river must contain. It requires that the identification data of an applicant be shown and the identification of a minor river which is the subject of the application and a due justification of an application where the reason for the change of administrator is shown, including proposal for performance of administration. The applicant thereby shows its relationship to a minor river the administration of which the applicant is applying for, and the applicant thereby also shows its justification for the performance of the administration of a minor river.

■ **Notice of the Ministry of Agriculture No. 471/2001 Coll., concerning technical-safety supervision of waterworks.**

The notice is issued for section 61 and 62 of the Water Act. Technical-safety supervision is expert activity ensuring the technical condition of waterworks from the aspect of safety and stability and the possible causes of faults and draft measures for rectification. The new legal regulation defines the details of the duties of the owners and users of waterworks. In order to perform the duties designated in section 62, paragraph 4, letter a)

of the Water Act, cooperation is required for waterworks of the 1st and 2nd category with an expertly competent legal person authorised to this end by the Ministry of Agriculture. For waterworks of the 3rd and 4th category, the owner or the builder can carry out technical-safety supervision.

The notice defines waterworks subject to technical-safety supervision (designated waterworks), it designates the criteria for categorisation of the intended waterworks into the individual categories, it regulates the content and frequency of the performance of supervision for the individual categories of waterworks in the individual stages of their preparation, construction, reconstruction or operation and the scope of the participation of the owner or builder in supervision.

■ **In the year 2001 many other notices were prepared for the Water Act which are progressively being announced in the year 2002.**

They are, for example:

■ Notice pursuant to section 10 paragraph 3 concerning the method and frequency of measuring the amount and quality of water (notice No. 20/2002 Coll.)

■ Notice pursuant to section 59 paragraph 1 concerning the particulars of the handling rules and operational rules for waterworks (notice No. 195/2002 Coll.)

■ Notice pursuant to section 7 paragraph 5, which designates reservoirs and rivers on which navigation by vessels with combustion engines is forbidden and which designates the scope and conditions of the use of surface water for navigation (notice No. 241/2002 Coll.)

■ Notice pursuant to section 25 paragraph 2 concerning the areas of the river basins

■ Notice pursuant to section 56 paragraph 3, which designates the constructions for water management amelioration of lands and the parts thereof and which designates the method and scope of care for these constructions (notice No. 225/2002 Coll.)



8.4 NOTICE FOR WATER SUPPLY AND SEWER SYSTEM ACT

On 16th November 2001, the Ministry of Agriculture issued notice No. 428/2001 Coll., which accompanies Act No. 274/2001 Coll., Concerning Water Supply and Sewer Systems for Public Needs and Concerning the Amendment of Certain Acts. Upon the day of its effectiveness, this notice cancelled the effectiveness of notice No. 144/1978 Coll., concerning public water supply and public sewer systems and notice No. 185/1988 Coll., which amends notice No. 144/1978 Coll.

The notice, which accompanies Act No. 274/2001 Coll., Concerning Water Supply and Sewer Systems for Public Need and Concerning Amendment to Certain Acts (The Water Supply and Sewer System Act) designates the scope and method of processing the development plan for water supply and sewer systems and the keeping of property and operational records of water supply and sewer systems also covering the requirements for a plan of inspections in the course of the production of drinking water and for a plan of inspections of the extent of pollution of waste water and sludge. The notice also stipulates the particulars of an application for permission to operate a water supply or sewer system, and the particulars of a contract for the supply of water and collection of waste water. It also designates the method of calculating the compensation of losses during the unauthorised abstraction of water or unauthorised discharge of waste water. One important part of the notice in regard of approximation to the relevant directives of the EU is the provision concerning technical demands for the construction of water supply systems, the treatment of waste water, project documentation and the construction and operation of a sewer network and waste water treatment plants. The notice also designates indicators for the quality of untreated water taken from surface or underground water sources for the purposes of processing into drinking water; the particulars of the sewer system, requirements for an analysis of sam-



ples of waste water and the method of designating the amount of water consumed without measurement and also general conditions for measuring the amount of supplied water and method of calculating the amount of discharged waste water and rain water into the sewers without measuring. An important part of the notice are the provisions on the method of calculating the fixed element of water supply and sewerage charges during payment in a dual-element form and for the signature of the newly introduced technical audit of a water supply and sewer system.

