MINISTRY OF AGRICULTURE
OF THE CZECH REPUBLIC

CZECHIA EXPERIENCE IN RURAL WATER SERVICE PROVISION

MGR. TOMÁŠ GREMLICA

The Last Mile: Rural Water Services Delivery In The Danube Region

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ICPDR IKSD
International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau

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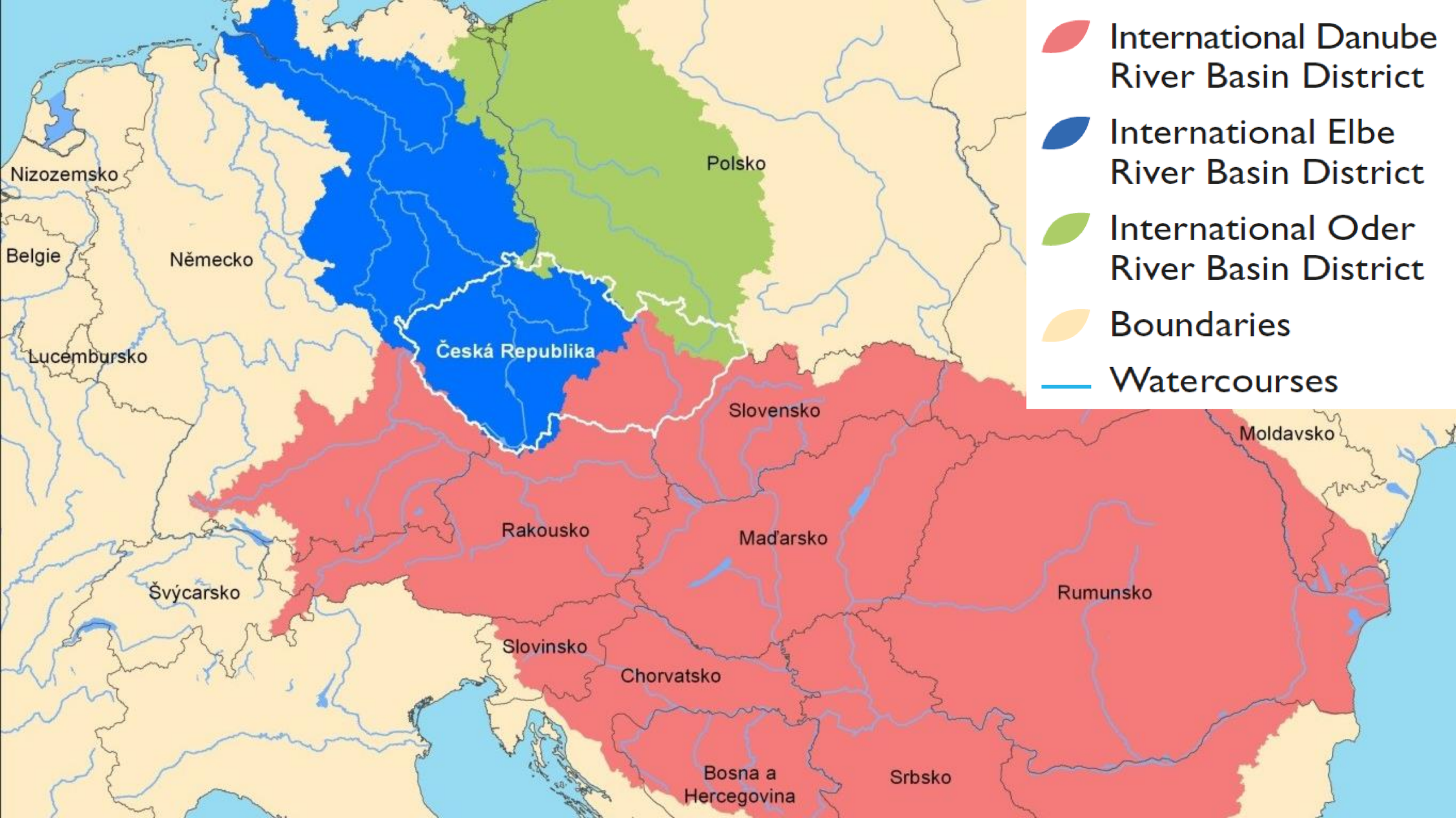
IAWD DANUBE WATER PROGRAM


