MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

In brief about WATER in the Czech Republic

Ministry of Agriculture of the Czech Republic

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Dear Readers,

The Ministry of Agriculture prepared for you a brief publication with key facts about water management in the Czech Republic. You will find basic hydrological data, information on watercourse administration, interesting facts about floods and flood control measures, water supply and sewerage systems, reports on international cooperation in the field of water and many other facts related to water management.

The publication does not aim to provide detailed analyses of water-related issues, its purpose is to bring general information that can be found, in more detail, on the website of the Ministry of Agriculture www.eagri.cz or on the website of Information System WATER www.voda.gov.cz, or through contact with the listed specialized departments in the area of water management.

I will be happy if we manage through this booklet arouse your interest and enrich your knowledge about water and management of this irreplaceable asset which is extremely important for the life of each of us and for the existence of the planet Earth.

Marian Jurečka
Minister of Agriculture
of the Czech Republic

Basic hydrological data of the Czech Republic

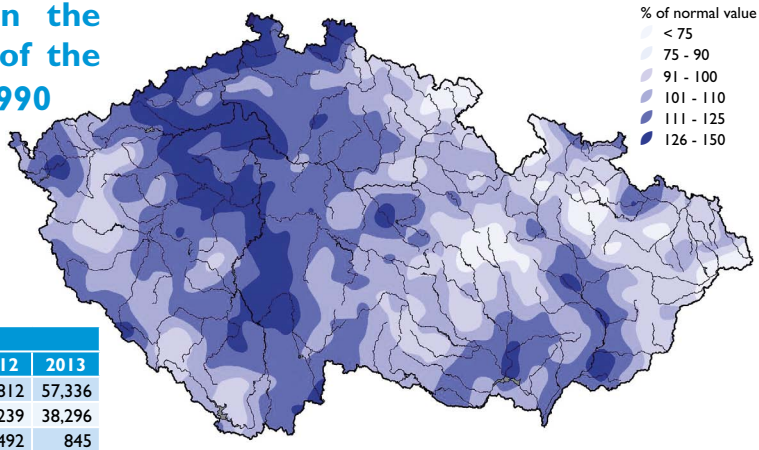
Czech Republic with an area of 78,866 km^2 and a population of 10.3 million is located in central Europe. Altitude of most of the territory ranges between 200 and 600 m a. s. l. Czech Republic lies in a temperate climate zone in the northern hemisphere, the average air temperature is 8 °C and the average precipitation amount is 693 mm.

Czech Republic lies at the watershed of three seas – the North Sea, the Baltic Sea and the Black Sea. Virtually all of our major watercourses drain water into neighbouring countries and water resources of the Czech Republic are entirely dependent on atmospheric precipitation.

Basic characteristics of water management

Watercourses in the Czech Republic (total length)	102,900 km
Major watercourses	16,300 km
Minor watercourses	86,600 km
Major water reservoirs	165
Minor water reservoirs (ponds, etc.)	approx. 25,000
Weirs	approx. 1,000
Waterways	522.2 km
Water supply systems	74,141 km
Sewerage systems	41,911 km
Waste water treatment plants	2,557

Total precipitation amount in the Czech Republic in 2013 by % of the average over the period 1961–1990



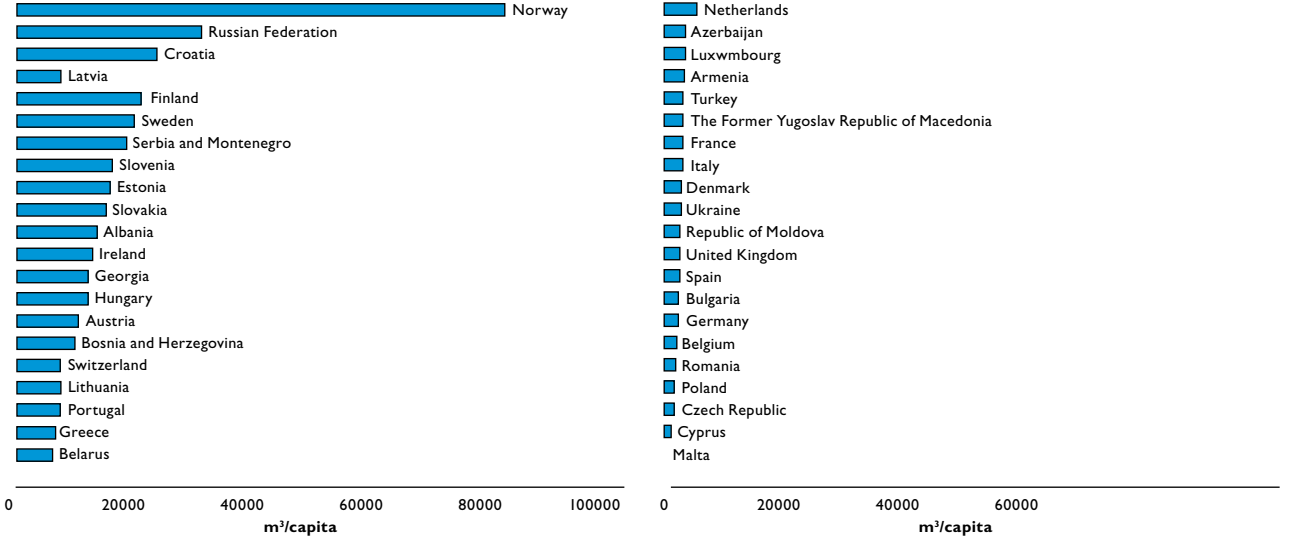
Renewable water sources in year of hydrological extremes in millions of m^3

Item	Annual values					
	2002	2003	2009	2010	2012	2013
Precipitation	71,298	40,695	58,676	68,692	54,812	57,336
Evapotranspiration	48,533	29,319	44,090	46,824	42,239	38,296
Annual inflow [1]	1,341	524	714	781	492	845
Annual runoff [2]	24,106	11,900	15,300	22,649	13,065	19,885
Surface water sources [3]	6,506	3,758	5,112	8,788	5,195	6,626
Usable groundwater sources	1,625	1,195	1,266	1,594	1,311	1,657

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

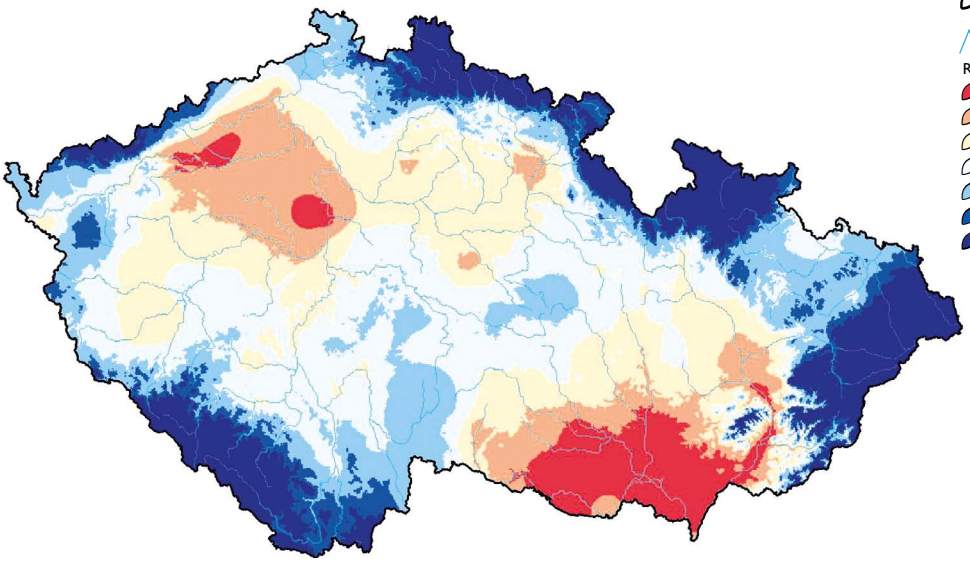
The table shows that the water regime in the Czech Republic is very fluctuating due to hydrological extremes. In the periods of drought the volume of water resources significantly decreases, at the time of floods, on the contrary, the volume of water resources increases.

