

# Water Supply and Sewerage Systems in the Czech Republic



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# 1. Basic information about water conditions in the Czech Republic

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The Czech Republic has a total area of 78,866 km<sup>2</sup> and lies between two neighbouring mountain ranges – the Czech Highlands and the Carpathians, which have greatly differing geological ages and characters. The hilly terrain is distinguished by significant differences in elevation (1602 metres above sea level for the peak of the mountain Sněžka and 115 metres above sea level for the valley of the river Elbe at the state border). Highlands and lowlands are represented on a relatively small territory; most of the territory has a height above sea level of 200-600 metres.

The long-term average for annual precipitation varies greatly in the Czech Republic depending on the height above sea level and the relief. The driest area in North-West Bohemia has an average annual total of just 450 mm, whereas the greatest average is on the ridges of the Jizerské mountains with 1700 mm. The average annual precipitation in the Czech Republic is 668 mm.

Water resources (water wealth) in the Czech Republic are replenished almost exclusively by precipitation. Their volume in the long-term average represents 16.7 billion m<sup>3</sup> per year, which represents 1621 m<sup>3</sup> per inhabitant; fluctuation between wet and dry years is from 8 to 19 billion m<sup>3</sup>. The Czech Republic is thus a country with relatively moderate and unevenly distributed resources of water; in comparison with the average in the countries of the EU, the water resources of the Czech Republic are approximately half (per unit area and per inhabitant). From approximately 30 % to 50 % of water resources can be considered useable.

The territory of the Czech Republic is an important European watershed with the upper reaches of basins of large European Rivers such as the Elbe the Odra and the Danube (on the territory of the Czech Republic, the basin of the river Morava. The average density of the network of natural and man-made water courses in the Czech Republic,



the total length of which exceeds 76,000 km, is 0.96 km of water course per km<sup>2</sup> of territory.

On the water courses of importance in terms of water management, the long-term trend of reducing released pollutants is having a positive impact on the basic parameters of conventional pollu-

tion of surface water. Despite the implementation of many measures for sources of pollution and the achievement of a significant improvement in the elimination of heavy metals and organic substances in water, not all problems associated with the quality of surface water have yet been resolved.

# 2.

## Selected information of water balance for managing water in the Czech Republic in the year 2000

### 2.1 Abstractions of surface water

In the year 2000 there was a downward overall trend in abstractions of surface water, down by 3.9% in comparison with 1999

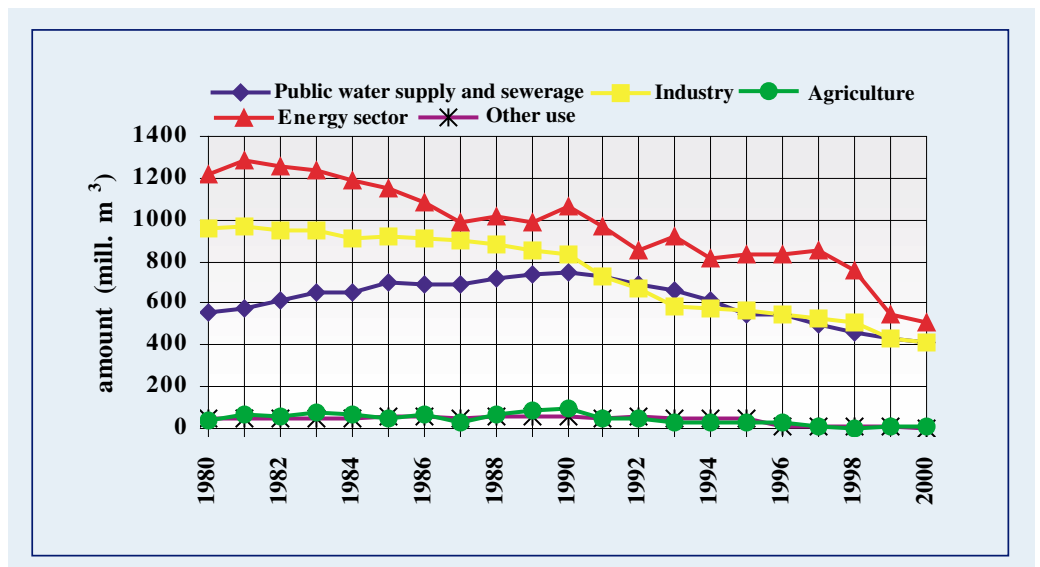
In the year 2000, 764 abstractions of surface water from water courses and reservoirs was recorded with a total amount of 1363 million m<sup>3</sup> (these are abstractions recorded according to the currently valid legal regulations, i.e., those above 15,000 m<sup>3</sup> per year or 1250m<sup>3</sup> per month). The structure of the recorded abstractions of surface water in the individual river board corporations in the year 2000 is given in the following table and graph showing the long-term trend of a drop in the abstractions of surface water.

Abstractions of surface water in 2000

Registration by River Board corp.	Units	Categories of users					Total
		Water supply	Energy sector	Industry	Agriculture	Other	
Elbe River Board corp.	Number	34	7	121	20	3	185
	Thous. m <sup>3</sup>	44 964.84	338 689.14	158 792.65	3 884.13	146.08	546 476.84
Vltava River Board corp.	Number	54	3	103	10	20	190
	Thous. m <sup>3</sup>	190 848.00	2 378.80	86 030.00	754.90	2 932.00	282 943.70
Ohře River Board corp.	Number	31	7	68	10	2	118
	Thous. m <sup>3</sup>	64 981.59	71 026.00	47 643.81	218.30	19.30	183 889.00
Odra River Board corp.	Number	16	1	78	2	9	106
	Thous. m <sup>3</sup>	74 175.60	6 356.00	102 391.80	19.10	313.30	183 255.80
Morava River Board corp.	Number	32	3	102	20	8	165
	Thous. m <sup>3</sup>	41 227.60	94 122.10	25 768.18	4 431.37	1 068.49	166 617.74
<b>Total River Boards</b>	<b>Number</b>	<b>167</b>	<b>21</b>	<b>472</b>	<b>62</b>	<b>42</b>	<b>764</b>
	<b>Thous. m<sup>3</sup></b>	<b>416 197.63</b>	<b>512 572.04</b>	<b>420 626.44</b>	<b>9 307.80</b>	<b>4 479.17</b>	<b>1 363 183.08</b>

Source: VÚV T.G.M. from the information of the river board corporations

Abstractions of surface water in the Czech Republic in the years 1980-2000



Source: VÚV TGM

## 2. 2 Abstractions of groundwater

**In comparison with the year 1999 abstractions of ground water were reduced by 2.2%**

In the year 2000, 2204 abstractions of ground water were recorded with a total amount of 441.2 m<sup>3</sup>. The structure of the recorded abstractions of water in the individual river board corporations in the year 2000 is given in the following table.

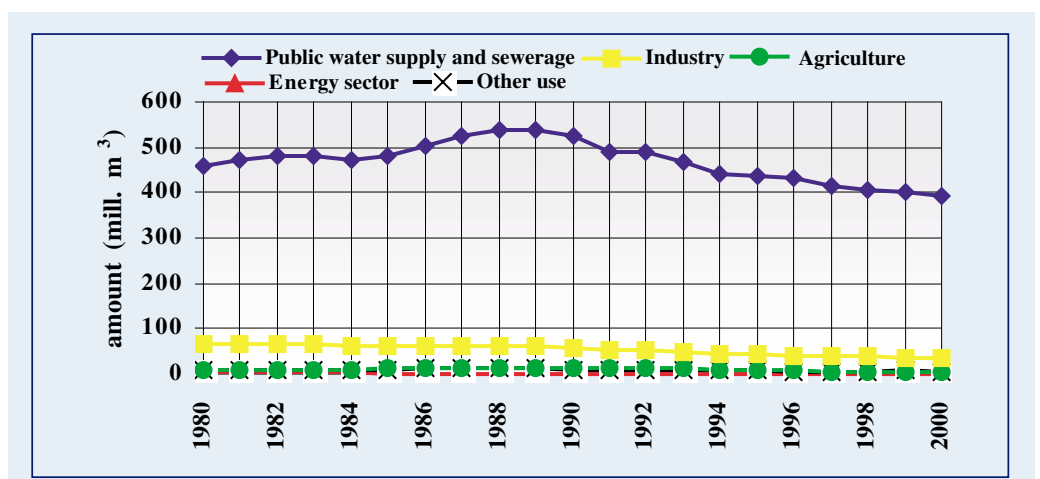
Abstractions of groundwater for public water supply systems represent 89% of the total abstractions and the greatest drop was recorded in them. The overall development of abstractions of groundwater since 1980 is shown in the following graph.