8.5 INSPECTION OF THE EXERCISE OF STATE ADMINISTRATION IN WATER MANAGEMENT

Within the framework of the supervision activity of a central body, in the year 2001 the Ministry of Agriculture carried out a series of negotiations with individual regional authorities with the participation of the relevant district authorities where the fundamental principles of performance of state administration in water management under new conditions was dealt with – in particular the creation of regions, the new Water Act and the corresponding adjustment to competencies arising therefrom. In view of the fact that in the year

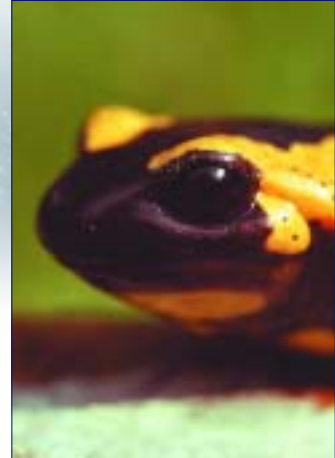
2001 the regions began to operate in a wholly new manner, no specialised inspection and supervision events of the Ministry of Agriculture in the regions or of the regions at the district authorities took place within the framework of the performance of state administration in water management. But a timetable was planned for inspections of the performance of state administration in water management in the competence of the Ministry of Agriculture in the year 2002.

A detailed report and evaluation of the inspection activities carried out within the framework of supreme water-law supervision in the sense of section 111 of the Water Act will be submitted to the government in the year 2003.

Within the framework of the inspection and supervision activities of supreme water-law supervision under the management of the Ministry of the Environment carried out by the territorial departments, in the year 2001 the individual OVSSs carried out 179 supervision projects (of which 30 expressly concentrated on the protection of water) at district authorities, regional authorities, CHKO, the Czech Environmental Inspectorate, the administrations of national parks and at significant polluters. A timetable for inspections of the performance of state administration in the competence of the Ministry of the Environment for the year 2002 was also planned and approved. ■



9 International Relations



9.1 INTERNATIONAL COOPERATION ON BORDER WATERS

In the year 2001, international cooperation on border waters continued with Germany, Austria, Poland and Slovakia.

From 24. to 26. 9. 2001 the fourth meeting of the Czech-German Committee for Border Waters (the Committee) was held, at which the results were discussed of the meetings of the Standing Committees for the Bavarian and Saxony Border Sector held in the year 2001 and the joint fundamentals for the individual areas of cooperation on border waters. The Committee also dealt with questions associated with its participation in the implementation of the Outline Directive, the crossing of state borders by authorised persons, the updating of lists of border waters and certain specific tasks of cooperation such as the protection of pearl mussels in border waters.

From 26. 5. to 1. 6. 2001 the ninth meeting of the Czech-Austrian Committee for Border Waters (the Committee) was held at which there was discussion of regular questions of the maintenance of border rivers, the updating of the Directives for the Warning Service on Border Waters, questions of the supply of water and discharge of waste water and care for water quality, the issue of hydrology etc. The Committee also dealt with the updating of the list of representative unit prices.

The discussion of the representatives of the Government of the Czech Republic and the Government of the Polish Republic for cooperation on border waters once again did not take place in the year 2001, and cooperation on border waters with Poland

occurred only at the level of the four working groups. In the year 2001, work began on the preparation of a new Agreement between the Government of the Czech Republic and the Government of the Polish Republic concerning cooperation on border waters.

From 11. to 14. 12. 2001 the 2nd meeting of the Czech-Slovak Committee for Border Waters took place in compliance with the Agreement between the Government of the Czech Republic and the Government of the Slovak Republic concerning cooperation on border waters signed in December 1999. The Committee dealt with the composition of working groups for technical questions, for hydrology and for the protection

of waters and their activities, and it discussed the individual technical measures which apply to joint border waters, and the further procedure was agreed.

9.2 REGIONAL COOPERATION IN THE RIVER BASIN OF THE ELBE, THE Odra, THE DANUBE AND THE TREATY ON THE PROTECTION AND USE OF BORDER RIVERS AND INTERNATIONAL LAKES

In the year 2001 there was a continuation of the active participation of the Czech



9. International Relations

Republic in international committees for the protection of the Elbe, Danube and Odra river basins.

All the committees referred to took steps to implement the Outline Directive in the relevant international river basins. To this end coordination and working groups were established in all the committees in order to carry out the joint implementation in the relevant international river basins.

In October 2001 the 14th annual meeting of the International Committee for the Protection of the Elbe (ICPE) took place. Since the foundation of the ICPE in 1990, 239 larger municipal waste water treatment plants with a total capacity of 25.5 million EI have been built or modernised in the Elbe river basin, and 61 of them were in the Czech Republic.