The available water resources in different countries



Source: EEA – Istanbul, 2009

Agricultural drought in the Czech Republic during the growing season (degree of risk based on analysis of current water balance for the period 1961-2000)



Flood situations

Floods in the conditions of the Czech Republic are the most frequent and most extensive type of natural disasters. After almost a century lasting rest their occurrence unexpectedly increased and, starting in 1997, our country was affected by a number of major to extreme floods, accompanied by damage to property and loss of human lives.

Floods in the years 1997–2013 in terms of loss of human lives and the amount of flood damage

Flood situation [year]	Human lives lost	Flood damage [millions of CZK]	
		total	of that damage to state-owned water management structures
1997	60	62,600	6,600
1998	10	1,800	
2000	2	3,800	606
2001	0	1,000	100
2002	19	75,100	4,630
2006	9	6,200	2,238
2009	15	8,500	1,392
2010	8	15,200	3,400
2013	15	15,400	2,196
Total	135	189,600	21,162

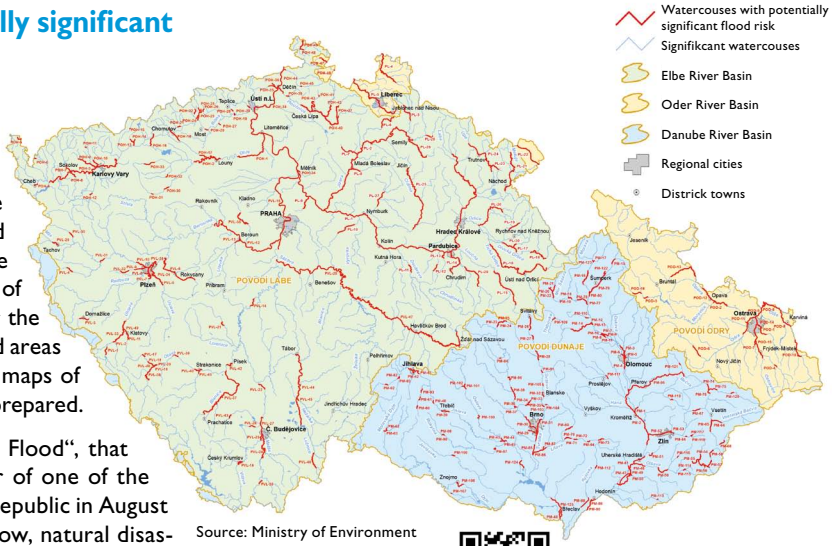
Comparison of historical floods

River	Station	Flood 1997/2002		Another flood in the observed time series		Other floods of comparable extent
		culmination	m^3/s	culmination	m^3/s	in years
Vltava	Praha	14. 8. 2002	5,160	29. 3. 1845	4,500	1118, 1432, 1784
Berounka	Beroun	13. 8. 2002	2,170	25. 5. 1872	3,000	1432, 1862
Elbe	Děčín	16. 8. 2002	4,770	30. 3. 1845	5,120	1118, 1432
Morava	Olomouc	9. 7. 1997	760	-	-	1652, 1761
Oder	Bohumín	8. 7. 1997	2,160	11. 7. 1903	1,500	1813, 1880

Definition of areas with potentially significant flood risk in the Czech Republic

With regard to the occurrence of extreme floods throughout Europe from the 1990s, in 2007 there was adopted a „EU Floods Directive“, which obliges Member States of the EU to prepare by 22 December 2015 flood risk management plans that include measure to prevent or mitigate the adverse impacts of floods. As part of the preparatory work for the elaboration of these plans there were defined areas with a significant flood risk, for which then maps of flood hazards and maps of flood risks were prepared.

The document „Ten Years after the Great Flood“, that can be watched on Youtube, is a reminder of one of the most devastating floods that hit the Czech Republic in August 2002. Heavy rainfall caused rivers to overflow, natural disaster affected large areas in the Vltava and Elbe river basins. The document reminds as well another critical flood of 1997 that hit mainly Moravia.



Source: Ministry of Environment

Watercourse administration

Length of major watercourses by administrators

Administrator	Length of watercourses [km]
Elbe River Board, state enterprise	3,667
Vltava River Board, state enterprise	5,418
Ohře Rive Board, state enterprise	2,377
Oder River Board, state enterprise	1,111
Morava River Board, state enterprise	3,753
Total	**16,326**

Major watercourses are rivers or river stretches listed in Annex 1 of Decree No. 178/2012 Coll., laying down a list of major watercourses and the method of carrying out activities relating to watercourse administration. The category of major watercourses also includes minor watercourses constituting the so-called „border" watercources. This category includes a total of 819 watercourses with a total length of 16,326 km that are administered by River Boards, state enterprises. The backbone watercourses are the Elbe (370 km) with the Vltava River (431 km) and Ohře River (254 km) in Bohemia, the Morava River (269 km) with the Dyje River (194 km) in South Moravia and the Oder River (135 km) with the Opava River (131 km) in the north of Moravia and in Silesia.

Length of minor watercourses by administrators

Administrator	Length of watercourses [km]
Forests of the Czech Republic, s. e.	38,260
River Boards, s. e. in total	41,888
Other administrators [1]	5,961
Other [2]	444
Total	**86,553**

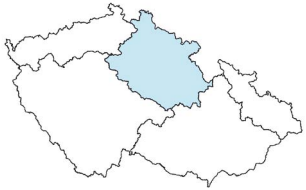
Note: There is indicated digital length from the Central Register of Watercourses.

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

[2] Including sections of minor watercourses, for which the administrator has not been designated yet, and which appear to be solitary.

All the other watercourses are in the category of minor watercourses. The total length of minor watercourses according to the Central Register of Watercourses is 86,553 km. The administration of minor watercourses is carried out based on the Section 48 of the Water Act. The public administration bodies and the general public find detailed information on the establishment of the administration of the respective watercourse in the „Register of Watercourses", which is available under the WATER Information Portal in the Czech Republic, i.e. www.voda.gov.cz.

Elbe River Board, state enterprise

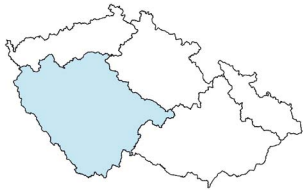


POVODÍ LABE

Víta Nejedlého 951
500 03 Hradec Králové
www.pla.cz

Elbe River Board, state enterprise, on the territory taking a total area of 14,976 km^2 carries out the administration of more than 9,350 km of watercourses and more than 88 km of artificial canals and conduits. In addition, it has the right to carry out the management of 24 water reservoirs, 30 lock chambers, 196 weirs and 20 small hydroelectric power plants.

Vltava River Board, state enterprise

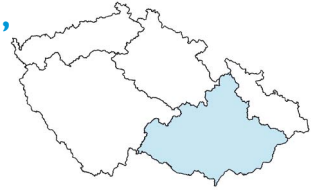


POVODÍ VLTAVY

Holečkova 8
150 24 Praha 5
www.pvl.cz

Vltava River Board, state enterprise, on the territory taking a total area of 28,708 km^2 carries out the administration of more than 23,000 km of watercourses, of which 5,418 km are major watercourses and more than 17,700 km are minor watercourses. In addition, it has the right to carry out the management of 120 water reservoirs (of which 31 are major water reservoirs), 20 lock chambers on the Vltava Waterway, 48 gated weirs and 292 fixed weirs and 19 small hydroelectric power plants.

Morava River Board, state enterprise

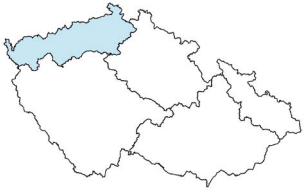


POVODÍ MORAVY

Dřevařská 11
601 75 Brno
www.pmo.cz

Morava River Board, state enterprise, on the territory taking a total area of 21,132 km^2 carries out the administration of 3,748 km of major watercourses and approx. 9,000 km of minor watercourses. The Morava River Basin consists of two, in many aspects different hydrological units: the first is a sub-basin of the Morava River upstream of the confluence with the Dyje River, the latter is a sub-basin of the Dyje River.