Abstractions of surface water in 2000

Registration by River Board corp.	Units	Categories of users					Total
		Water supply	Energy sector	Industry	Agriculture	Others	
Elbe River Board corp.	Number	458	2	118	31	19	628
	Thous. m <sup>3</sup>	122 748.78	859.28	10 816.35	806.78	1 400.97	136 632.16
Vltava River Board corp.	Number	373	0	78	45	20	516
	Thous. m <sup>3</sup>	35 512.20	0	9 450.90	1 636.50	1 805.50	48 405.10
Ohře River Board corp.	Number	270	1	34	3	11	319
	Thous. m <sup>3</sup>	64 396.04	358.20	5 041.63	292.20	1 836.90	71 924.97
Odra River Board corp.	Number	124	0	29	13	11	177
	Thous. m <sup>3</sup>	28 508.69	0	2 085.50	332.50	652.00	31 578.69
Morava River Board corp.	Number	359	0	125	64	16	564
	Thous. m <sup>3</sup>	140 514.75	0	9 454.62	2 153.04	583.30	152 705.71
<b>Total River Board corp.</b>	<b>Number</b>	<b>1 584</b>	<b>3</b>	<b>384</b>	<b>156</b>	<b>77</b>	<b>2 204</b>
	<b>Thous. m<sup>3</sup></b>	<b>391 680.46</b>	<b>1 217.48</b>	<b>36 849.00</b>	<b>5 221.02</b>	<b>6 278.67</b>	<b>441 246.63</b>

Source: VÚV T.G.M. from the information of the river board corporations

Abstractions of groundwater in the Czech Republic in the years 1980-2000



Source: VÚV TGM

## 2. 3 Outflow of waste water

**The volume of outflow of waste water dropped by 2.3%**

In the year 2000, 2258 outflows of waste water into surface waters with a volume of 1803 million m<sup>3</sup> were recorded for the state water management balance. The structure of the recorded outflows in the individual river board corporations in the year 2000 is given in the following table.

Outflows of waste water in the year 2000

Registration by River Board corp.	Units	Categories of users					Total
		Water supply	Energy sector	Industry	Agriculture	Others	
Elbe River Board corp.	Number	235	16	146	1	29	427
	Thous. m <sup>3</sup>	162 104.63	327 746.72	153 516.11	29.83	2 712.85	646 110.14
Vltava River Board corp.	Number	493	2	127	9	41	672
	Thous. m <sup>3</sup>	312 400.00	1 631.20	84 800.50	1 324.50	5 075.80	405 232.00
Ohře River Board corp.	Number	207	11	167	0	14	399
	Thous. m <sup>3</sup>	93 421.10	25 783.60	134 812.83	0	2 180.55	256 198.08
Odra River Board corp.	Number	140	5	91	0	23	259
	Thous. m <sup>3</sup>	118 742.45	4 649.00	82 184.80	0	1 582.17	207 158.42
Morava River Board corp.	Number	331	2	141	2	25	501
	Thous. m <sup>3</sup>	193 165.18	64 635.70	28 568.61	85.30	1 798.84	288 253.63
<b>Total for river board corporations</b>	<b>Number</b>	<b>1406</b>	<b>36</b>	<b>672</b>	<b>12</b>	<b>132</b>	<b>2258</b>
	<b>Thous. m<sup>3</sup></b>	<b>879 833.36</b>	<b>424 446.22</b>	<b>483 882.85</b>	<b>1 439.63</b>	<b>13 350.21</b>	<b>1 802 952.27</b>

Source: VÚV T.G.M. from information from river board corporations for SVHB 2000

# 3. Public water supply and sewerage systems

## 3.1 Drinking water supply

**In the year 2000, public water supply systems supplied 87.1% of inhabitants with drinking water**

In the year 2000, 8.95 million inhabitants in the Czech Republic were supplied from public water supply systems. A total of 777.6 million m<sup>3</sup> of drinking water was produced in all the public water supply systems. For the main operators, losses of water reached a total of 189.3 million m<sup>3</sup>, i.e., 25.2% of the water produced and intended for realisation.

**The downward trend in volume of drinking water produced and specific needs per one inhabitant have not yet halted**

The development in the number of serviced inhabitants and the specific amount of charged water in the years 1989 – 2000 is shown by the following graph:

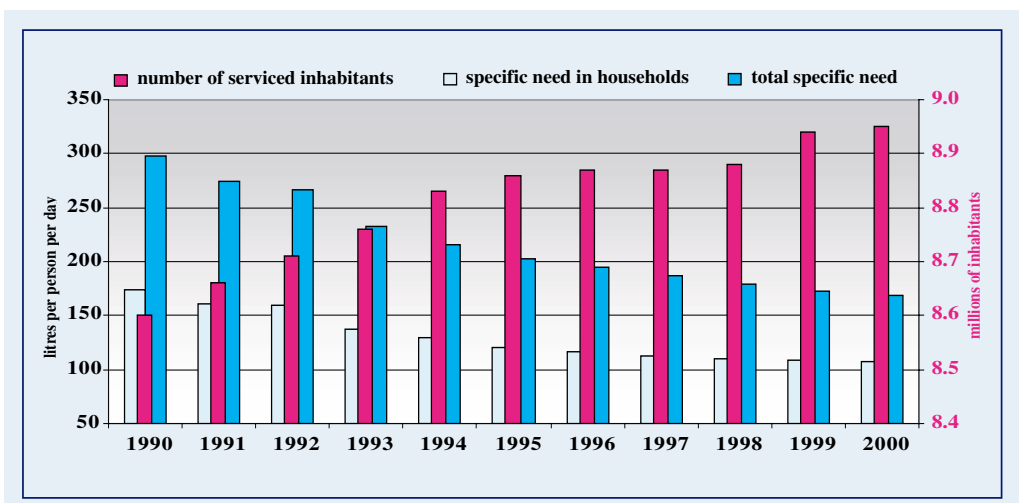
*Drinking water supply from public water supply systems in the years 1989 and 1994 – 2000*

Parameter	Unit	Year							
		1989	1994	1995	1996	1997	1998	1999	2000
Inhabitants (median state)	Thou. of inhab.	10 364	10 333	10 331	10 316	10 304	10 295	10 283	10 273
Inhabitants actually supplied with drinking water	Thou. of inhab.	8 537	8 831	8 860	8 868	8 866	8 879	8 936	8 952
	%	82.4	85.5	85.8	86.0	86.0	86.2	86.9	87.1
Water produced in public water supply systems	mil. m <sup>3</sup> . year <sup>-1</sup>	1 251	1 021	958	944	887	843	800	778
	%	100.0	81.6	76.6	75.5	70.9	67.4	63.9	62.2
Total charged water	mil. m <sup>3</sup> . year <sup>-1</sup>	929.4	696.2	655.9	631.4	604.0	579.9	564.2	554.1
	%	100.0	74.9	70.6	67.9	65.0	62.4	60.7	59.6
Specific need from water produced	l per person per day	401	317	296	292	274	260	245	237
	%	100.0	79.1	73.8	72.8	68.4	64.8	61.1	59.1
Total specific amount of charged water	l per person per day	298	216	203	195	187	179	173	169
	%	100.0	72.5	68.1	65.4	62.6	60.1	58.1	56.7
Specific amount of charged water for households	l per person per day	171	129	121	116	113	110	109	107
	%	100.0	75.4	70.8	67.8	66.1	64.3	63.7	62.6
Losses of water per 1 km of piping *)	l per km per day	16 842	17 043	16 367	16 801	14 159	12 149	10 704	9 706
Losses per serviced inhabitant. *)	l per person per day	90	92	90	93	79	71	63	60

Source: ČSÚ

Note: \*) including water supply systems not included in statistical survey

*Development in the number of inhabitants serviced and specific need for charged water in the years 1990-2000*



Source: ČSÚ, VÚV TGM

The greatest percentage of inhabitants supplied from public water supply systems in the year 2000 was in the capital, Prague, (99.9%), the North Bohemia region (92.0 %) and the South Bohemia region (90.7%); the lowest was in the Central Bohemia (72.3%) and South Moravia region (82.5%).