International Danube River Basin District
International Elbe River Basin District
International Oder River Basin District
Boundaries
Watercourses
Nizozemsko
Belgie
Německo
Lucembursko
Polsko
Česká Republika
Slovensko
Moldavsko
Rakousko
Maďarsko
Švýcarsko
Rumunsko
Slovinsko
Chorvatsko
Bosna a Hercegovina
Srbsko

THE CZECH REPUBLIC – BASIC HYDROLOGICAL INFORMATION

- The territory of the Czech Republic is located in real centre of the Central Europe, **in the source area of part of the European rivers**.
- The territory of the Czech Republic is crossed by the main European watershed, which separates **3 drainage sea areas**:
  - the **North Sea** drainage area – **Elbe** river basin (**66,2%** of total area of the Czech Republic);
  - the **Black Sea** drainage area – **Morava** river basin (**24,0%** of total area of the Czech Republic);
  - the **Baltic Sea** drainage area – **Odra** river basin (**9,8%** of total area of the Czech Republic).
- Total length of watercourses: **99 200 km**, from it:
  - significant watercourses: **16 400 km**;
  - minor watercourses: **82 800 km**.
- Significant water reservoirs: **165**, from it:
  - reservoirs for drinking water supply: **47**
- Small water reservoirs (fishponds, etc.): more than **25 000**.

THE CZECH REPUBLIC – BASIC DEMOGRAPHIC INFORMATION

- Total area of the Czech Republic: **78 871 km^2**.
- Population of the Czech Republic: **10 900 555 inhabitants**.
- Population density: **138,2 inhabitants per km^2**.
- Number of municipalities: **6 258 villages, towns and cities**, from it:
  - towns and cities over 5 000 inhabitants; **279**

    (5000–20000 inh. = **216**; 20000–50000 inh. = **44**; 50000–100000 inh. = **13**; over 100000 inh. = **6**);
  - villages and towns 1 000–5 000 inhabitants: **1 243**

    (1 000–2 000 inh. = **795**; 2 000–5 000 inh. = **448**);
  - villages 0–1 000 inhabitants: **4 736**

    (0–200 inh. = **1 359**; 200–500 inh. = **1 995**; 500–1 000 inh. = **1 382**).
- **1 384 732** inhabitants currently live in the capital city of Prague.


Rumburk
Varnsdorf
Krupka
Děčín
Nový Bor
Liberec
Jablonec n. N.
Česká Lípa
Teplice
Ústí n. L.
Litvínov
Vrchlabí
Turnov
Trutnov
Bílina
Litoměřice
Jirkov
Most
Chomutov
Mladá Boleslav
Dvůr Králové n. L.
Roudnice n. L.
Jičín
Náchod
Klášterec n. O.
Kadaň
Louny
Jaroměř
Žatec
Mělník
Ostrov
Kralupy n. V.
Neratovice
Chodov
Karlovy Vary
Milovice
Jeseník
Slaný
Hradec Králové
Sokolov
Brandýs n. L.-St. Boleslav
Nymburk
Rychnov n. K.
Kladno
Lysá n. L.
Poděbrady
Rakovník
Pardubice
Krnov
Cheb
Čelákovice
Kolín
Vysoké Mýto
Praha
Říčany
Ústí n. O.
Šumperk
Bruntál
Bohumín
Mariánské Lázně
Králův Dvůr
Beroun
Kutná Hora
Chrudim
Opava
Hlučín
Jesenice
Česká Třebová
Karviná
Ostrava
Tachov
Čáslav
Litomyšl
Žábřeh
Havířov
Benešov
Uničov
Plzeň
Rokycany
Vlašim
Sternberk
Český Těšín
Příbram
Svitavy
Frýdek-Místek
Třinec
Havlíčkův Brod
Olomouc
Nový Jičín
Kopřivnice
Žďár n. S.
Hranice
Frenštát p. R.
Humpolec
Boskovice
Prostějov
Přerov
Rožnov p. R.
Domažlice
Klatovy
Tábor
Valašské Meziříčí
Pelhřimov
Jihlava
Velké Meziříčí
Blansko
Holešov
Vsetín
Písek
Kuřim
Vyškov
Kroměříž
Strakonice
Zlín
Třebíč
Brno
Otrokovice
Sušice
Jindřichův Hradec
Uherské Hradiště
Kyjov
Uherský Brod
Prachatice
České Budějovice
Hodonín
Veselí nad Moravou
Znojmo
Břeclav
Český Krumlov