Ohře River Board, state enterprise

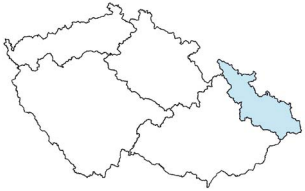


Povodí Ohře

Bezručova 4219
430 03 Chomutov
www.poh.cz

Ohře River Board, state enterprise, on the territory taking a total area of almost 10,000 km^2 carries out the administration of more than 6,900 km of watercourses with 22 major water reservoirs, the majority of which is a part of six water management systems. In addition, it carries out the administration of 41 weirs, 7 pumping and pumped-storage reservoirs, 184 km of artificial canals and conduits and 21 small hydroelectric power plants.

Oder River Board, state enterprise

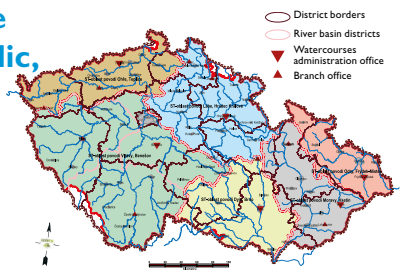


Povodí Odry
státní podnik

Varenská 49
701 26 Ostrava
www.pod.cz

Oder River Board, state enterprise, on the territory taking a total area of 6,252 km^2 carries out the administration of 3,653 km of watercourses, of which 1,111 km are major watercourses and 680 km are regulated watercourses. In addition, it carries out the aministration of 179.5 km of flood control dikes, 17.54 km of water conduits, 82 weirs, 8 large water reservoirs, of which 3 are water-supply reservoirs, and 5 other water reservoirs.

Forests of the Czech Republic, state enterprise



LESY ČR

Přemyslova 1106
501 68 Hradec Králové 8
www.lesycr.cz

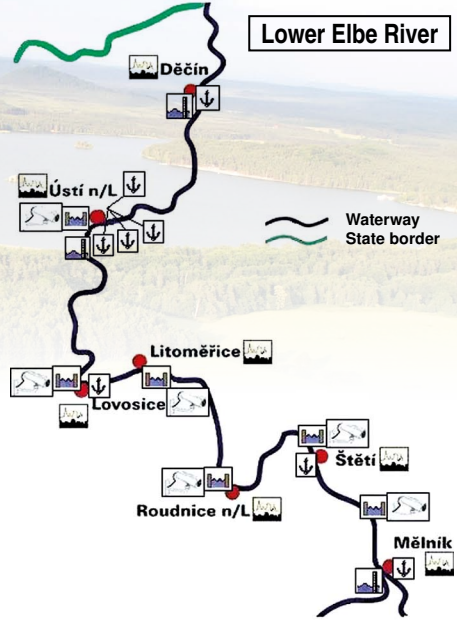
For the Forests of the Czech Republic, s. e., the administration and management of more than 38,000 km of minor watercourses and torrents is organizationally carried out by six regional Watercourse Administrations operating in the Elbe, Vltava, Ohře, Oder, Morava and Dyje river basin districts.

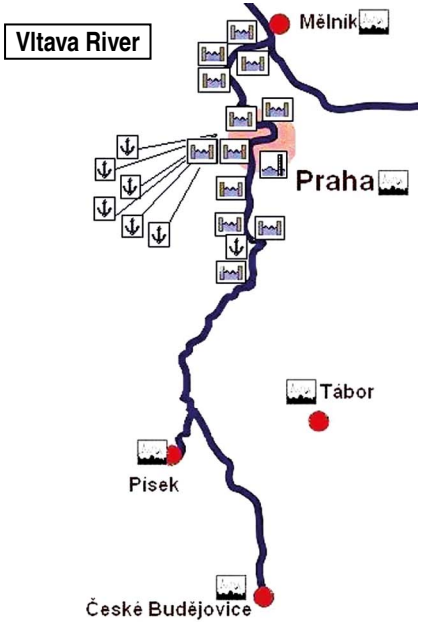
Navigation

Elbe-Vltava waterway is part of the European network of inland waterways of international importance and ensures for the Czech Republic access not only to inland ports, but also sea ports.

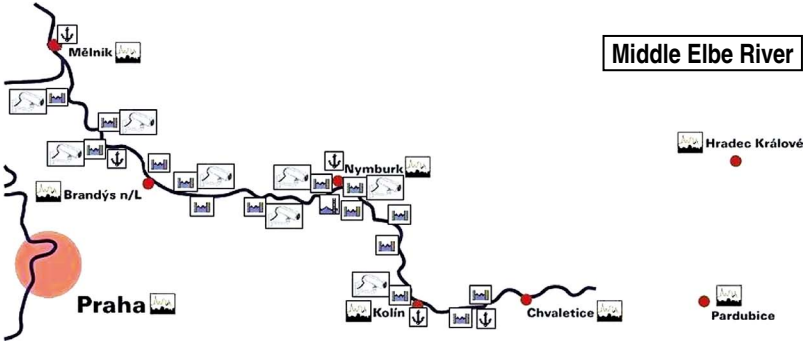
For longer cruises, 222.5 km of the Elbe waterway with 27 lock chambers and 91.5 km of the Vltava waterway with 9 lock chambers and 1.2 km of the Berounka River are available in the Czech Republic. Small and recreational boating can be operated on additional more than 130 km of the Vltava River and 22 km of the Elbe, 4,870 ha of Lipno reservoir, 55 km of the Moravsko-slovácká waterway, on stretches of Morava, Bečva, Oder, Ostravice, Berounka and Ohře rivers and some other water reservoirs.

Responsible for the development and modernization of waterways is the Ministry of Transport, navigation traffic and maintenance of waterways including lock chamber operations are ensured by River Boards, state enterprises.



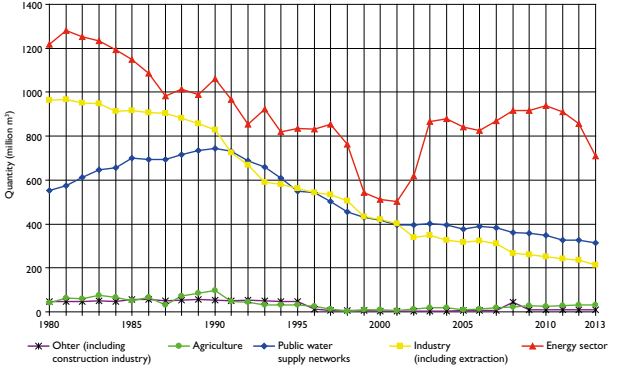


State administration and supervision in inland navigation is carried out by the State Navigation Administration www.spspraha.cz, which also carries out the administration of the Internet portal Elbe-Vltava Traffic Information System www.lavdis.cz, where navigation maps, information on the opening hours of lock chambers, water levels and other information for planning cruises is available.



Water abstractions and discharges of waste waters

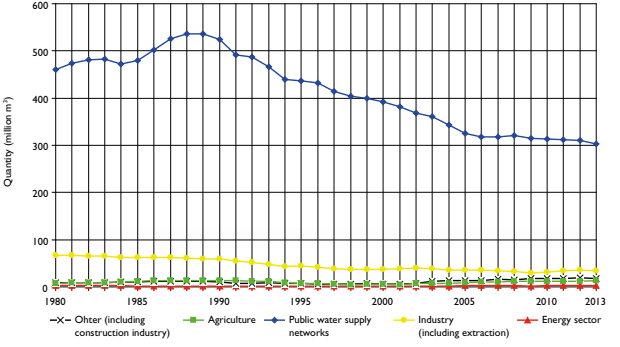
Surface water abstractions in the Czech Republic in the years 1980–2013



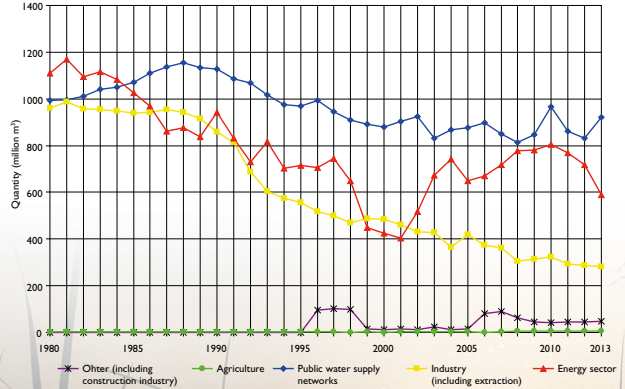
After 1990, due to political and economic changes there occurred a significant decrease in the use of water resources. In 2013, water abstractions reached only 45.7% of the amount of surface water abstracted in 1990.