Supply of inhabitants, production and delivery of water from public water supply systems in the year 2000 (original regional organisation)

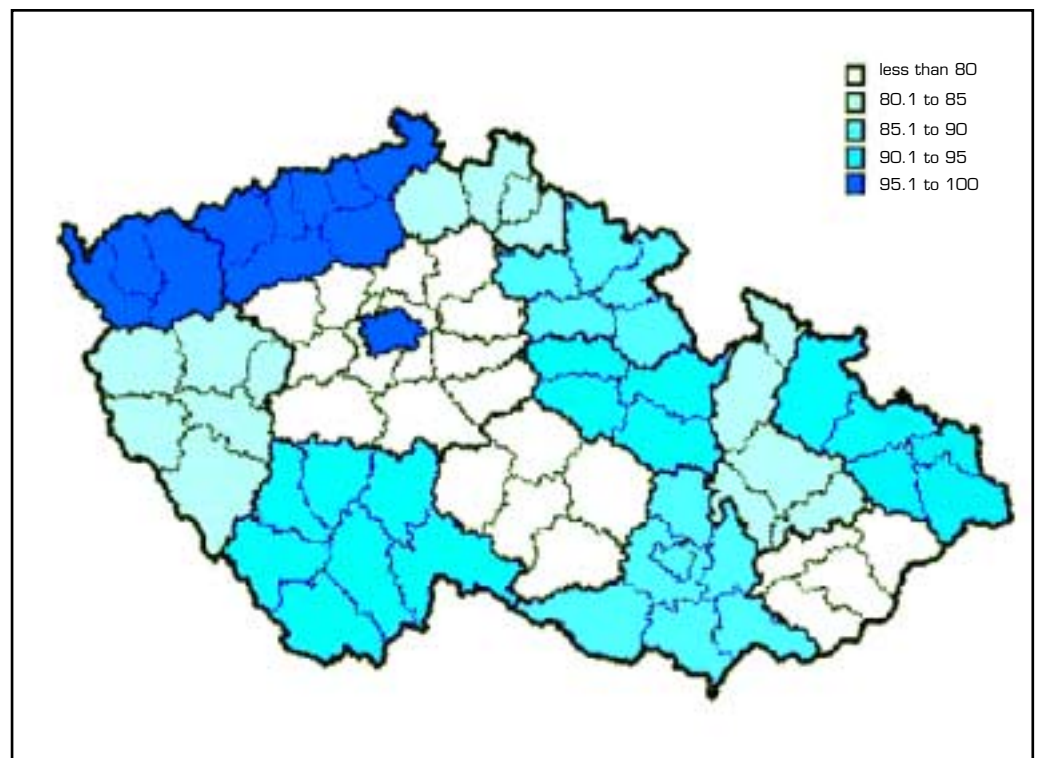
Region	Inhabitants		Water manufactured from public water supply systems	Water charged	
	Actually supplied with water from public water supply systems	Percentage of inhabitants supplied with water out of the overall number		Total	of which for households
	(Number)	(%)	(Thous. m <sup>3</sup> )	(Thous. m <sup>3</sup> )	(Thous. m <sup>3</sup> )
Capital, Prague	1 183 000	99.9	159 641	94 382	61 931
Central Bohemia	804 300	72.3	48 410	43 186	27 538
South Bohemia	634 800	90.7	49 043	36 043	21 942
West Bohemia	750 800	87.7	67 853	49 868	30 786
North Bohemia	1 086 500	92.0	106 053	69 972	45 421
East Bohemia	1 068 000	86.8	82 767	61 230	37 305
South Moravia	1 689 500	82.5	122 153	96 131	59 268
North Moravia	1 735 500	88.6	141 721	103 335	66 913
<b>Czech Republic</b>	<b>8 952 400</b>	<b>87.1</b>	<b>777 641</b>	<b>554 147</b>	<b>351 104</b>

Source: ČSÚ

Note: including water supply systems not included in statistical survey

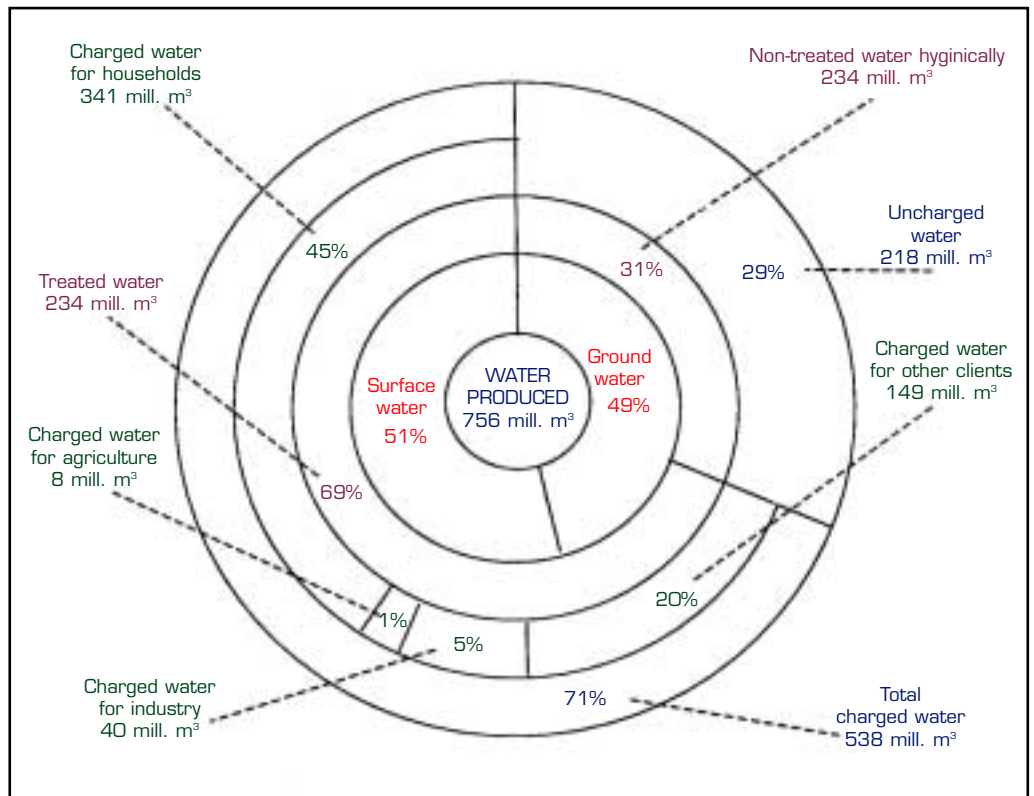
The following map expresses the proportion of inhabitants supplied with water from public water supply systems expressed in percent as the average of the individual regions. The map shows the regions in the new territorial arrangement:

PROPORTION OF INHABITANTS SUPPLIED WITH WATER FROM PUBLIC WATER SUPPLY SYSTEMS IN THE YEAR 2000 (in percent – as average of individual regions)



Source: ČSÚ

DIAGRAM OF USE OF WATER PRODUCED FOR PUBLIC WATER SUPPLY SYSTEMS IN YEAR 2000  
(MAIN OPERATORS IN REPORTING OF STATE STATISTICS)



Source: ČSÚ

In the year 2000 the water supply network was extended by a further 2 399 km

- The length of the water supply network was extended by 2399 km and reached 53 288 km (without connections)
- The number of water supply connections grew by 40 491 to 1 367 512,
- The length of water supply connections grew by 168 km and reached 12 871 km,
- The capacity of water supply systems dropped to 68 472 l.s<sup>-1</sup>
- The number of public water supply systems grew to 2037
- The number of water meters installed reached 1 385 471

Parameters and capacity of public water supply systems for main operators are clearly represented in the following table:

Parameter	Unit	Year		Index 00/99	Note
		1999	2000		
<b>PRIMARY STATISTICAL PARAMETERS</b>					
Overall number of inhabitants serviced	thou.	8 635.8	8 681.5	1.01	
Number of public water supply systems	thou.	1 933	2 037	1.05	
Length of water supply network	thou.	50 889	53 288	1.05	
Number of water supply connections	thou.	1 327.0	1 367.5	1.03	
Capacity of water supply systems	m <sup>3</sup> . s <sup>-1</sup>	68.7	68.5	1.00	
Capacity of sources of ground water	m <sup>3</sup> . s <sup>-1</sup>	22.3	22.4	1.00	
Water produced	mil. m <sup>3</sup>	776.0	755.9	0.97	
Charged drinking water - total	mil. m <sup>3</sup>	546.0	538.0	0.99	
Of which for households	mil. m <sup>3</sup>	343.9	341.1	0.99	
For agriculture	mil. m <sup>3</sup>	6.9	7.9	1.14	
For industry	mil. m <sup>3</sup>	83.4	40.1	0.48	
For others	mil. m <sup>3</sup>	111.8	148.9	1.33	
Uncharged drinking water	mil. m <sup>3</sup>	223.3	212.9	0.95	
Of which losses from piping	mil. m <sup>3</sup>	198.9	189.3	0.95	
Total water	mil. CZK	8 850.6	9 394.5	1.06	Including non-potable water

Source: ČSÚ

Note: including water supply systems not included in statistical survey

### 3. 2 Public sewerage systems and treatment of municipal waste water

#### Three quarters of the inhabitants of the Czech Republic live in buildings connected to public sewerage systems

In the year 2000, 7.69 million inhabitants lived in buildings connected to public sewerage systems. A total of 576.0 mil. m<sup>3</sup> of waste water was discharged into the public sewerage systems. Out of this amount, 94.8% was treated (not including precipitation), which represents 546.1 mil. m<sup>3</sup>. The trends in the development of public sewerage systems and the treatment of waste water over the long term are shown in the following table and graph:

The development in the number of inhabitants living in buildings connected to public sewerage systems, discharge of waste water and treatment of waste water (without precipitation water) in the years 1990 – 2000 is shown in the following graph:

The lowest proportion of inhabitants connected to sewerage is in the Central Bohemia Region followed by the Eastern Bohemia Region. The proportion of treated waste water is the lowest in the Northern Bohemia Region

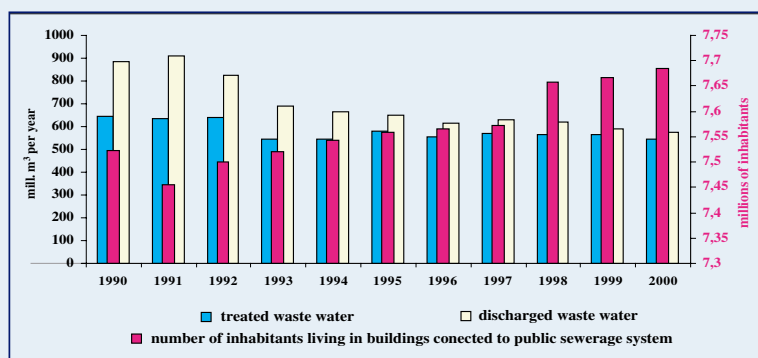
The number of inhabitants living in buildings connected to public sewerage systems and amount of discharged and treated waste water in the year 2000 in the individual regions (original territorial arrangement monitored hitherto by the ČSÚ) is shown in the following table.

Collection and treatment of waste water from public sewerage in the years 1989 and 1994 – 2000

Parameter	Unit	Year							
		1989	1994	1995	1996	1997	1998	1999	2000
Average population	thou. inhab.	10 364	10 333	10 331	10 316	10 304	10 295	10 283	10 273
Inhabitants in buildings connected to public sewerage	thou. inhab.	7 501	7 541	7 559	7 566	7 573	7 657	7 666	7 685
	%	72.4	73.0	73.2	73.3	73.5	74.4	74.6	74.8
Total outflow of waste water (without precipitation water)	mil. m <sup>3</sup>	877.8	666.2	649.7	615.6	628.5	620.0	592.2	576.0
	%	100.0	75.9	74.0	70.1	71.6	70.6	67.5	65.6
Treated waste water including precipitation water *)	mil. m <sup>3</sup>	897.4	819.2	866.3	903.4	842.5	818.9	814.6	808.8
Total treated waste water without precipitation water	mil. m <sup>3</sup>	627.6	547.3	581.4	555.9	571.5	566.1	562.9	546.1
	%	100.0	87.2	92.6	88.6	91.0	90.2	89.7	87.0
Percentage of treated waste water without precipitation water	%	71.5	82.2	89.5	90.3	90.9	91.3	95.0	94.8
Ratio of treated and untreated water without precipitation water	-	2.51	4.60	8.51	9.31	10.0	10.5	19.2	18.3

Source: ČSÚ

Number of inhabitants living in buildings connected to public sewerage systems, discharge of waste water and treatment of waste water (without precipitation water) in the years 1990 – 2000

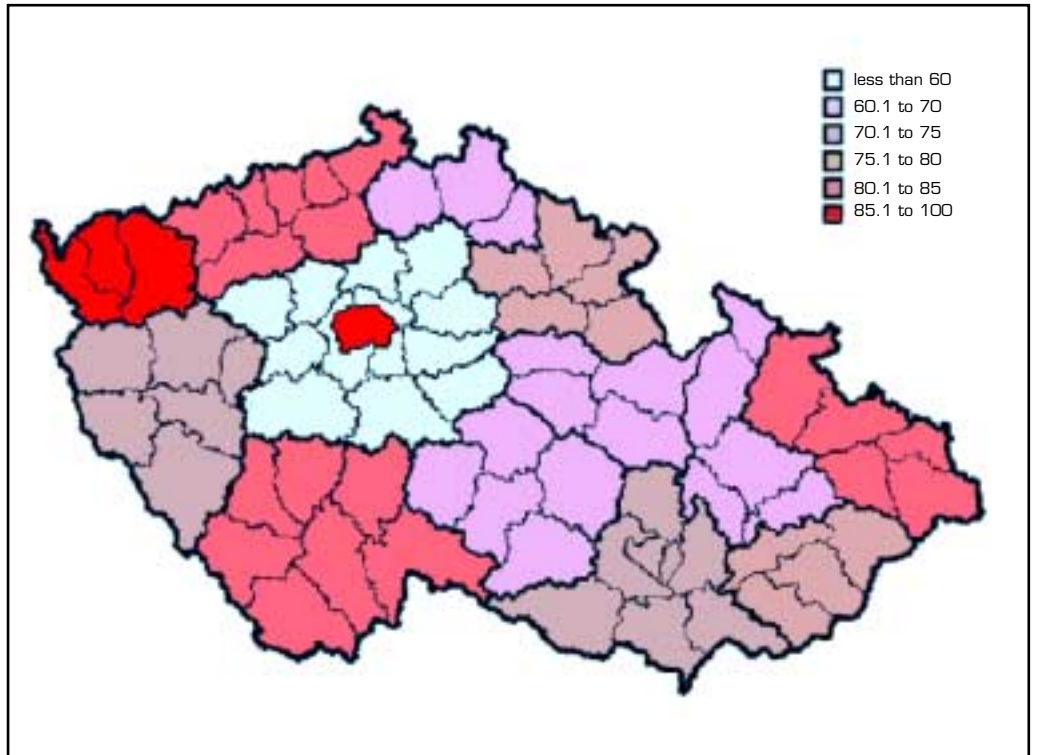


Source: CSO, WRI TGM

Region, territory	Inhabitants living in households connected to public sewerage systems		Outflow of waste water to public sewerage systems		Treated waste water without precipitation
	Percentage of the total number of inhabitants		Total		Ratio
	Total	%	Thous. m <sup>3</sup>	Thous. m <sup>3</sup>	%
Capital, Prague	1 176 000	99.3	42 113	107 725	100.0
Central Bohemia	570 200	51.2	39 730	40 898	97.1
Southern Bohemia	579 800	82.9	43 500	41 149	94.6
Western Bohemia	681 500	79.6	52 476	51 766	98.6
Northern Bohemia	913 700	77.4	62 101	53 068	85.5
Eastern Bohemia	801 400	65.1	59 104	54 499	92.2
Southern Moravia	1 495 600	73.0	93 245	91 057	97.7
Northern Moravia	1 467 000	74.9	115 691	105 961	91.6
<b>Czech Republic</b>	<b>7 685 200</b>	<b>74.8</b>	<b>575 955</b>	<b>546 123</b>	<b>94.8</b>