Region	Number of Inhabitants	Number of municipalities up to 100 inhabitants
Highlands Region	514 777	107
South Bohemian Region	652 303	87
Pilsen Region	605 388	57
Central Bohemian Region	1 439 391	51
South Moravian Region	1 217 200	31
Pardubice Region	528 761	21
Hradec Kralove Region	555 267	18
Olomouc Region	631 802	8
Usti nad Labem Region	812 337	7
Liberec Region	449 177	4
Zlin Region	580 531	4
Karlovy Vary Region	293 595	1
Moravian-Silesian Region	1 189 674	1
Prague Capital City	1 357 326	0
Czech Republic	10 827 529	397

Region	Number of Inhabitants	Number of municipalities up to 200 inhabitants
Highlands Region	514 777	326
South Bohemian Region	652 303	223
Pilsen Region	605 388	158
Central Bohemian Region	1 439 391	198
South Moravian Region	1 217 200	102
Pardubice Region	528 761	103
Hradec Kralove Region	555 267	92
Olomouc Region	631 802	46
Usti nad Labem Region	812 337	39
Liberec Region	449 177	26
Zlin Region	580 531	18
Karlovy Vary Region	293 595	15
Moravian-Silesian Region	1 189 674	13
Prague Capital City	1 357 326	0
Czech Republic	10 827 529	1 359

THE CZECH REPUBLIC – BASIC WATER MANAGEMENT INFORMATION

In the Czech Republic, the following ministries are responsible for the regulation of water supply and wastewater management:

- **The Ministry of Agriculture** – is responsible for the economic use of water resources and for the collection, removal and treatment of wastewater;
- **The Ministry of the Environment** – is responsible for the protection of the quantity and quality of surface and underground waters and for the protection of aquatic ecosystems;
- **The Ministry of Defence** – ensures the management of small watercourses in the territory of military districts;
- **The Ministry of Health** – is responsible for monitoring and evaluating the quality of drinking water supplied from public water supply systems and for monitoring the quality of bathing water;
- **The Ministry of Finance** – according to Act No. 526/1990 Coll., on prices, as amended, determines the goods and the method of their price regulation for all the seller in the field of water supply and sewerage is responsible for issuing.

THE CZECH REPUBLIC – BASIC WATER MANAGEMENT INFORMATION

- In the Czech Republic, the following ministries are responsible for the regulation of water supply and wastewater management:
  - **The Ministry of Transport** – is responsible for inland freight and passenger water transport and for inland waterways.
- State administration according to **Act No. 254/2001 Coll.,** on water and on the amendment of certain laws (Water Act), as amended, is carried out by water authorities and the Czech Environmental Inspectorate. They are water authorities:
  - **municipal authorities**;
  - **district authorities on the territory of military districts**;
  - **municipal authorities of municipalities with extended powers**;
  - **regional authorities**;
  - **building authorities**;
  - **ministries as the central water authorities**.
- As part of water law supervision, **The Czech Environmental Inspectorate** checks how natural or legal persons in business comply with the obligations established by the Water Act.