The quality of water in the Elbe is constantly improving, which is shown by the fact that today 94 species of fish are recorded in the Elbe as opposed to the state in 1990, when only 68 types of fish were recorded in the Elbe. In the year 2001, under the framework of the ICPE, work on the processing of the Action Plan for Flood Protection in the Elbe river basin continued with intensity. Information about the activity of the ICPE is available to the public via the Internet at the address www.wikse-mkol.de.

As part of cooperation in the International Committee for the Protection of the Danube (ICPD), in the year 2001 the preparation began for the updating of the basic documents of the ICPD, i.e., the Rules of Procedure, the Financial Rules, the Working Code and other associated documents. Two new working groups began to work - the group for Integrated Management and the Ad-hoc Group for Ecology - with the aim of implementing the Outline Directive in the river basin of the Danube via the ICPD. A control system was established for the performance of the Danube Joint Action Programme. The information system of the ICPD called "DANUBIS" was gradually augmented and improved, and it is available at the Internet address www.icpdr.org/danubis. The fourth plenary meeting of the ICPD took place from 29th to 30th November 2001.



In the year 2001, the International Committee for the Protection of the Odra from Pollution (ICPO) dealt with the preparation of the Rules of Procedure, the Fundamentals of Granting Observer Status to National and International Organisations and the alteration of the mandates of the working groups and plans of their activities. The Fundamentals of the Action Plan for the Protection of the Odra from Pollution for the period 2003 – 2007 were prepared and discussed, as were the first version of the Action Plan for Flood Protection and the document Flood Notification and Forecast Service. The meeting of the ICPO was held from 17. to 18. 12. 2001.

Since May 2000 the Czech Republic has been a party to the Treaty on the Protection and Utilisation of Border Rivers and International Lakes. In the year 2001 Czech experts took part in many associated activities (the meetings of the working groups Monitoring and Evaluation, Water Manage-

ment and seminars on the theme of underground water; the prevention of accidents, management in unified river basins). Under the Treaty work also continued on the Pilot Project Morava. The Czech Republic actively contributed to the preparation of a document concerning civil liability for cross border water pollution caused by dangerous activities.

In cooperation with the World Health Organisation, the Protocol on Water and Health was prepared for the Treaty. The ratification process for the protocol was terminated in the Czech Republic in November 2001.

9.3 PREPARATION OF CZECH REPUBLIC FOR ACCESSION TO THE EUROPEAN UNION

■ In the year 2001, the chapter "Environment" was concluded.



The process of direct negotiations between the EU and the Czech Republic on chapter 22, the Environment, initiated by the screening negotiations in January 1999 was concluded on 1st June 2001 by the handover of the joint position of the EU on this chapter.

By the date of accession, the Czech Republic will accept the relevant programmes of measures for the implementation of directives, the implementation of which in practice will take some time after the date of accession. For the directive concerning dangerous substances, the existing quality standards of the Union should be met by the date of accession, and the relevant programmes of measures should be implemented by the end of the year 2009. For the directive concerning nitrates, the programmes of measures should be accepted by the date of accession and should be implemented by 2009. For the directive concerning drinking water, all the quality requirements should be met by the date of accession, with the possibility of utilising derogation.

■ The Czech Republic has just one transition period in the area of water protection – to the end of the year 2010 – in order to meet certain requirements of directive 91/271/EU concerning the treatment of municipal waste water.

The transition period is intended for the construction of sewer systems and municipal waste water treatment plants in agglomerations with from 2000 to 10,000 EI and the intensification (removal of nitrates and phosphates) of municipal waste water treatment plants with more than 10,000 EIP in sensitive areas. It is also assumed that the entire Czech Republic will be declared a sensitive area, which will result in a duty to ensure a higher standard of treatment of waste water in agglomerations with an equivalent population higher than 10,000.

The estimate for overall costs for the implementation of all directives in the field of the protection of water is approximately CZK 170 billion, of which (with the spe-

cification of the financial needs within the framework of the first stage of the establishment of the plan of concrete measures necessary for the implementation of Directive 91/271/EU concerning the treatment of municipal waste water; the result of which are the so-called regional implementation plans for the individual regions) the need for implementation of Directive 91/271/EU was estimated at approximately 63 billion crowns in 2001 prices. By the year 2010 there is an assumption of a need for the implementation of corresponding measures in a volume of approximately CZK 81 billion, with annual inflation of 4.5 % taken into account.