Source: ČSÚ

RATIO OF INHABITANTS USING PUBLIC SEWERAGE IN THE YEAR 2000 (in percentage – as average of individual regions)

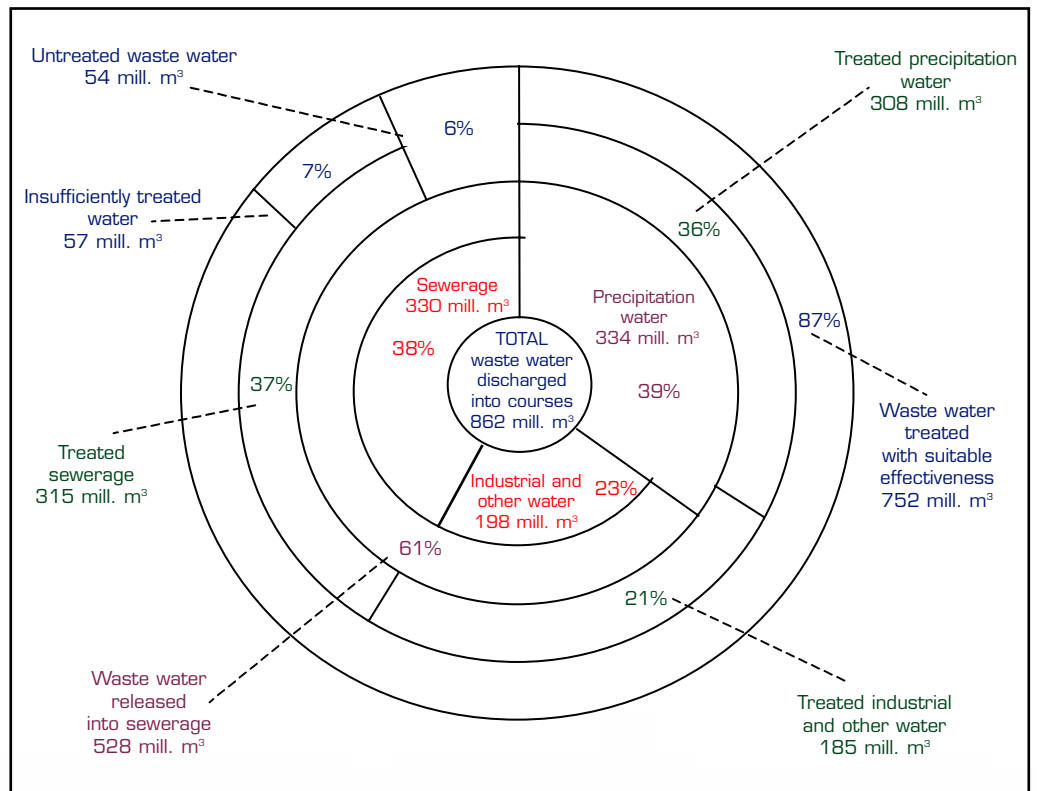


Source: ČSÚ, VÚV TGM

The map expresses the percentage of inhabitants as the average of the individual regions which are given in the new territorial arrangement.

Structure of discharged waste water in the year 2000 (main operators in reporting of state statistics)

The subsequent breakdown of amount of waste water discharged into water courses according to its origin and level of treatment is shown in the graph



Source: ČSÚ, VÚV TGM Prague

# 4. Water supply and sewerage charges

Payments for deliveries of drinking water or non-potable water are called water supply charges, and payments for the collection and treatment of waste water and precipitation are called sewerage charges.

**In comparison with 1999, water supply and sewerage charges grew by an average of 7.4%**

In the year 2000 in the Czech Republic, average water supply charges, including VAT, calculated according to the realisation prices were CZK 18.00 m<sup>3</sup> (for households CZK 17.44 m<sup>3</sup> and for other customers CZK 18.96 m<sup>3</sup>) and the average sewerage charges, including VAT, were CZK 15.11 m<sup>3</sup> (for households CZK 14.20 m<sup>3</sup> and for other customers CZK 16.16 m<sup>3</sup>).

For households, the marginal values of the total of water supply and sewerage charges in the year 2000 were a minimum of CZK 13.37, average of CZK 31.64 and maximum of CZK 41.94. For other consumers they were a minimum of CZK 18.40, average of CZK 35.10 and maximum of CZK 55.53. A more detailed review processed according to calculation information is given in table 5.3.1.

With regard to the average values in the Czech Republic (100%), the pricing differences in the individual regions in the year 2000 were from 36 % to 47 % for the lowest prices and 139 % to 194 % for the highest prices.

Since 1994 water supply and sewerage charges have not been subsidised from the state budget and they are regulated materially.

The main fundamentals of material regulation of the prices of drinking water and water collected by sewerage systems in the current year are given in a pricing bulletin every year for the field of water supply and sewerage.

Water supply and sewerage charges in the year 2000 (including VAT)

Parameter	Unit	Water supply			Sewerage		
		Average	Households	Other	Average	Households	Other
Weighted arith. av. for Cz. Rep.	CZK. m <sup>3</sup>	18.00	17.44	18.96	15.11	14.20	16.16
	%	100.0	96.9	105.3	100.0	94.0	107.0
Minimum value	CZK. m <sup>3</sup>	7.73	7.28	8.00	6.09	5.16	7.56
	% of line 1	42.9	41.8	42.2	40.3	36.3	46.8
Maximum value	CZK. m <sup>3</sup>	28.04	28.04	31.28	25.95	19.78	31.27
	% of line 1	155.7	160.8	165.0	171.7	139.4	193.5

Source: WRI T.G.M. Prague

The subject of material regulation of prices according to the assessment of the Ministry of Finance is:

- Drinking water and non-potable water delivered to direct client,
  - Drinking water and non-potable water delivered to a public water supply network administered by another subject ("water passed on"),
  - Untreated water collected by sewers, waste water and specially treated water.
- The materially regulated prices are single-element, relating to 1 m<sup>3</sup> of delivered or collected water.
- The price increase of water supply and sewerage charges for households and other clients in the monitored period was somewhat greater than the average inflationary development. Since 1994, the average level of water supply charges has

increased from CZK 9.46 m<sup>3</sup> to CZK 18.00 m<sup>3</sup> and the price of sewerage charges has risen from CZK 7.25 m<sup>3</sup> to CZK 15.11 m<sup>3</sup>, which represents a sum total price increase since 1994 of 198.1%. The greater growth in sewerage charges (increase to 208.4 %) than water supply charges (increase to 190.3 %) is primarily a reflection of the operation of new WWTPs.

One characteristic phenomenon influencing the overall growth is the far faster growth in prices for households, which reflects the growing tendency of approximation of hitherto differing prices for households and other customers. Whereas in 1994 the prices for households were an average of 33% lower than for other users, this difference at present is just 10%. This development has become more marked over the past three years in particular.



# 5. State in the treatment of waste water from the aspect of Directive 91/271/EHS concerning the treatment of municipal waste water and its implementation in the Czech Republic

According to the Directive of the Commission 91/271/EHS, by the end of the year 2000, sewerage systems and waste water treatment plants with suitable effectiveness should be built in agglomerations with a population equivalent (PE) greater than 15,000, and by the year 2005, in agglomerations with a PE greater than 2000.

**Through the completion of the WWTP Děčín, the Czech Republic has ensured at least mechanical-biological treatment of waste water in all agglomerations with a PE greater than 15,000.**

**In agglomerations with PE greater than 5,000, treatment of waste water must be ensured in another four places.**

These are Přebuz, where the WWTP is under construction, Kunovice, Kravaře and Šenov. There is also a need to deal with the connection of the outlying parts of the cities Liberec and Ostrava.

The main problem for the Czech Republic is ensuring the construction of sewerage systems and WWTPs in hitherto unresolved municipalities with a PE of 2000 – 5000. There are almost 60 municipalities of this size category in the Czech Republic where treatment of waste water has not been resolved, and in the majority of cases it will also be necessary to complete or expand the sewerage system.

In addition to ensuring the basic mechanical-biological treatment, it will be necessary to ensure increased effectiveness of treatment from the aspect of removal of nitrates and phosphates throughout the Czech Republic in agglomerations with a PE greater than 10,000 (more



than 180 agglomerations in the Czech Republic), because the entire territory of the Czech Republic is to be declared a sensitive area for the reasons of protection of the sea.