THE CZECH REPUBLIC – BASIC WATER MANAGEMENT INFORMATION

- Important watercourse administrators under the Ministry of Agriculture are River Boards and Forests, state enterprises, namely:
  - **Elbe River Board, state enterprises**;
  - **Morava River Board, state enterprises**;
  - **Oder River Board, state enterprises**;
  - **Ohře River Board, state enterprises**;
  - **Vltava River Board, state enterprises**;
  - **Forests of the Czech Republic, state enterprises**.
- These administrators manage **94.4%** of the total watercourse length in the Czech Republic. The remaining **4.6%** of watercourse lengths are managed by other administrators (the Ministry of Defence, the National parks administrators, municipalities, other natural persons and legal entities).
- All 819 significant watercourses with a total length of 16 436 km are listed in Annex No. 1 to **Decree No. 178/2012 Coll.** that defines a list of significant watercourses and methods for conducting activities linked with watercourse management.


selected major reservoirs
selected major reservoirs for drinking water supply
Fláje
Přísečnice
Újezd
Křímov
Nechranice
Horka
Stanovice
Skalka
Vidhostice
Jesenice
Josefův Důl
Souš
Mšeno
Les Království
Rozkoš
Klíčava
Hracholusky
Slapy
Vrchlice
Pastviny
Seč
Křižanovice
Švihov
Orlík
Hamry
Slezská Harta
Kružberk
Těrlicko
Olešná
Žermanice
Nýrsko
Vír I
Letovice
Hubenov
Mostiště
Vír II
Plumlov
Morávka
Bystřička
Šance
Brno
Slušovice
Karolinka
Dalešice
Římov
Vranov
Nové Mlýny - střední
Nové Mlýny - horní
Nové Mlýny - dolní
Lipno I
Lipno II
N

THE CZECH REPUBLIC – LEGAL FRAMEWORK

- The basic legal framework governing water protection and water management in the Czech Republic consists of:
  - **Act No. 254/2001 Coll., on water and on the amendment of certain laws (Water Act)**, as amended;
  - **Act No. 274/2001 Coll., on water pipes and sewers for public use and on the amendment of certain laws (Water Pipes and Sewers Act)**, as amended.
- These acts are supplemented by implementing legislation, which are government regulations and decrees.

THE CZECH REPUBLIC – WATER AND SEWAGE INFRASTRUCTURE

The development of the water supply and sewerage sector in the Czech Republic is characterized by an excessively high number of **infrastructure owners**, which numbered **8 153** in 2022, and **infrastructure operators**, whose number reached **3 091** in the same year. Owners and operators are guided by five basic models of operating water and sewage systems:

- **separate operating model**;
- **proprietary operating model**;
- **stand-alone operating model**;
- **mixed operating model**;
- **service operating model**.

THE CZECH REPUBLIC – WATER AND SEWAGE INFRASTRUCTURE

Drinking water and sewage infrastructure in the Czech Republic is owned by almost 92% of cities and municipalities. Either they own the property directly, or it is property managed by companies or associations of municipalities controlled by them. Among other things, the Water Act imposes on the owners of water supply and sewerage systems:

- **ensure the permanent existence of the water management infrastructure, its continuous operation and take care of its maintenance and renewal**;
- **ensure the operability of the network, the quality of the supplied water, the range of services provided 365 days a year, effective wastewater treatment, the expertise of service personnel**.

THE CZECH REPUBLIC – WATER AND SEWAGE INFRASTRUCTURE

- In accordance with the requirements of the Water Act, regional authorities prepare and approve a **Plans for the development of water supply and sewerage systems** for their territories, which are updated annually. In doing so, they are based on proposals for changes submitted to the regional office by the municipalities. Before approval, the regional authority will discuss the draft plan with the municipalities, owners and operators of water supply and sewerage systems in its territory, with the Ministry of Agriculture, with the relevant spatial planning authority, with the relevant basin manager and with the relevant water authority.

THE CZECH REPUBLIC – WATER AND SEWAGE INFRASTRUCTURE

- Each municipality, on whose territory a water management infrastructure is built, must make a decision on how it will handle this infrastructure. That is, whether it will take care of the operation of the water pipes and the sewers by itself, or if it will choose a specialized company. The main criterion must be the efficiency of operation, which is directly related to the price of water and sewage, and of course also the expertise and ability of technical security of the entire operation.
- As shown by the results of the Ministry of Agriculture's investigation of small and smallest municipalities operating water management infrastructure, the insufficient creation of funds intended for repairs and restoration is a relatively widespread practice. Some municipalities even subsidize water and sewage prices from the municipal budget. Although people pay a low price for water and sewage, the municipality has little income from the operation of the water management property and therefore does not have sufficient resources for its maintenance and renewal. Such a practice is unsustainable in the long term.