In connection with the process of approximation, much important conceptual and strategic materials have been processed which have been discussed by the government. In addition to the National Programme For the Preparation of the Czech Republic for Accession to the European Union and the Positioning Document for Chapter 22 – the Environment – formulating the short-term and medium-term tasks and intentions of the Czech Republic in the process of approximation, the Implementation Plan for the area of the Environment was also updated. In this extensive material, which the government took due note of in November 2001, the transposition and implementation tasks were expounded in detail for the individual directives, and the dates of the individual

steps and responsible subjects were designated. An estimate is also made in it of the costs and personnel needs associated with the implementation of the directives in the area of the environment.

In the year 2001 the Strategy for the Financing of Implementation of Directive 91/271/EEC concerning the treatment of municipal waste water was updated, and the Strategy for the Financing of Implementation of the Directive Concerning Nitrates from Agricultural Sources was processed, which the government took due note of in September 2001.

In the year 2001, under the PHARE programme, a twinning project called "Implementation Strategy in the Area of Water in the Czech Republic", which started in September 2000 and ended in April 2002 took place in support of implementation. The project, which was implemented by teams of experts from Great Britain, Austria and France focussed on the implementation of directives concerning dangerous substances in surface and underground water; concerning nitrates from agricultural sources and concerning drinking water.

In the year 2001 the European Commission approved another follow up PHARE twinning project focussing on the implementation of the Outline Directive. The project will once again be implemented by a consortium of Great Britain, France and Austria and will run from May 2002 to November 2003. ■





10. Fishery and fishpond management



10.1 FISHERY AND FISHPOND MANAGEMENT

■ The year 2001 can be characterised as average in the field of fish farming.

Although there was a slight drop against year 2000 in the production of fish, the result for the year 2001 is still above the average for the years 1993-2000. Over the last five years there is, however, evident a slight drop in the consumption of freshwater fish, which is approximately 1.0 kg/inhabitant/year. In the year 2001, approximately 10 % of fish production (i.e., 1/5 of consumption) was processed into fish products, and approximately half of production was exported.

The development in the production of market fish for the period 1992 – 2001 is documented by table 10.1.



Table 10.1 Development of production for the period 1992 – 2001 in thousands of tons of live weight

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Production of live weight	20,8	20,1	18,7	18,7	18,2	17,6	17,2	18,8	19,5	19,2

Source: Fishery Federation of the Czech Republic

Table 10.2 Estimate for catch of fish from fishponds and flowing rivers in the Czech Republic in the year 2001 in thousands of tons of live weight

Indicator	Production of market fish	Caught with rod and line (self-supply)	Total
Market fish total	19,2	4,3	23,5
Of this carp	16,8	3,1	20,0

Source: Fishery Association of Czech Republic

The dominant fish is carp (approximately 87 % of overall production) followed by herbivorous fish (more than 5 %) and salmonoid fish (slightly less than 4 %).

Damage to fish caused by predators (especially the common cormorant, Eurasian otter and the grey heron) in the year 2001 exceeded CZK 325 million.

A significant role is played in production fisheries in the Czech Republic by the Fishery Federation of the Czech Republic – a professional grouping of breeders of fish and poultry and processors which brings together more than fifty organisations and interest groups such as fishery federations, breeders and producers of fish and fish

10. Fishery and fishpond management

products, universities and other organisations. The number of members of the federation has reached a stable level of 55 subjects, of which 45 are legal persons and 10 are natural persons.

In the year 2001, breeders (39 subjects) of the Fishery Federation of the Czech Republic produced a total of 16,693 tons of market fish, mainly from fish ponds (95.9 %), 3.8 % was gained from special facilities with a dominant breeding of trout, and the rest (0.3 %) were caught in reservoirs. One part of Czech productive fishery management is the breeding of salmonoid fish, which is carried on at special farms of which there are approximately thirty, with an overall annual production of approximately 800 tons. In several cases the fish are reared in floating cages in valley reservoirs or in specialised buildings.

The results of fishing in fishing reserves of the Czech and Moravian Fishery Association are characterised in tables 10.3 and 10.4.