A similar trend has also appeared in the use of groundwater resources, but with regard to the limited level of charges for abstractions the figures continue to show only a slight decrease.

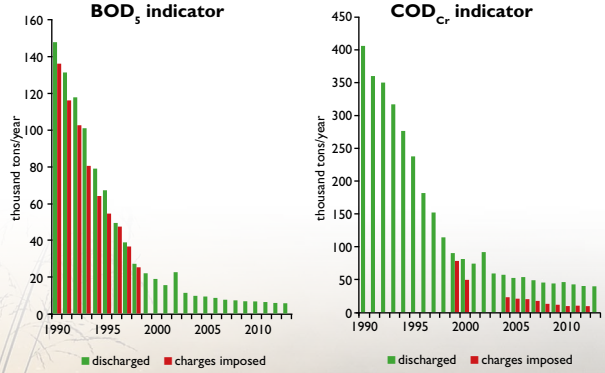
Groundwater abstractions in the Czech Republic in the years 1980–2013



Discharges of waste waters in the Czech Republic in the years 1980–2013



Discharged pollution and pollution on which charges were imposed in the years 1990–2013



Since 1990, declined substantially discharged pollution in the indicators BOD_5 and COD_{Cr}.

Public water supply and sewerage systems

Drinking water supply

In the year 2013 water supply systems supplied water to 9.854 million inhabitants in the Czech Republic, i.e. 93.8% of the total population.

All water supply systems produced in total 600.2 million m^3 of drinking water. 471.8 million m^3 of drinking water were supplied and charged for (invoiced), including 313.6 million m^3 of drinking water for households. Drinking water losses amounted to 106.3 million m^3, i.e. 17.9% of water intended for consumption.

Water consumption continued to show a downward trend in 2013. Similarly, specific quantities of water invoiced in total and water invoiced for households decreased.

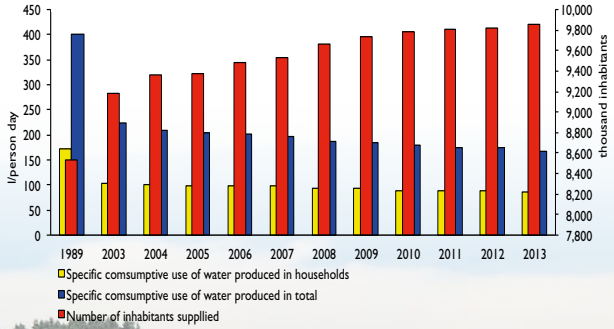
Water supply from water supply systems in the years 1989 and 2007–2013

Indicator	Measurement unit	1989	2007	2008	2009	2010	2011	2012	2013
Inhabitants (mean)	thousand inhabitants	10,364.0	10,323.0	10,430.0	10,491.0	10,517.0	10,495.0	10,509.0	10,511.0
Inhabitants actually supplied with water from water supply systems	thousand inhabitants	8,537.0	9,525.0	9,664.2	9,733.0	9,787.5	9,805.4	9,823.1	9,854.4
	%	82.4	92.3	92.7	92.8	93.1	93.4	93.5	93.8
Specific consumptive use of water produced	l/person/day	401.0	196.0	188.0	184.0	180.0	174.0	173.8	166.8
	% as of 1989	100.0	48.9	46.9	45.8	44.8	43.4	43.3	41.6
Specific quantity of water invoiced for households	l/person/day	171.0	98.5	94.2	92.5	89.5	88.6	88.1	87.1
	% as of 1989	100.0	57.6	55.1	54.1	52.3	51.8	51.5	50.9
Water losses per 1 km of water mains	l/km/day	16,842.0*)	4,893.0	4,889.0	4,705.0	4,673.0	4,220.0	4,351.0	3,856.9
Water losses per 1 inhabitant supplied	l/person/day	90.0*)	36.0	37.0	35.0	35.0	32.0	33.0	29.5

Source: Czech Statistical Office

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

Development in the number of inhabitants supplied and the specific consumptive use of water invoiced in the years 1989 and 2003–2013



Source: Czech Statistical Office

The chart shows a continuing increase in the number of inhabitants connected to the public water supply systems and a continuing decrease in water consumption, including households. This trend is due to the development of water-saving appliances (washing machines, dishwashers, water-saving flush toilets, etc.) as well as the rising prices of water tariff, which previously did not cover all costs, especially the creation of sufficient funds for renovation.

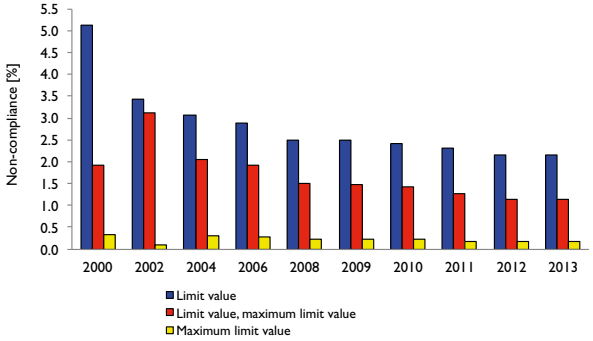
Inhabitants supplied, production and supply of water from water supply systems in 2013

Region	Inhabitants		Water produced in water supply systems	Water invoiced	
	actually supplied with water from water supply systems	percentage of inhabitants supplied with water of the total number		total	for households
	(number)	(%)	(thousand m^3)	(thousand m^3)	(thousand m^3)
City of Prague	1,244,227	100.0	113,617	77,571	50,572
Středočeský region	1,085,882	83.7	45,620	48,365	33,882
Jihočeský region	569,453	89.5	32,952	25,109	17,921
Plzeňský region	477,110	83.3	28,456	24,058	14,025
Karlovarský region	300,999	100.0	19,137	14,123	8,983
Ústecký region	798,296	96.7	50,223	36,923	23,028
Liberecký region	402,603	91.8	26,891	19,035	12,043
Královéhradecký region	520,327	94.3	30,530	22,917	14,831
Pardubický region	503,455	97.6	27,776	22,301	14,176
Region Vysočina	487,181	95.4	24,643	21,100	14,040
Jihomoravský region	1,115,052	95.4	61,191	53,266	37,108
Olomoucký region	578,091	90.8	28,671	24,956	17,238
Zlínský region	550,263	93.8	29,082	22,857	15,310
Moravskoslezský region	1,221,475	99.8	81,386	59,243	40,423
Czech Republic	**9,854,414**	**93.8**	**600,174**	**471,824**	**313,580**

Source: Czech Statistical Office

The highest percentage of inhabitants supplied with drinking water from water supply systems in 2013 was recorded in Karlovarský region (100%), in the City of Prague (100%) and in Moravskoslezský region (99.8%), the lowest percentage of inhabitants supplied with drinking water was recorded in Plzeňský region (83.3%) and Středočeský region (83.7%).

Development of drinking water quality expressed by the percentage of exceedances of the limit values



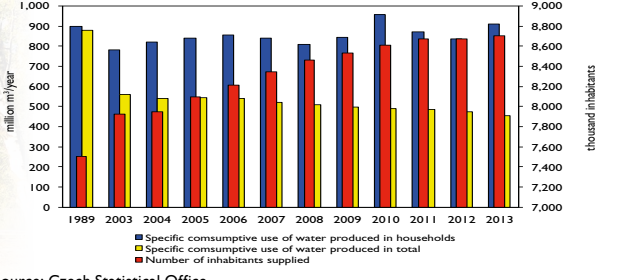
Source: Ministry of Agriculture, Water Supply and Sewerage Systems of the Czech Republic 2013 – Economy, prices, information

The chart shows a downward trend of exceedances of the limit values, which demonstrates a trend of improving quality and security of drinking water supply in the Czech Republic that is comparable with the most advanced EU countries.

Discharge and treatment of municipal waste waters

In 2013, in total 8.705 million inhabitants in the Czech Republic lived in buildings connected to sewerage systems, which is 82.8% of the total population. In total 455.3 milion m^3 of waste waters (excluding rain water charged for) were discharged into sewerage systems. Of this quantity, 97.4% of waste waters were treated (excluding rain water), which amounts to 443.4 million m^3.