**Costs for implementation of directive 91/271/EHS come to approximately CZK 100 billion**

As a result of the significant financial burdens of this implementation, a transitional period up to the end of the year

2010 is assumed, but increased removal of nitrates and phosphates in the largest agglomerations with a PE greater than 150,000 should be ensured by the end of the year 2006.

The Czech Republic has prepared an Implementation Plan for Directive 91/271/EHS, and on the basis of this the plans for the implementation of the specific necessary measures will be completed in the year 2002.

# 6. State support for improvement in the level of water management infrastructure

State financial support for the construction and renewal of water management infrastructure is provided from two basic sources – the state budget of, in particular, the Ministry of Agriculture and the State Environmental Fund.

A review of the provision of financial support from the state budget and the State Environmental Fund for the investment construction of water supply systems, sewerage systems and waste water treatment plants is given in the following table:

The following important projects have been completed over the past three years as part of the water management investment construction of the Ministry of Agriculture.

**In the year 2000, via the programmes of the MoA the state supported the development of water management infrastructure for water supply and sewerage systems to the extent of CZK 1 397 million.**

In the year 2000 financial resources were provided from the state budget via the MoA in support of construction from the programmes “Construction and technical renewal of water supply systems and water treatment plants” and “Construction and technical renewal of sewerage systems and waste water treatment plants”

Under the programme “Construction and technical renewal of water supply systems and water treatment plants”, a total 154 projects with investment costs of over CZK 5 million were supported. Of these, 73 projects were started in the year 2000.

In smaller municipalities, the construction of 127 projects with investment costs of up to CZK 5 million were undertaken, and 11 of these projects had been started in 1999.

The construction of a further 4 projects for rectifying the consequences of the flood from the year 1997 and 1998 continued.

*Financial support for investment construction of water supply systems, sewerage systems and WWTPs in the years 1994-2000*

Year	State budget		SEF		Total	
	Total support	of which, interest-free loan	Total support	of which, interest-free loan	Total support	of which, interest-free loan
1994	3 799	377	2 000	820	5 799	1 197
1995	3 250	1 064	2 200	1 000	5 450	2 064
1996	3 101	1 366	1 947	854	5 048	2 220
1997	2 154	838	1 892	747	4 046	1 585
1998	1 648	435	1 083	512	2 731*)	947
1999	1 718	473	1 069	414	2 787**)	887
2000	976	421	1 130	438	2106***)	859

Source: MoA, SEF

\*) This amount must be increased by the resources provided by the European Investment Bank of CZK 798 mil.

\*\*\*) This amount must be increased by the resources provided by the European Investment Bank of CZK 568 mil.

\*\*\*) This amount must be increased by the resources provided by the European Investment Bank of CZK 164 mil.

Year 1998		
	WWTP Žďár nad Sázavou	CZK 108.4 mil.
	WWTP and sewerage system Žamberk	CZK 71.6 mil.
	Water Management System for Eastern Bohemia - st. III. - Chrudim district	CZK 118.5 mil.
	Group water supply system Babice district	CZK 77.4 mil.
	Group water supply system Pomoraví st. No. 6	CZK 58.8 mil.
Year 1999		
	WWTP Kolín	CZK 565.0 mil.
	WWTP and sewerage system Tuchlovice	CZK 96.3 mil.
	Eastern Bohemia water management system Pardubice district	CZK 564.5 mil.
	KSKM st. No. 6 - Water supply system Všetaty - Neratovice	CZK 81.5 mil.
Year 2000		
	WWTP and sewerage system Mělník	CZK 369.3 mil.
	WWTP Tanvald - Desná	CZK 82.5 mil.
	WWTP and sewerage system Třešť	CZK 80.7 mil.
	WWTP and sewerage system Borohrádek	CZK 77.2 mil.
	WWTP Sokolov	CZK 53.8 mil.
	Water supply system Pomoraví	CZK 71.7 mil.

The connection of ÚV Bzenec – Veselí, Water supply system Brantice and Water supply system Bílá Lhota were completed in the year 2000. The Černovír water treatment plant will be completed in the year 2001.

In the year 2000, the programme “Construction and technical renewal of water supply systems and water treatment plants” provided total support of CZK 985.573 million CZK.

The construction of 21 projects was financed from the programme “Construction and technical renewal of sewerage systems and waste water treatment plants” in the year 2000. Support totalling CZK 411.004 million were provided for them. Out of the 21 projects, 6 are partially completed, 11 were completed in the year 2000 and four were started in that year. The most important partially completed constructions are “WWTP Přešov (second construction)” and “WWTP Prostějov”.

An overall review of the state financial resources provided via the MoA in the year 2000 under the aforementioned programmes is given in the following table.

In order to ensure the requisite financial resources in the area of the construction of water supply systems and sewerage systems, the preparation of a further loan from the EIB continued successfully in the year 2000, and this culminated with the signature of a loan contract and the acceptance of other documents following on. The financial resources for the support of infrastructure development over the next four years have thus been increased by a further EUR 100 million.

**In the year 2000, the State Environmental Fund supported constructions for the protection of water with a financial volume of CZK 1129.5 million.**

As of 1.1.2000, the Directive of the MoE concerning the provision of financial resources from the SEF has been effective; the new appendices of the Directive valid as of 1.6.2000 contain specific measures which the Fund will support.

The greatest volume of financial support from the Fund in the area of protection of water was provided to municipalities and cities in the amount of CZK 1014,384 million (89.8% of total support), the next greatest support went to entrepreneurial subjects – legal entities (CZK 65,082 million, i.e., 5.8%). The implemented financial support is evident in the following table:

Amongst the most important recipients of support from the aspect of the released resources is the city of Přeštice (sewerage system and WWTP CZK 31.4 million – grant CZK 10.4 million, loan CZK 21.0 million), the city ward Uhřetěves (effluent sewerage system CZK 27.9 million – grant CZK 13.2 million, loan CZK 14.7 million), Bechyně (sewerage system and WWTP CZK 27.0 million – grant CZK 12.5 million, loan CZK 14.5 million) and Tábor (reconstruction of WWTP Tábor – Klokoty, sewerage collector “Jordán” CZK 24.0 million – grant CZK 10.5 million, loan CZK 13.5 million).

In the year 2000, 157 decisions on the provision of support for the construction

*State financial resources provided under the programmes of the MoA (millions of CZK) :*

Form of support	Water supply systems	Sewerage systems and waste	MoA total
	and water treatment plants	water treatment plants	
Interest-free loan	259.421	161.541	420.962
Grant	726.152	249.463	975.615
<b>Total</b>	<b>985.573</b>	<b>411.004</b>	<b>1 396.577</b>

*Financial support of SEF in the year 2000*

Subject of support	Grant		Loan		Total support	
	Thou. CZK	Percentage	Thou. CZK	Percentage	Thou. CZK	Percentage
Entrepreneurial subjects						
■ individuals	0		1 400	0.3	1 400	0.1
■ legal entities	26 030	3.8	39 052	8.9	65 082	5.8
Churches	200	0.0			200	0.0
Non-profit-making organisations	12 367	1.8	17 381	4.0	29 748	2.6
Municipalities	642 638	92.9	371 746	84.9	1 014 384	89.8
Public budget	10 671	1.5	8 036	1.8	18 707	1.7
<b>Total</b>	<b>691 906</b>	<b>100.0</b>	<b>437 615</b>	<b>100.0</b>	<b>1 129 521</b>	<b>100.0</b>

of WWTPs and sewerage systems were issued with a total amount of CZK 2198 million (total costs for the implementation of these projects are CZK 3489 million), and this gives rise to the possibility of disposing of pollution in the amount of 8,222 tons of chemical oxygen demand and 3,889 of undissolved substances per year.

**In the year 2000, the programme of the MoE “Minor water management and ecological projects” supported the construction of 139 se-**

**werage systems and WWTPs in small municipalities with a total volume in excess of CZK 280 million.**

The subject of the provision of financial resources from the programme Minor Water Management and Ecological Projects was the construction or reconstruction of sewerage systems and waste water treatment plants in municipalities with from 500 to 2000 equivalent inhabitants (in the event of an exceptional interest in environmental protection, from 300 to 3000 ED).