Table 10.3 Catches in reserves of the Czech Fishery Association

Year	Non-trout waters			Trout waters		
	Catch (thousands of fish)	Catch (t)	Average (1 kg/ha)	Catch (thousands of fish)	Catch (t)	Average (1 kg/ha)
1991	2 088	2 107,4	90,2	318	128,2	40,05
1992	2 241	2 337,9	101,3	318	135,0	38,72
1993	2 169	2 393,4	103,7	277	116,5	33,41
1994	2 466	2 768,5	98,6	312	122,9	35,60
1995	2 405	2 766,9	92,5	323	131,5	38,56
1996	2 045	2 454,0	89,2	309	118,0	25,008
1997	2 063	2 359,4	80,2	315	118,7	36,205
1998	2 310	2 803,0	92,6	334	127,4	40,03
1999	2 498	2 992,3	98,4	337	124,8	39,18
2000	2 554	3 312,5	107,8	318	128,2	40,50
2001	2 546	3 374,5	109,18	332	130,5	39,52

Source: Czech Fishery Association

Table 10.4 Catches in reserves of Moravian Fishery Association

Year	Non-trout waters			Trout waters		
	Catch (thousands of fish)	Catch (t)	Average (1 kg/ha)	Catch (thousands of fish)	Catch (t)	Average (1 kg/ha)
1991	633	730,3	107,1	115	57,3	85,58
1992	728	802,6	116,2	113	57,1	94,12
1993	720	800,1	115,4	87	46,5	85,85
1994	838	1 013,1	150,7	98	54,5	107,70
1995	796	1 003,0	148,9	104	58,1	107,70
1996	706	898,7	134,2	91	53,4	98,20
1997	650	812,5	121,9	99	57,4	104,64
1998	725	958,1	143,0	116	64,6	117,79
1999	767	1 010,5	150,6	107	62,0	113,05
2000	778	1 148,5	168,9	100	61,5	114,57
2001	730	1 105,7	162,6	92,3	35,5	67,88

Source: Moravian Fishery Association



10.2 STATE OF FISHPONDS

■ **It is not possible to be satisfied with the technical condition of fishponds.**

The condition of most fishponds is unsatisfactory for the following reasons in particular:

- Embankments and functional objects at a significant number of fishponds are damaged to varying degrees, most of them being so far functional but with a tendency to get worse.
- Embankments are poorly accessible and difficult to see for regular inspection activity as a result of overgrown and unmanaged vegetation.
- Fishponds (especially the regional ones) are to varying degrees clogged up with mud, the quality of which is often problematic.

■ **In compliance with the relevant fundamentals, in the year 2001 the Ministry of Agriculture provided more than CZK 90 mil. in support of the dredging of fishponds.**

In the year 2001, 217 applications were submitted to the Ministry of Agriculture of the Czech Republic for the dredging of fishponds. The overall costs for these applications were CZK 517.614 mil. In the year 2001, with regard for financial resources dredging was carried out primarily at smaller fishponds. The Ministry of Agriculture provided grants for the dredging of 79 fishponds in the amount of CZK 90.142 mil., i.e., 8 % more than in the year 2000. 590 thousand m³ of fishpond sediment was dredged up. ■





11 Research and development in water management



11.1 RESEARCH AND DEVELOPMENT IN THE COMPETENCE OF THE MINISTRY OF AGRICULTURE

■ In the year 2001, specific research and development in the area of water management was financed by the Ministry of Agriculture as part of research projects to the extent of CZK 19 mil.

Out of the overall amount, the following were supported:

a) completion of research programmes 1996 - 2000 (2001) in programme II (non-entrepreneurial research) in the total amount of CZK 2.5 mil. on:

- 2 projects in sub-programme IIA Management of Water in the Countryside and Protection of the Hydrosphere,
- 2 projects in the sub-programme IIB Technology and Economics of Water Supply and Sewer Systems.

b) Research programme 2000-2004 for projects in selected thematic areas in the total amount of CZK 16 mil. on:

- 2 projects in area A) Protection, Preservation and Constant Use of Basic Natural Resources in Agriculture and for the Development of the Rural Space,
- 8 projects in area F) Water Management, Care for Rivers, Flood Protection,
- 4 projects in area G) Waterworks Engineering, Sewerage and Treatment Plant Engineering.

neering, Sewerage and Treatment Plant Engineering.

A summarised overview of the projects dealt with is shown in tables 11.1 and 11.2. The focus of the projects is on comprehensive research into the field of protection and use of water as a natural non-re-