Development in the number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated waste waters in the years 1989 and 2003–2013



Source: Czech Statistical Office

Development of infrastructure of water supply and sewerage systems

	1990	1995	2000	2005	2010	2011	2012	2013
Water supply network [km]	44,907	46,071	69,358	73,448	74,141	74,915	75,481	69,358
Sewerage network [km]	21,755	23,605	21,615*)	36,233	40,902	41,911	42,752	43,618
Number of waste water treatment plants	626,000	783,000	1,055	1,994	2,188	2,251	2,318	2,382
Number of water treatment plants **)	-	-	-	1,866	2,054	2,101	2,142	2,231

Source: Czech Statistical Office

Note: *) only data under the administration of water management organizations.

**) until 2000, this data was not monitored by the Czech Statistical Office.

Number of inhabitants living in buildings connected to sewerage systems and the quantity of discharged and treated waste waters in the year 2013 in the individual regions

Region	Inhabitants living in buildings connected to public sewerage systems		Waste waters discharged to public sewerage systems (excl. rain water charged for)	Treated waste waters excluding rain water	
	total	percentage of the total number of inhabitants	total	total	percentage
	(number)	(%)	(thousand m^3)	(thousand m^3)	(%)
City of Prague	1,229,326	98.8	77,935	77,935	100.0
Středočeský region	873,208	67.3	50,113	50,068	99.9
Jihočeský region	546,351	85.8	27,661	26,255	94.9
Plzeňský region	463,461	80.9	29,684	28,635	96.5
Karlovarský region	285,920	95.0	14,450	14,424	99.8
Ústecký region	677,016	82.0	29,590	28,844	97.5
Liberecký region	299,005	68.2	14,066	13,927	99.0
Královéhradecký region	422,334	76.5	20,172	18,867	93.5
Pardubický region	377,412	73.2	17,412	17,126	98.4
Region Vysočina	443,541	86.9	19,483	16,862	86.5
Jihomoravský region	1,033,396	88.4	53,654	52,514	97.9
Olomoucký region	502,861	79.0	27,304	26,437	96.8
Zlínský region	540,013	92.1	26,317	25,206	95.8
Moravskoslezský region	1,010,701	82.6	47,473	46,326	97.6
Czech Republic	**8,704,544**	**82.8**	**455,313**	**443,426**	**97.4**

Source: Czech Statistical Office

The highest percentage of inhabitants connected to sewerage systems in 2013 was recorded in the City of Prague (98.8%) and in Karlovarský region (95.0%), the lowest percentage was recorded in Středočeský region (67.3%) and Liberecký region (68.2%).

Development of water and sewage charges

Pricing in the Czech Republic is regulated by Act No. 526/1990 Coll., on prices, Act No. 403/2009 Coll. and Decree No. 450/2009 Coll., implementing the Act on prices. Pricing can be regulated by pricing authority only in cases well-defined by the provision of Section 1, sub-section 6 of the Act on prices. In accordance with applicable laws and regulations therefore the price for water and sewage charges can include only economically justifiable costs, reasonable profit and tax pursuant to special regulations.

According to the data provided by the Czech Statistical Office, the average price of water rate and sewage charge in 2013 reached the amount of 62.90 CZK.m^{-3} excluding VAT, of which price of water rate was 33.70 CZK.m^{-3} excluding VAT and price of sewage charge was 29.20 CZK.m^{-3} excluding VAT.

The comparison of prices of water rate and sewage charge in the regions shows that the highest prices are in Ústecký region, compared to the national average they are higher by 21.46%. On the contrary, the lowest prices are in the Vysočina region, where consumers pay in average 56.90 CZK.m^{-3} excluding VAT, which is by 9.54% less than the national average. Separately, the highest price of water rate was established in Ústecký region (39.30 CZK.m^{-3} excluding VAT), on the contrary, the lowest price of water rate was established in Jihomoravský region (29.40 CZK.m^{-3} excluding VAT).

The highest price of sewage charge was established in Liberecký region (37.50 CZK.m^{-3} excluding VAT), the lowest price in the Vysočina region (23.70 CZK.m^{-3} excluding VAT).

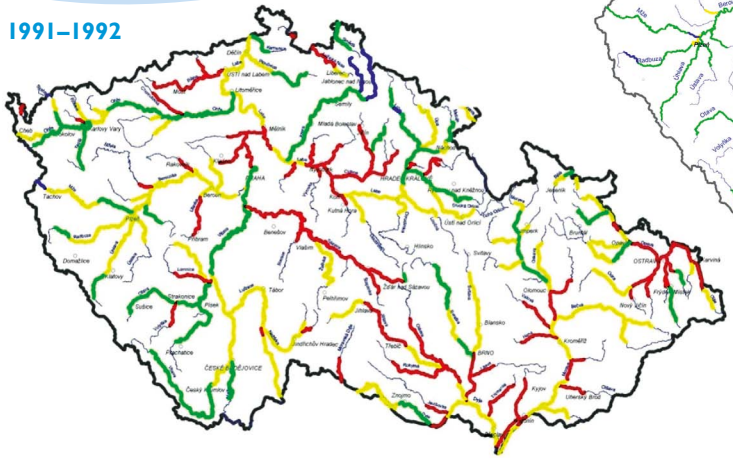
Strike prices of water and sewage charges (incl. VAT)

Indicator	Unit	Year						
		1995	2000	2005	2010	2011	2012	2013
Average price of water rate	CZK/m^3	10.67	17.93	23.94	32.91	33.88	38.29	40.79
Average price of sewage charge	CZK/m^3	8.55	15.05	20.56	28.72	30.69	33.42	35.72

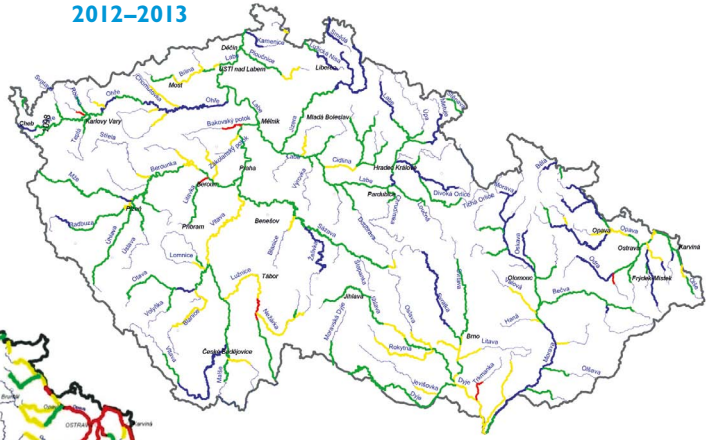
Source: Ministry of Agriculture

Quality of water in watercourses in the Czech Republic

1991–1992



2012–2013



CLASSIFICATION UNDER CSN 75 7221 STANDARD

Basic classification

Class

- I. and II. unpolluted water and slightly polluted water
- III. polluted water
- IV. heavily polluted water
- V. very heavily polluted water

Surface waters used for bathing

Directive 2006/7/EC of the European Parliament and of the Council concerning the management of bathing water quality and repealing Directive 76/160/EEC established the obligation to prepare profiles for surface waters used for bathing (bathing water profiles). The profiles are prepared, reviewed and updated according to Section 34 of the Water Act by river basin administrators.

In 2014, the following numbers of bathing water profiles (bathing sites) were registered by:

- Elbe River Board, state enterprise, 19 profiles (24 bathing sites)
- Vltava River Board, state enterprise, 36 profiles (44 bathing sites)
- Morava River Board, state enterprise, 31 profiles (40 bathing sites)
- Ohře River Board, state enterprise, 15 profiles (22 bathing sites)
- Oder River Board, state enterprise, 16 profiles (23 bathing sites)

Information on bathing water quality and current list of monitored bathing sites is within the competence of the Ministry of Health.

Website of the European Environment Agency reports for each bathing season bathing water profiles in European countries with data available to the general public.

Fisheries and fishpond management

Fishponds in the Czech lands were built from the 10th century, with the heyday of fishpond management falling to the 15th and 16th centuries. Fishponds have become a specific factor of appearance of the Czech landscape and form the basis of Czech fisheries.