# 7. Legislation

## **New fundamental water management acts were passed**

In the year 2000, preparation culminated for new fundamental regulations for the area of water management, which resulted in the passing of the following acts in mid 2001:

- Act No. 254/2001 Coll., Concerning Water and Amendments to Certain Acts (the Water Act)
- Act No. /2001 Coll., Concerning Water Supply and Sewerage Systems for Public Use and Concerning Amendments to Certain Acts (the Water Supply and Sewerage System Act)

which with effect from 1.1.2002 govern this area in compliance with the relevant directives of the EU, including Directive 2000/60/ES, establishing the framework for the activity of the Union in the area of water policy.

The Water Act regulates the legal relations to surface and ground water, the relations of individuals and corporate bodies for the use of surface and ground water and relations to land and constructions which the occurrence of this water is directly associated with. The aim of the act is to protect surface and ground water and preserve and improve the quality of water and the creation of conditions for a reduction in the adverse impacts of floods and droughts and to ensure the safety of water management works.

The Water Supply and Sewerage System Act defines the legal framework for the proper activity of the water supply and sewerage branch under new conditions. The act defines the concept of water supply and sewerage systems, it regulates the rights and liabilities of owners of water supply and sewerage systems (including its relations with public administration), the rights and liabilities of opera-

tors and the relations between owners and operators, it introduces the recording of ownership of water supply and sewerage systems and details the duty to keep operational records and introduces the granting of permits for the operation of water supply and sewerage systems for public needs.

These two fundamental acts will be complemented by many implementing decrees by the end of the year 2001. The decree designating parameters and values of acceptable water pollution which accompany the Act on Water Supply and Sewerage Systems will be especially important for the supply of drinking water and collection and treatment of sewerage.

## **In the course of the year 2000, further legal regulations were adopted which apply to water management:**

- The River Boards Act (No. 305/2000 Coll.) of 4<sup>th</sup> August 2000, effective as of 1<sup>st</sup> January 2001,
- The Act Concerning Public Health and Amendments to Certain Associated Acts (No. 258/2000 Coll.) of the date 14<sup>th</sup> July 2000, effective as of 1<sup>st</sup> January 2001 and accepted implementing regulations associated with water management,
- Decree of the Ministry of Health which designates the requirements for drinking water and the scope and frequency of the inspection thereof (No. 376/2000 Coll.) of the date 9<sup>th</sup> September 2000, effective as of the date 1<sup>st</sup> January 2001,
- Decree of the Ministry of Health which designates the hygiene requirements for swimming pools, saunas and hygiene limits for outdoor playing areas (No. 464/2000 Coll.) of the date 8<sup>th</sup> December 2000, effective as of the date 1<sup>st</sup> January 2001,
- Act No. 410/2000 Coll. of the date 25<sup>th</sup> October 2000, which amends the Fisheries Act (No. 102/1963 Coll.)



# 8. Programmes for the development of water supply and sewerage systems of territorial units

Through the “Programmes for the development of water supply and sewerage systems of territorial units”, in cooperation with the district authorities and significant owners and operators of water management infrastructure, the Ministry of Agriculture is creating a detailed specification of development of water management infrastructure which ensures an optimum solution for this development. By the end of the year 2000, these programmes had been processed for 46 districts and partially completed for 1 district. It would be desirable to accelerate the processing of these programmes to cover the remaining parts of territory, in order that by the end of the year 2002 it is possible to start work on summarising the output of the development programmes for the entire Czech Republic.

Programmes for the development of water supply and sewerage systems of territorial units (i.e., parts of districts, entire districts or groups of districts), so-called PDWSSSTUs

- analyse the conditions for ensuring the desirable level of water management infrastructure of the territorial unit,
- designate the basic concept for optimal development of supply of drinking water, collection and treatment of waste water, including the order of priorities in the individual localities of the unit in question with regard to ownership relations, possibilities of financing and social feasibility of the proposed procedures,
- serve as a basis for state administrative bodies and local government when promoting public interest and applying their decision-making powers,
- constitute an objective, specialist basis for decision making in the field of financial support for implementation of constructions on the part of the Ministry of Agriculture, Ministry of Finance, State Environmental Fund and district authorities.



The individual programmes for the development of water supply and sewerage systems of a territorial unit constitute the basis for the processing of sub-PDWSSSTUs and nationwide PDWSSSTUs.

The further processing of PDWSSSTUs is specified in the Water Supply and Sewerage Systems Act and the associated implementing decree.

*Programmes for the development of water supply and sewerage systems for territorial units of the Czech Republic processed in the years 1994 – 2000*

Ref. No.	District	Month/year of completion	Ref. No.	District	Month/year of completion
1	Žďár nad Sázavou	/ 1994	24	Kolín	11 / 1997
2	Kutná Hora	/ 1994	25	České Budějovice	11 / 1997
3	Rakovník	/ 1994	26	Opava	12 / 1997
4	Blansko – without database	/ 1994	27	Břeclav	12 / 1997
5	Brno-Rural- without database	/ 1994	28	Kroměříž	6 / 1998
6	Jihlava- without database	/ 1994	29	Liberec	9 / 1998
7	Třebíč- without database	/ 1994	30	Jablonec n Nisou	9 / 1998
8	Znojmo- without database	/ 1994	31	Mladá Boleslav	12 / 1998
9	Prague – East – without database	/ 1994	32	Karviná	3 / 1999
10	Nový Jičín	12 / 1996	33	Zlín	4 / 1999
11	Mělník (+Odolena district)	12 / 1996	34	Příbram	5 / 1999
12	Kladno	12 / 1996	35	Prague - West	7 / 1999
13	Šumperk	12 / 1996	36	Česká Lípa	7 / 1999
14	Liberec (Frýdlant district) – without database	12 / 1996	37	Bruntál	8 / 1999
15	Nymburk- without database	12 / 1996	38	Uherské Hradiště	9 / 1999
16	Frydek – Místek	3 / 1997	39	Chomutov	12 / 1999
17	Přerov	8 / 1997	40	Olomouc	4 / 2000
18	Havlíčkův Brod	10 / 1997	41	Klatovy	6 / 2000
19	Hodonín	10 / 1997	42	Tábor	6 / 2000
20	Domažlice	11 / 1997	43	Litoměřice	9 / 2000
21	Cheb	11 / 1997	44	Semily	9 / 2000
22	Vyškov	12 / 1997	45	Trutnov	9 / 2000
23	Svitavy	3 / 1998	46	Český Krumlov	10 / 2000

# 9.

## Preparation of Czech Republic for accession to the European Union

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**The process of direct negotiation between the European Commission and the Czech Republic continued in the year 2000 and focussed mainly on the issue of the implementation of EU directives, where the Czech Republic indicated the need for transitional periods (treatment of municipal waste water, nitrates from agricultural sources, dangerous substances, the quality of water for human consumption).**

As part of the negotiation process, in the year 2000 the Czech Republic processed the Additional Information for Joint Position of the EU on Chapter 22, the Environment, focussing primarily on the issue of implementing problematic directives for which it had requested transitional periods and the economic impacts of their implementation. On the basis of the negotiations held and the technical consultations with the European Commission, at the end of the year 2000 the Czech Republic prepared another, second, Additional Information, where on the basis of the latest information from monitoring, from impact studies, and on the basis of the interpretation of the European Commission concerning the time steps for implementation, it re-evaluated its application for a transitional period, and in the area of water protection it renounced its request for a transitional period for the implementation of directives concerning dangerous substances, nitrates from agricul-

tural sources and drinking water. By the date of accession, the Czech Republic shall adopt the relevant programmes for measures leading to the implementation of the directives the implementation of which will last a certain period longer than the date of accession (a maximum of six years).

**Much important conceptual and strategic material has been processed and discussed by the Government**

In addition to the annual updating of the National Programme for the Preparation of the Czech Republic for Accession to the EU and the Positioning Document Concerning Chapter 22 – the Environment which formulate the short-term and medium-term tasks and intentions of the Czech Republic in the process of approximation, in connection with the Approximation Strategy an Implementation Plan has been processed for the area of the environment. In this extensive material, which was approved by the Government in August 2000, transposition and implementation tasks were set out in detail, the deadlines for the individual steps were specified, and the responsible subjects were designated. It also contains an estimate of costs and personnel needs associated with the implementation of the directives in the area of the Environment. In the economic field, impact studies were processed and, following on from this, the first financial strategy was processed

for the financing of the implementation of Directive 91/271/EHS concerning the treatment of municipal waste water, which the Government took due note of on 11.10.2000. In addition a financial strategy was processed for the implementation of the directive concerning nitrates from agricultural sources.