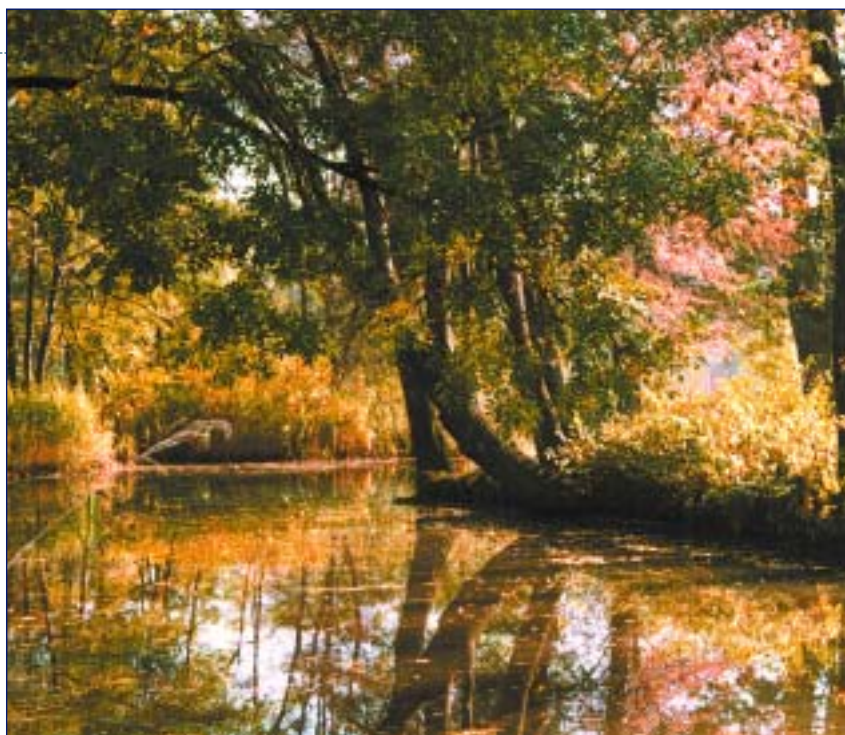


Table 11.1.1 Projects dealt with in the year 2001 within the framework of the Research Programmes 1996-2000 (2001)

Name of project	Coordinator	Period of solving
In sub-programme 11A – Management of Water in the Country and Protection of the Hydrosphere		
Use of the retention potential of the country during the reduction of flood flows and draft measures for their harmless diversion	VÚMOP Prague 5	1999-2001
Fundamentals for the creation and use of zones of differentiated protection of water in river basins of water management reservoirs	VÚMOP Prague 5	1999-2001
In sub-programme 11B – Technology and Economics of Water Supply And Sewer Systems		
Use of findings from population dynamic of activated sludge for dealing with operational problems of systems for the biological removal of nutrients	VŠCHT Prague 6	1999-2001
Hygienisation of sludge from treatment plants	VŠCHT Prague 6	1999-2001

Source: Ministry of Agriculture

11. Research and development in water management

Table 11.1.2 Projects dealt with in the year 2001 within the framework of Research Programmes 2000 – 2004

Name of project	Coordinator	Period of solving
In area A) Protection, Preservation and Constant Use of Basic Natural Resources in Agriculture and for the Development of the Rural Space		
Application of system for alternative management of soil and water protection in the country	VÚMOP Prague 5	2000-2004
Anti-erosion and anti-flood measures in small agricultural and forest river basins	VÚMOP Prague 5	2000-2002
In area F) Water Management, Care for Rivers, Flood Protection		
Analysis of flood damage and its use for prevention	ČVUT Prague 6	2000-2002
Integrated set of data for formalised evaluation of non-productive functions (services) of water management	Prof. Ing. Říha, DrSc. Prague 9	2000-2002
Evaluation of water management measures in the field of supply of drinking water and elimination of waste water	VRV, a.s. Prague	2001
Application of risk analysis in the process of selection of measures for flood protection	DHI Hydroinform, a.s. Prague	2001
Proposal and use of territorial information system of hydroamelioration constructions	VÚMOP Prague 5	2001-2002
Evaluation of suitability of application of rain-drainage models with respect to the simulation of flood conditions for localities on the territory of the Czech Republic	ČZÚ Praha 6	2001-2002
Optimisation of system of comprehensive measures for the minimisation of undesirable effects of surface drainage in river basins and its application in the process of land regulations	VÚMOP Prague 5	2001-2002
Verification of methods for deducing hydrological data for the evaluation of the safety of waterworks during floods	ČHMÚ Prague 4	2001-2004
In area G) Waterworks Engineering, Sewerage and Treatment Plant Engineering		
Optimisation of processes of treatment of drinking water making possible the separation of oocyst protozoan <i>Cryptosporidium</i> spp.	W&ET Team České Budějovice	2000-2004
Integrated approach during the plans for reconstruction and modernisation of waste water treatment plants	VÚV TGM Prague 6	2000-2004
Research into effect of treatment of water on its quality with extended retention in the distribution network	VÚV TGM Prague 6	2001-2004
Reconstruction and modernisation of water treatment plants and water supply systems	VÚV TGM Prague 6	2001-2004

Source: Ministry of Agriculture

newable resource, on questions of management of water in the soil and in the country with the aim of increasing retention of water in the country, on the issue of care for rivers and flood protection from the aspect of applying public interest and on resolving the problems associated with the ensuring of high-quality drinking water and the improvement of treatment processes.