Fishery in the Czech Republic is divided in two basic areas. One of them includes production fishery and the other includes management in fishing districts. Fishery as such is part of agriculture and in terms of fish production it belongs to successful areas of agricultural production. Fishery is also followed up by not negligible service sector, for example, manufacturers of various fishnet systems and other technical equipment and tools that are indispensable to this field of activity. Sports fishing as one of active leisure time activities have more than a hundred years´ tradition in our country. Major competitions in this field including the European and the World Championships are organized in the Czech Republic. At these competitions at home and abroad, the Czech sports fishermen receive major awards.

Overview of fish production for direct consumption in the Czech Republic

Indicator of production and consumption of fish	Year				
	1990	1995	2000	2005	2013
Production in thousands of tonnes	19.3	18.6	19.5	20.4	19.4
Of that: export in thousands of tonnes	2.7	7.8	9.2	9.3	8.4
Catch in fishing districts in thousands of tonnes	3.0	4.0	4.7	4.2	3.8
Consumption per person in kg.year^{-1}	1.2	1.1	1.0	1.4	1.5

Technical and safety supervision of hydraulic structures

Technical and safety supervision means to monitor and evaluate the technical condition of the hydraulic structure which impounds or dams water, in terms of its safety, operational reliability, possible causes of failures and their consequences. The designated hydraulic structures subject to supervision are classified in categories I to IV (27 hydraulic structures in category I, 67 hydraulic structures in category II, 339 hydraulic structures in category III and the remaining thousands of hydraulic structures are classified in category IV). Individual categories determine the extent and frequency of supervision. The criterion for inclusion in one of the four categories is the amount of the potential damage that may occur in the event of failure of stability and safety of the hydraulic structure, accompanied by the emergence of a special flood wave.

Number of water reservoirs in the Czech Republic

	Number	Volume [mill. m^3]
Major water reservoirs	165	3,342
Minor water reservoirs (fishponds etc.)	25,000	480

Hydraulic structures by I to III categories of technical and safety supervision

Category	Type of hydraulic structure							Total
	dam lake	polder	weir	tailings pond	dike	hydroelectric power plant	other	
I	27	0	0	0	0	0	0	**27**
II	52	0	3	7	2	1	2	**67**
III	177	33	37	18	58	11	5	**339**
Total	**256**	**33**	**40**	**25**	**60**	**12**	**7**	**433**

Small hydroelectric power plants

Referred to small hydroelectric power plants are those, whose installed capacity is max. 10 MW (in the EU small hydroelectric power plants are considered those with the capacity of up to 5 MW). The overwhelming majority of hydro power (approx. 90%) come from power plants with the capacity of more than 5 MW and the remaining approx. 10 % from small hydroelectric power plants according to the EU classification. Small hydroelectric power plants are mostly built on minor watercourses, whose flow varies depending on the season and precipitation amount. If appropriately located and designed, small hydroelectric power plants may belong to the most ecological and most economical energy sources.

Category	Installed capacity		Electric power generation	
	MW	%	GWh	%
pumped-storage hydroelectric power plants	1,146.5	52.5	553.1	18.5
small hydroelectric power plants < 0.5 MW	96.5	4.4	268.7	9.1
small hydroelectric power plants (0.5 – 10 MW)	197.2	9.0	814.0	27.3
hydroelectric power plants > 10 MW	742.8	34.1	1,346.9	45.1
Total	**2,183.0**	**100.0**	**2,982.7**	**100.0**
Total excl. pumped-storage hydroelectric power plants	**1,036.5**	**-**	**2,429.6**	**-**

International cooperation

Basic documents for the area of international cooperation of the Czech Republic in the field of water:

UNECE Convention on Protection and Use of Transboundary Watercourses and International Lakes (signed in March 1992, in force from October 1996, ratified by the Czech Republic in May 2000).

Agreements on cooperation in the area of international Danube, Elbe and Oder River Basins (map of international river basins see page 2):

- Agreement on the International Commission for Protection of the Elbe (signed in October 1990, in force from August 1993)
- Convention on Cooperation for Protection and Sustainable Use of the Danube River (signed in June 1994, in force from October 1998)
- Agreement on the International Commission for Protection of the Oder River against Pollution (signed in April 1996, in force from April 1999)

Agreements between the Czech Republic and neighbouring states on cooperation on transboundary watercourses in the field of water management:

- Agreement between the Czech Republic and the Federal Republic of Germany on Cooperation on Transboundary Waters (signed in December 1995, in force from October 1997) – state border 811 km, of that 290 km are watercourses
- Convention between the Government of the Czechoslovak Republic and the Government of the People´s Republic of Poland on Water Management on Transboundary Waters (signed in March 1958, in force from August 1958) – state border 762 km, of that 218 km are watercourses
- Agreement between the Czechoslovak Socialist Republic and the Republic of Austria on Regulation of Water Management Issues on Transboundary Waters (signed in December 1967, in force from March 1970) – state border 466 km, of that 173 km are watercourses
- Agreement between the Government of the Czech Republic and the Government of the Slovak Republic on Cooperation on Transboundary Waters (signed on 16 December 1999, in force from 16 December 1999) – state border 252 km, of that 71 km are watercourses

For more information about international cooperation:

International Commission for Protection of the Elbe – ICPE

http://www.ikse-mkol.org/

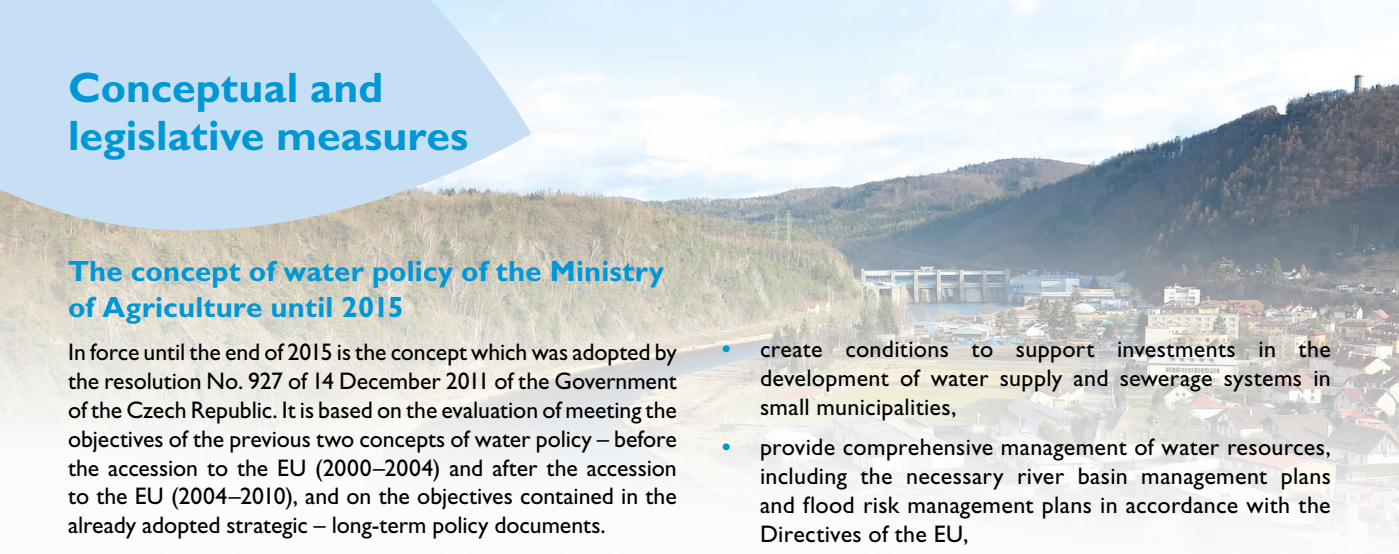
International Commission for Protection of the Oder (against Pollution) – ICPO

http://www.mkoo.pl/

International Commission for Protection of the Danube River – ICPDR

http://www.icpdr.org

Conceptual and legislative measures



The concept of water policy of the Ministry of Agriculture until 2015

In force until the end of 2015 is the concept which was adopted by the resolution No. 927 of 14 December 2011 of the Government of the Czech Republic. It is based on the evaluation of meeting the objectives of the previous two concepts of water policy – before the accession to the EU (2000–2004) and after the accession to the EU (2004–2010), and on the objectives contained in the already adopted strategic – long-term policy documents.