THE CZECH REPUBLIC – RURAL WATER MANAGEMENT SERVICES

- Currently, the Czech Republic has achieved that agglomerations larger than 2 000 population equivalents (p. e.) are basically drained. Wastewater is effectively collected, drained and treated even in some municipalities from 1 000 to 2 000 p. e.
- Upon joining the European Union, the Czech Republic undertook to ensure an adequate wastewater solution even in smaller agglomerations.
- In addition, the goal is also to achieve a good water condition. This requires solving the problems of the countryside as a whole. Furthermore, it is necessary to ensure a minimum reduction of wastewater in cities, by implementing measures for rainwater management, and to keep agricultural production and industry under control.
- Another parameter that the Czech Republic has set for itself in the area of wastewater sanitation is the socially acceptable price of water and sewage, which is closely related to the effectiveness of the investments made in the infrastructure of water pipes and sewers.

THE CZECH REPUBLIC – RURAL WATER MANAGEMENT SERVICES

- Sewerage in municipalities with more than 2 000 p. e. is thus almost solved in the Czech Republic. Nevertheless, most of the monitored profiles still do not reach a good status – in the Elbe basin it is 85% and in the Danube basin 75% of the profiles.
- Even with investments of around five billion CZK per year, the situation has basically not changed for more than ten years. From the changes in the profiles, it is possible to judge that the sewerage of small municipalities has an effect only in their immediate surroundings.
- In many cases, the direct effect on surface water bodies is also negative, because the discharged treated wastewater is concentrated in one place and will usually at least increase the phosphorus content.
- With the implementation of central wastewater treatment in small municipalities, the cost of collection, removal and treatment of wastewater per 1 inhabitant increases with the decreasing number of their inhabitants (i.e. with an increase in the length of the sewage system per 1 p. e.).