■ **Research and development in the fields of dealing with the problems of the protection, preservation and continuous use of natural resources – soil and water in agriculture and for the development of the rural space is ensured by the Research Institute for the Amelioration and Reclamation of Soil Prague.**

Within the framework of the projects shown in the overviews of research pro-

jects for the year 2001, the following problem areas were dealt with: the use of the retention potential of the country during a reduction of flood flows along with a plan for their harmless diversion, fundamentals and criteria for the designation and creation of zones of differentiated protection of soil and water; including their use and the system of management as the basis for a new concept of water protection; data was also prepared for ascertaining the retention of the soil and country in river basins during floods and the evaluation of the effectiveness of measures for its increase, anti-erosion and anti-flood measures in small agricultural and forest river basins, the application of the system of alternative management of soil and water protection in the country.

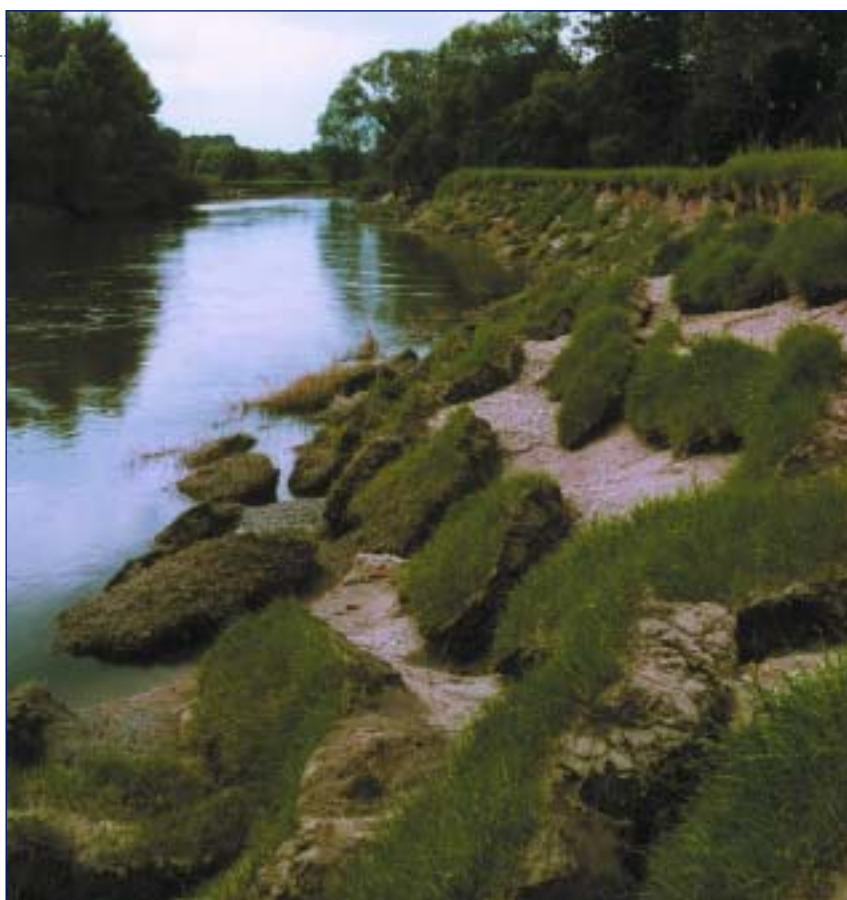
The "Comprehensive resolution of the problems of management of the soil, water and country" focuses on the hydrological processes in the country, the creation of unified systems of preventative protection of land and country against extreme hydro-

logical situations, management of drainage and irrigation systems, revitalisation of small streams and regulation of biotopes of fishponds, concept of countryside planning and water management in the context of land regulations and the improvement of applications of data and geographic systems for land and water.