According to this concept, the priorities of the Ministry of Agriculture in the period 2011 – 2015 are the following tasks:

- ensure the preparation and launching of Stage III of Flood Prevention Programme,
- create conditions to support investments in the development of water supply and sewerage systems in small municipalities,
- provide comprehensive management of water resources, including the necessary river basin management plans and flood risk management plans in accordance with the Directives of the EU,
- to meet these priorities it is necessary to establish and provide appropriate financial resources.

The next stage of the concept of water policy is being prepared for the years 2016–2021.

Legal rules adopted after the floods in 1997

Act No. 254/2001 Coll., on waters and on amendment to certain acts (the Water Act), as amended

Decree No. 236/2002 Coll., on the manner of drafting and establishing flood areas

Act No. 12/2002 Coll., on state aid for the regeneration of affected areas (on the provision of government support in the event of natural disaster)

Act No. 238/2002 Coll., on the Fire and Rescue Service of the Czech Republic

Act No. 239/2000 Coll., on integrated rescue system and on amendment to certain acts, as amended

Act No. 240/2000 Coll., on crisis management and on amendment to certain acts (Crisis Act)

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

Strategy and guidelines for flood prevention

- improve forecasting and warning services (early warning, precipitation forecast, relationship to water runoff from the river basin – mathematical models)

- measures in hydrological catchment areas (system concept of measures along watercourses, the combination of structural (technical and non-technical) and non-structural measures, the use of mathematical simulation models, manipulation at hydraulic structures)

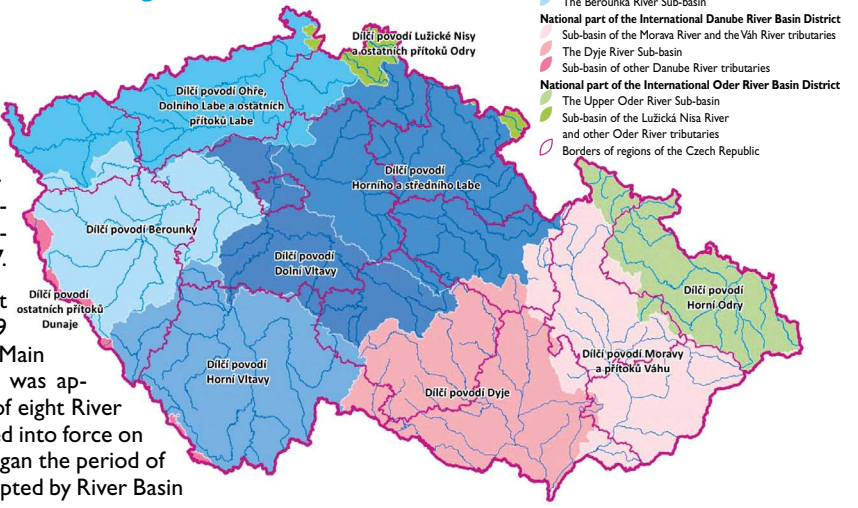
- defining and establishing flood areas (for Q_5, Q_{20}, Q_{100} and newly Q_{500}, and possibly for the maximum)

Water management planning

Water management planning is a systematic conceptual activity, pursuant to the Water Act ensured by the Ministry of Agriculture and Ministry of the Environment, which implements the requirements of Directive 2000/60/EC of the European Parliament and of the Council to achieve good water status in three six-year periods until 2027.

Preparation of Stage 1 of water management planning proceeded in the years 2004–2009 and included a preparation of the Plan of Main River Basins in the Czech Republic, which was approved on 23 May 2007, and a preparation of eight River Basin District Management Plans that entered into force on 22 December 2009. From this date there began the period of implementing Programmes of Measures, adopted by River Basin District Management Plans.

Map of ten River Sub-basins – Stage 2



The adopted River Basin Management Plans must be updated for Stage 2 with a view to the assessment of the impact of the adopted measures. The updated River Basin Management Plans for the period 2015–2021 must be approved by 22 December 2015. Within the amendment to the Water Act, amended by Act No. 150/2010 Coll., also restructuring of the management plans for Stage 2 was adopted. Newly prepared will be three National River Basin Management Plans and the current eight River Basin District Management Plans will be transformed to ten River Sub-basin Management Plans.

Newly prepared will be flood risk management plans, which implement the requirements of Directive 2007/60/EC on the assessment and management of flood risks. These plans will be prepared in a six-year cycle, identical with the river basin management planning cycle, and their preparation and updates will proceed in mutual cooperation.

For more information on water management planning see www.eagri.cz → English → section „WATER MANAGEMENT“ → „Planning in the Field of Water Management“.

Development plans for water supply and sewerage systems in the Czech Republic

Development plans for water supply and sewerage systems in the Czech Republic (The National Development Plan and Regional Development Plans) including their updates represent a medium-term continuously updated concept in the field of water supply and sewerage systems.

Development plans for water supply and sewerage systems in the Czech Republic are the basis for utilization of the European Community funds and national financial resources for construction and renewal of water supply and sewerage system infrastructure.

In the period 2006 – 2014, the Ministry of Agriculture prepared 4,764 opinions on the submitted drafts of development plan updates.

Development plans for water supply and sewerage systems in the Czech Republic are used by the Ministry of Agriculture, the Ministry of the Environment, the regional authorities, water authorities in municipalities with extended authority, owners and operators of water supply and sewerage systems as well as by both specialists community and the general public.

Grants of the Ministry of Agriculture

Established under the programme funding in accordance with Act No. 218/2000 Coll., as amended

- Programme „Support for Remedying Flood Damage to Water Supply and Sewerage System Infrastructure“ (until 2015)
- Programme „Fostering Competitiveness of Agri-Food Complex – Irrigation“ (until 2016)
- Programme „Construction and Rehabilitation of Water Supply and Sewerage System Infrastructure II“ (until mid-2015)
- Programme „Support for Construction and Technical Improvements of Water Supply and Sewerage System Infrastructure“ (until 2017)
- Programme „Support for Renewal, Dredging and Rehabilitation of Fishponds and Construction of Water Reservoirs“ (until 2015)
- Programme „Remedying the Impacts of Floods on State-owned Water Management Property II“ (from 2014)
- Programme „Support for Flood Prevention III“ (until 2019)

To ensure the implementation of the Government Resolution No. 119 of 16 February 2011 in accordance with Act No. 218/2000 Coll., as amended

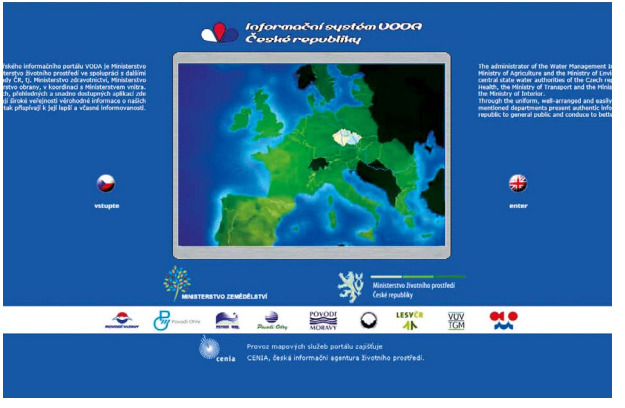
- Grant for the Oder River Board, state enterprise, for the settlement of property affected by the implementation of Measure to Reduce Flood Risks in the Catchment Area of the Upper Opava River and by using nature friendly flood control measures (Stage 2, 2012–2016)

State Administration of Water Management in the Czech Republic

- municipal authorities
- authorities of military districts
- water authorities of municipalities with extended authority
- regional water authorities
- central water authorities
  - Ministry of Agriculture
  - Ministry of the Environment
  - Ministry of Transport
  - Ministry of Defence

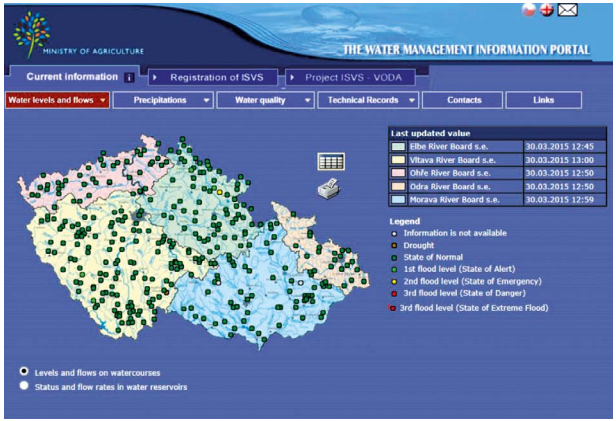
Public Administration Information System in Water Management

It is an interdepartmental project, which was officially launched in 2005. The project aims through the website www.voda.gov.cz to present aggregate and uniform information on water management under the control of all central water authorities (Ministry of Agriculture, Ministry of the Environment, Ministry of Transport, Ministry of Health, Ministry of Defence) independently of the division of competences in water management among different departments. This approach allows state and local governments, including the general public, to use and share state-guaranteed data on water management and eliminate duplicate costs of acquiring the same data within individual departments.