THE CZECH REPUBLIC – RURAL WATER MANAGEMENT SERVICES

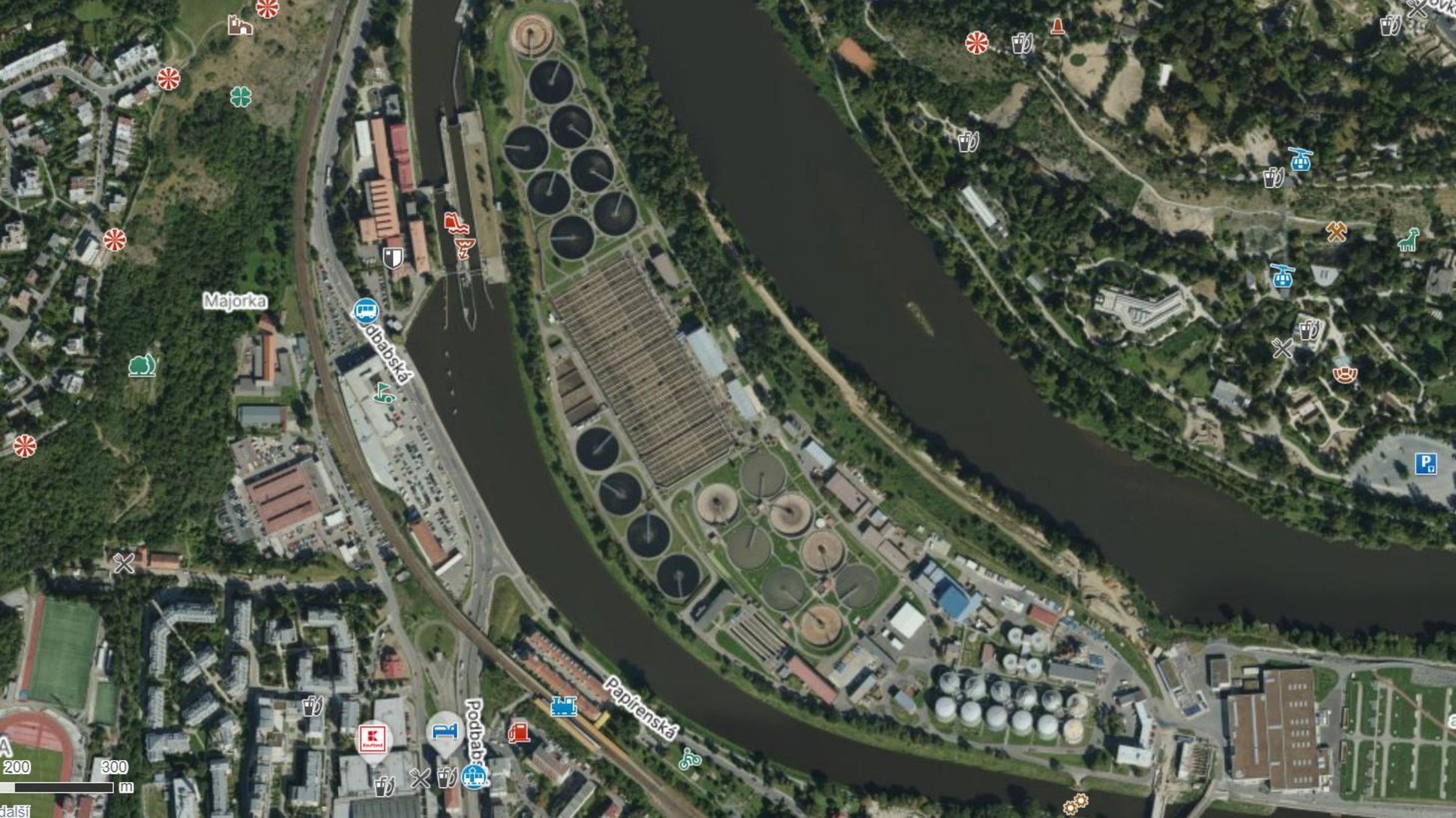
- At the same time, there has been a huge boom in the construction of individual/residential wastewater treatment plants in the Czech Republic in recent years. Unfortunately, they were also installed in locations where it is uneconomical and impractical even for operators and unmanageable for state administration bodies and the performance of their control functions.
- In addition to the mentioned methods, a number of other solutions for the sanitation of small municipalities are also possible, such as small-profile sewers, group treatment plants, systems with water division, etc. The rural environment often allows the use of extensive technologies, which represent the most sustainable solutions with minimal operating costs, carbon footprint and social impacts on residents and also with minimal negative effects on the environment.
- Ideal Plans for the development of water supply and sewage systems must be based on detailed knowledge of local conditions – demographic, hydrogeological, morphological, land use and other requirements for environmental protection, protection of biodiversity and protection of ecosystems.

THE CZECH REPUBLIC – RURAL WATER MANAGEMENT SERVICES

- Problems in supplying small villages with drinking water:
  - **impacts of climate change** – according to some studies, drinking water supplies may decrease by up to 20% by 2085 as a result of climate change;
  - **impacts of long periods of drought and of water scarcity**;
  - **effects of demographic changes** – according to the statistics of the Czech Statistical Office, between 2010 and 2020, the number and share of inhabitants living in small municipalities up to 2 000 p. e. increased;
- **Water pipes are registered in 5 036 municipalities**, of which 87% are small municipalities with up to 2 000 inhabitants. About **1 200 municipalities**, mostly small ones, do not have water supply for public use, and the inhabitants are thus dependent on individual sources or municipal wells.

THE CZECH REPUBLIC – RURAL WATER MANAGEMENT SERVICES

- The main sources of drinking water in small municipalities of the Czech Republic according to number of inhabitants are:
  - **regional water supply (39,2%)**;
  - **local water supply (33,3%)**;
  - **water supply and individual supply (16,3%)**;
  - **individual supply (11,2%)**.
- Share of population supplied with water from water supply systems: **95,6 %**.
- Length of the water supply network in 2022: **81 005 km.**
- Share of population permanently living in houses connected to sewerage in 2022: **87,3 %.**
- The length of the sewer network in 2022: **51 568 km.**
- Number of wastewater treatment plants in 2022: **2 915**.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THANK YOUR FOR YOUR ATTENTION

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