**In order to support implementation in problem areas as well, as part of the PHARE programme, the European Commission released an amount of EUR 1 million for the implementation of the twinning project “Implementation Strategy in the Area of Water in the Czech Republic”, which was initiated in September 2000 after a tender had been held.**

The project, which is being implemented by teams of experts from Great Britain, Austria and France, focuses on the implementation of directives concerning dangerous substances in surface and ground water, nitrates from agricultural sources and drinking water.

**For the treatment of municipal waste water, a transitional period up to the end of the year 2010 is realistic.**

Discussion of the chapter “the Environment” was concluded by the presentation of the Joint Position of the European Union to the Czech Republic on 1<sup>st</sup> June 2001 and the expression of agreement with the granting of the negotiated transitional period in the sub-area of “water quality” for Directive 91/271/EHS concerning the treatment of municipal waste water until the end of 2010.

In the event of the implementation of Directive 98/83/EU concerning the quality of water intended for human consumption, the European Commission agreed with the use of possible derogation for attaining the stricter parameters for water quality for 1,2-dichlorethane and pesticides for some sources.



# 10. Federation of Branch of Water Supply and Sewerage (Czech acronym SOVAK)

The federation came into being upon registration at the Ward Authority of Prague 1. Under registration number 25/92 on the day 12.11.1992.

Secretariat:

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**Tel: 02/21 082 207, 02/21 082 346**  
**Fax: 02/ 22 22 21 55**  
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**[www.sovak.cz](http://www.sovak.cz)**

**SOVAK** is a voluntary, non-profit-making interest federation of legal entities in the branch of water supply and sewerage for public use. It brings together legal entities on the territory of the Czech Republic whose activity is the ensuring of water supply and the collection and treatment of waste water both from the aspect of operation and ownership, development and also construction.

**Subject of activity:** It represents its members during negotiations with state bodies in matters which are the common interest of its members (activity concerning the creation of legislation and standards). It ensure services of an educational, consultation and information nature for its members. It cooperates with similar organisations both in the Czech Republic and abroad.

For the needs of its members it issues a monthly specialist magazine SOVAK, which informs the specialist public of news in the branch, changes in legislation and the construction of new water management facilities. The magazine also publishes the results of research and its practical application. It includes discussion of the employees of operation and expert specialists concerning the current problems in the branch of water supply and sewerage.

**SOVAK** is the organiser of the international water management exhibition

“WATER SUPPLY SYSTEMS – SEWERAGE SYSTEMS”, the seventh annual event of which was held this year. The aim of the exhibition is to acquaint the general specialist public with the latest news in the branch of water supply and sewerage systems, with new technologies for the treatment of drinking water and waste water, with new materials, pipe fittings, equipment and operating materials used in the Czech Republic and abroad. Two hundred and two exhibiting firms, twelve of them from abroad, took part in this year’s exhibition. As part of the exhibition there is an accompanying programme which aims to acquaint visitors with specialist information relating to specific issues. During the preparation of the expert programme,

SOVAK cooperates with the Ministry of Agriculture, Ministry of the Environment and other specialist societies operating in this area (Federation of Water Managers of the Czech Republic, Czech Society for Non-Excavation Technology, Association of Water Treatment Experts etc.)

Any legal entity with a registered office in the Czech Republic which trades in the Branch of water supply and sewerage can become a member of SOVAK. SOVAK brings together 74 water management companies operating water supply and sewerage systems in the Czech Republic. The following are some of the largest companies in terms of number of inhabitants serviced:

<b>Pražské vodovody a kanalizace, a.s</b>	
number of inhabitants serviced	1 183 000
length of water supply network	3 302 km
length of sewerage network	2 464 km
<b>Severočeské vodovody a kanalizace, a.s</b>	
number of inhabitants serviced	1 060 683
length of water supply network	7 829 km
length of sewerage network	2 783 km
<b>Severomoravské vodovody a kanalizace Ostrava, a.s.</b>	
number of inhabitants serviced	721 178
length of water supply network	4 238 km
length of sewerage network	1 102 km
<b>Vodárenská akciová společnost, a.s.</b>	
number of inhabitants serviced	510 884
length of water supply network	4 048 km
length of sewerage network	1 266 km
<b>Brněnské vodárny a kanalizace, a.s.</b>	
number of inhabitants serviced	398 092
length of water supply network	1 133 km
length of sewerage network	974 km
<b>Vodovody a kanalizace Jižní Čechy, a.s.</b>	
number of inhabitants serviced	336 414
length of water supply network	3 048 km
length of sewerage network	1 088 km
<b>Ostravské vodárny a kanalizace, a.s.</b>	
number of inhabitants serviced	318 749
length of water supply network	1 049 km
length of sewerage network	713 km

Companies in SOVAK supply water to more than 90% of the inhabitants of the Czech Republic connected to public water supply systems. They ensure the operation of important water management systems throughout the entire Czech Republic: the Želivka Water Supply System, which supplies the central Bohemia region, including Prague, the Ostrava Area Water Supply System, which supplies the region of North Moravia, including Ostrava, the North Bohemia Water Supply System, the South Bohemia Water Management System and the Vírský Area Water Supply System, which supplies the area of Moravia, including Brno.

SOVAK brings together 50 companies which do not operate water management facilities but which cooperate with the branch of water supply and sewerage. These companies are special members. They include several important ownership companies such as the Prague Water Company, the north Bohemia Water Company and the South Bohemia Water Federation which own infrastructure water management property.

Design organisations dealing with the design of water management works are special members, as are contracting and production firms trading in the branch of water supply and sewerage systems.

In all the activity of the federation there is targeted support for the constant and continuous explanation of ideas, mutual and rapid information exchange and thorough assertion of main aims.

The focus of the expert activity is in the work of the expert committees, which bring together 180 specialists who prepare materials for the board of directors of SOVAK and specialist statements of opinion for central bodies and which ensure specialist seminars for members of SOVAK and other members of the specialist public.

At present 13 committees are operating. Via the legal committee we participated intensively in the preparation of the articulated wording of the Water Supply and Sewerage Systems Act, which we see as a model of cooperation between experts on the creation of legislative amendments. The legal committee ensures specialist information for the members concerning the amendment of certain laws which have an impact on the activity of the branch of water supply and sewerage.

The committee for technical standards works actively on the preparation and creation of new standards and technical recommendations and the review of standards. This cooperation is of benefit at the present time during the crossover to the legislation of the EU.

The economic committee unifies the statements of opinion of the companies in the field of the economics of operation of water management facilities, questions of pricing and taxation issues.

The activity of the specialist committees of SOVAK significantly improves the level of work of the board of directors, and this applies to the work of the legal

committee, the health and safety committee, the committee for the implementation of graphic information systems, the laboratory committee and the economic committee. With regard for the amendment of the Labour Code, the health and safety (HS) committee is preparing an updating of safety regulations for our branch principally in the area of risk identification.

Cooperation between SOVAK and the Dutch company AQUANET in the area of education has resulted in the preparation of study materials and the implementation of four courses for operatives of water treatment plants and waste water treatment plants. SOVAK wishes to continue in this cooperation and is preparing educational courses for water supply and sewerage network professionals.

The main aim and purpose of the activity of SOVAK is the permanent development of water supply and sewerage systems, and this requires the active work of all its members for the uniting of interests in favour of our branch for the good name of SOVAK whilst respecting the broader water management interests. The expansion of cooperation to an international level, primarily within the context of the EU, will be of benefit for the activity of SOVAK and for the development of the branch of water supply and sewerage systems.

**Questions of international cooperation are receiving ever greater room in the work of the SOVAK board of directors, and the scope is determined primarily by the entry of large foreign companies to the branch of water supply and sewerage systems. Contacts are being strengthened with specialist societies such as ATV, AQUANET and DVGW. We retain very good contacts with water supply and sewerage companies in Slovakia, and this is primarily through cooperation on specialist events. We are convinced that cooperation with the newly incorporated committee of the IWA will also be mutually beneficial.**