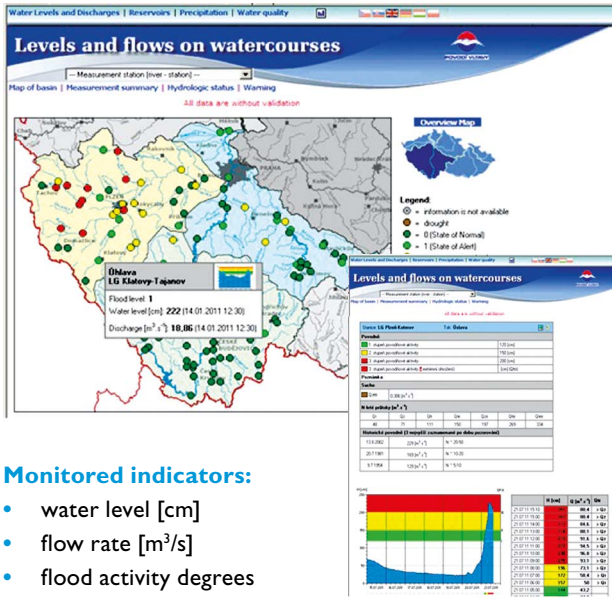


On the home page of the portal there are four main tabs:

- Current information
- Registration of ISVS
- Water management planning
- Project ISVS–VODA



Most frequently visited within the tab „Current information“ is the application „Watercourse levels and flows“, which is based on selected profiles of water gauging stations in the state monitoring network operated by the Czech Hydrometeorological Institute and profiles of River Boards, state enterprises.



Monitored indicators:

- water level [cm]
- flow rate [m^3/s]
- flood activity degrees
- records of historical floods

Interests in river-basins

The Elbe River Basin

- the Elbe was known already during the reign of Emperor Tiberius (42 BC to 16 AD), who wanted its middle and lower reaches to constitute the border of the Roman Empire,
- the spring of the Elbe was consecrated on 19 September 1684 by Jan František Kryštof of Talmberk, suffragan bishop of Hradec Králové,
- the Elbe is after the Danube and Rhine the third longest river in Central Europe, the total length of the Elbe from its source to the North Sea is 1,095.3 km, of which 368.7 km are on the territory of the Czech Republic. In terms of flow, the Elbe is the third largest river in the world,
- the Lower Elbe waterway has six locks. Near Mělník, it is joined by the Vltava waterway with eight locks as far as Radotín in Prague and the Middle Elbe waterway with fifteen locks (as far as Chvaletice).

The Oder River Basin

- the largest fluctuation of flows in watercourses (the ratio of low and high flow rates of up to 1:4000) in the Beskydy Mountains caused by rapid runoff from a very sloping landscape with permeable underlying beds in combination with the occurrence of extreme precipitation,
- the largest subsidence of the ground in the river basin due to undermining (up to 35 m) in the area of the Ostrava-Karviná mining district on the Oder River and its tributaries. Over the past 200 years there has been a subsidence of the ground of 15 m in the Ostrava area and up to 35 m in the Karviná area,
- Moravian Gate (300 m a. s. l.) is the lowest point of the main European watershed between the northern and southern seas.

The Morava River Basin

- the longest functional Moravian waterway Bata Canal – in a length of more than 52 km along with Výklopník in Sudoměřice as unique structural and technical work,
- flood control dikes along watercourses in a length of 1,114 km – the largest portion of these structures in the Czech Republic, more than 70% of the total length of flood control dikes in the Czech Republic,
- the largest polder in the Czech Republic is the Soutok polder with a flooded area of 8,000 hectares and volume of 140 million m^3.

The Vltava River Basin

- the largest water supply reservoir in the Czech Republic is Švihov on the Želivka River. It supplies water to over 1.2 million people,
- lock chamber with the most traffic in the Czech Republic is Smíchov, with around 25,000 vessels yearly passing there,
- the highest drop, namely 20 m, overcome by a lock chamber in the Czech Republic is in Štěchovice,
- the oldest lock chamber in the Czech Republic was in Županovice on the Vltava River from the year 1729. At present, it is underwater at the Slapy reservoir,
- the oldest operating hydroelectric power plant in the Czech Republic is the municipal power plant in Písek on the Otava River. It was built by František Křižík in 1887,
- the youngest lake in the Czech Republic is Odlezelské (Mladotické) Lake on the Mladotický stream. It emerged after the landslide during the disastrous flood in the Berounka River basin in 1872.

The Ohře River Basin

- the most interesting dam is at the Fláje hydraulic structure. It is the only concrete pillar dam in the Czech Republic,
- the highest masonry dam is at the Janov hydraulic structure near Litvínov. The height of the dam above the foundation is 53 m,
- the longest piped watercourse is the Bílina River. In the area of the Ervěnice corridor between Chomutov and Most the river flows through a piped section in a length of 3,110 m.

Do you know that in the Czech Republic…

- the longest river is the Vltava with the flow 430.7 km long,
- the mightiest river is the Elbe, whose average flow rate at the state border in Hřensko is 312.5 m^3/s; the Elbe also has the largest river basin taking an area of 49,933 km^2 and the highest drop – from the spring at an altitude of 1,384 m a. s. l. to the state border, where it leaves our country at an altitude of 115 m a. s. l. (difference 1,269 m),
- the largest artificial rivers Zlatá stoka (49 km), Nová řeka (13.5 km) and Opatovický kanál (32.7 km) were created in the 16th century,
- the first interconnection of the Elbe and Danube River basins is formed by the Schwarzenberg Canal 45.1 km long, built at the turn of the 18th and the 19th centuries,
- the highest waterfall is Pančavský Waterfall in the Krkonoše Mountains with a total height of 148 m,
- the largest lake is Černé jezero in the Bohemian Forest, taking an area of 18.47 ha and reaching a depth of 39.8 m, which is also the deepest non-karst lake in the Czech Republic,
- the deepest lake is a karst lake in Hranická Abyss; its maximum depth has not been measured yet, automatic sound in 1995 reached a depth of 204.5 m,
- the largest pond is Rožmberk taking an area of 449 ha, with the volume of retained water in amount of 5.9 million m^3 and the dam reaching a length of 2,355 m,

- the deepest lake is Máchovo jezero with a maximum depth of 12 m,
- the largest water area is constituted by Lipno I reservoir – 4,870 ha,
- the largest volume is shown by Orlík water reservoir – 716.56 million m^3,
- the deepest water reservoir is Dalešice in the Třebíč area, reaching a depth of 85.5 m. It is also a water reservoir with the highest earth dam in the Czech Republic (100 m), which is the second highest in Europe,
- the largest pumped-storage power plant in the Czech Republic is Dlouhé Stráně, which is also the third largest pumped-storage hydroelectric power plant in the world. It is also a plant with the highest drop and the highest output in the Czech Republic. This power plant also includes the largest reversing hydraulic turbine in Europe,
- the longest earth dam in the Czech Republic is at the Nechranice hydraulic structure, it is also the longest earth dam in central Europe (3,280 m),
- the most abundant spring of free groundwater is in Mělnická Vrutice, yielding the amount of 140 l/s,
- the hottest mineral spring is Vřídlo in Karlovy Vary, which rises from a depth of between 2,000 and 3,000 m and its temperature reaches 73 °C.

Photographers:

Archive of the Ministry of Agriculture – pages 12, 15, 20, 28, 37 and the photo on the cover

Ing. Jiří Šeda – pages 17, 24, 25, 27, 30, 38, 40

Ing. Tomáš Petr – page 19

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