11.2 RESEARCH AND DEVELOPMENT IN THE COMPETENCE OF THE MINISTRY OF THE ENVIRONMENT

■ **Research and development in the competence of the Ministry of the Environment is concentrated in the T. G. M. Water Management Research Institute Prague.**

Science and research projects were dealt with in the field of water protection



within the framework of the programme of the Governmental Board for research and development HYDROSFÉRA II, especially projects of water management solutions for the recultivation and revitalisation of the Sub-Ore Mountains Coal Basin (the task was completed in the year 2001), the Designation of the broad-area pollution of

surface and underground waters in the Czech Republic, Research into methods and the development of forecast models for the purposes of flood protection, Predictive models of river ecosystems (completed in the year 2001), System of measures in hydrological river basins for the amelioration of the harmful effects of flo-

ods, the Incidence and movement of dangerous substances in the hydrosphere of the Czech Republic and the Renewal of the contiguous nature of the river Elbe by making fish crossing points passable. In the year 2001, work began on dealing with the project Evaluation of Quantitative and Chemical State of Underground Waters and the Impact of Chemism on Conditions for the Existence of Pearl Mussels.

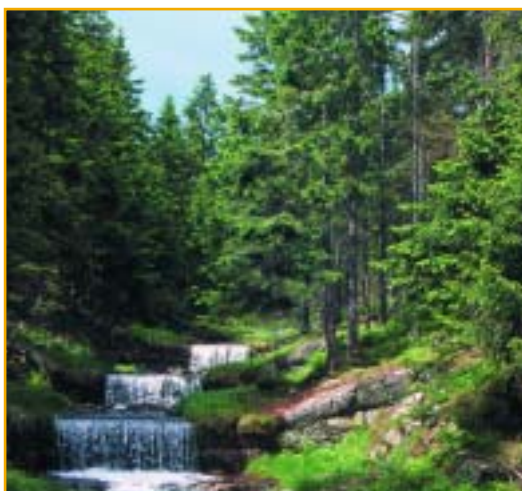
The protection of waters in the narrower sense of the word also applies to newly initiated tasks, carried on as part of the programme "Information about the Environment". The system of measures in hydrological river basins for the amelioration of the harmful consequences of floods – development of the GIS application, Integration of Data of Remote Research of the Country in Order to Secure the Information Needs of Care for Selected Elements of the Environment (flood protection, water protection) and Methodology for Creation of Cartographic Output from Digital Data.

A total of CZK 57.585 million out of the budget chapters of the Ministry of the Environment was spent on these projects in the year 2001.

In addition to this, many other research tasks were dealt with within the framework of the contribution of the founder of VÚV TGM (Ministry of the Environment), directed mainly towards support for the implementation of the Outline Directives and other relevant legal regulations of the EU. ■

Table 11.2.1 Projects VaV from the programme HYDROSFÉRA dealt with in the year 2001 managed by the Ministry of the Environment

Name of project	coordinator	Period of solution
VaV/510/98 Water Management Solution to the Recultivation and Revitalisation of the Sub-Ore Mountains Coal Basin	HDP CZ, a.s.	1998 - 2001
VaV/510/3/98 Odra II	VÚV	1998 - 2002
VaV/510/4/98 Limiting of Broad Area Pollution of Surface and Underground Waters in the Czech Republic	VÚV	1998 - 2002
VaV/510/1/99 Protection and Use of Water Resources as Part of Integrated River Basin (Project Elbe III)	VÚV	1999 - 2002
VaV/510/2/99 Research into Methods and Development of Forecast Models for the Needs of Flood Protection	ČHMÚ	1999 - 2002
VaV/510/7/99 Predictive models for river ecosystems	VÚV	1999 - 2001
VaV/650/1/00 Project Morava III	VÚV	2000 - 2002
VaV/650/2/00 System of measures in Hydrological River Systems for the Reduction of the Harmful Effects of Floods	ČVUT	2000 - 2002
VaV/650/3/00 Incidence and Movement of Dangerous Substances in the Hydrosphere of the Czech Republic	ČHMÚ	2000 - 2002
VaV/650/4/00 Renewal of Contiguous Nature of the River Elbe by Making Fish Crossing Points Passable	VÚV	2000 - 2002
VaV/650/1/01 Evaluation of Quantitative and Chemical State of Underground Water	VÚV	2001 - 2003
VaV/650/4/01 Effect of Chemism on the Conditions for the Existence of the Population of Pearl Mussels	VÚV	2001 - 2002
VaV/650/2/003 System of Measures in Hydrological River Basins for the Reduction of Harmful Consequences of Floods – Development of Application of GIS	VÚGTK	2001 - 2003
VaV/650/7/01 Integration of data of DPZ for the Information Securing of Selected Elements of the Environment (Flood Protection, Protection of Water)	VÚV	2001 - 2003
VaV/650/8/01 Methodology of Creation of Cartographic Outputs from Digital Data	VÚV	2001 - 2003



Report

on the state of water management in the Czech Republic in the year 2001

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