

# SDG 6 Country Acceleration Case Study Czechia

2024

# SDG 6 Country Acceleration Case Studies

**UN-Water coordinates the work of the United Nations (UN) on water and sanitation.**

At the end of 2023, UN-Water was comprised of 35 UN entities (Members) and 48 other international organizations (Partners) working on water and sanitation issues. UN-Water’s role is to ensure that Members and Partners ‘deliver as one’ in response to global water-related challenges.

**The latest progress report shows that we are not on track to achieve Sustainable Development Goal (SDG) 6.** At the current rate of progress, the world will not reach the SDG 6 targets by 2030. In 2021, UN-Water reported that the world – on average – must quadruple current rates of progress to have a chance of achieving SDG 6 by 2030.<sup>1</sup>

**It is not enough to look at what is not working.** There is so much we can learn from the many countries that have made significant progress. Since 2022, UN-Water has therefore commissioned case studies to understand how some countries are advancing towards SDG 6. The case studies highlight achievements and describe processes, enabling conditions and key lessons learned in countries selected for their progress on SDG 6. As such, each case study is a recognition of the progress made at the country level on one or several SDG 6 targets.

**The case studies are meant to enable the replication of what has worked** and encourage continued action to achieve SDG 6 in the selected countries. The 2030 Agenda for Sustainable Development forms an overarching lens for the case study to capture interlinkages and opportunities that are relevant across sectors and SDGs.

**Starting in 2022, UN-Water has published case studies on three countries each year.**

The selection of the case studies is made by the UN-Water Expert Group on the 2030 Agenda for Sustainable Development, based on country progress reporting on the SDG 6 global indicators, compiled by the UN custodian agencies. In 2024, the Expert Group selected Czechia, Cambodia and Jordan for the case studies.

**The contents of the case studies are prepared by UN-Water,** based on material shared by UN-Water Members and Partners and representatives from relevant ministries and institutions in the selected countries, including the country monitoring focal points for the SDG 6 global indicators. This case study also includes inputs from a participatory workshop, held in April 2024 and organized in collaboration with the UN Information Centre (UNIC) in Prague, the Ministry of the Environment and the Ministry of Agriculture of Czechia, as well as background interviews with a variety of stakeholders, conducted online and in-person. The case studies are reviewed and validated by UN-Water Members and Partners before publication.

**To enable cross-country comparison and learning,** the case studies examine key underlying factors and enabling conditions that brought about the changes. Often, these are political, institutional or behavioral, and they span over the five global accelerators identified in the SDG 6 Global Acceleration Framework: financing, data and information, capacity development, innovation, and governance.

So far, the following countries have been selected for country acceleration case studies:

**2022:** Costa Rica, Pakistan, Senegal

**2023:** Brazil, Ghana, Singapore

**2024:** Cambodia, Czechia, Jordan

More information: [www.unwater.org/publications/country-acceleration-case-studies](https://www.unwater.org/publications/country-acceleration-case-studies)

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1. As evidenced by UN-Water (2021).

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View of the Panska Skala Rock Formations, Czechia.  
Photo: Martin Melichar

# Executive summary

**Czechia’s water and sanitation has been steadily improving since the 1990s and the country is making progress on all SDG 6 indicators.** 98 per cent of the population now have access to safely managed drinking water and 89 per cent have access to safely managed sanitation. SDG 6 targets on drinking water and transboundary cooperation can be considered achieved. The key factors and drivers identified include:

- **Municipalities are aware of the importance of water.** SDG 6 ranks first among the SDGs in terms of importance for Czech municipalities. At the municipal level, elections can be won by committing to water.
- **There is a long tradition of water management planning.** River Basin Management Plans and Flood Risk Management Plans are updated once every six years. Public consultation during drafting of the plans is mandatory. Projects need to comply to receive funding.
- **There is a strong legal basis.** Czechia adopted comprehensive legislation and is equipped with a well-developed system of technical standards and certified methodologies for water management and water protection. The legal basis was enriched with the *acquis communautaire* when the country acceded to the European Union (EU) in 2004.
- **Investment policy evolves progressively.** Subsidies for the deployment of wastewater treatment used to be limited to municipalities of over 2,000 inhabitants. In 2010, subsidies started to be directed to smaller agglomerations, where infrastructure development was also desirable.
- **There is strong public investment with co-funding from the EU.** For water supply and sanitation, most of

the expenditure comes from household contributions and government spending from state and municipal budgets. In poorer areas, this is complemented by transfers from the EU.

- **Water tariffs are sustainable and socially responsible.** The combination of higher tariffs and low consumption represents a strong incentive to fight against leaks and other forms of water losses. As a result, water consumption has reduced and is relatively low. The level of affordability for households is good.
- **Reports on water management are published on a regular basis.** Every year, the Ministry of Agriculture and the Ministry of the Environment jointly produce and publish the “Blue Report” on water management. It contains all key information about water resources in the country.
- **Key information about water is collected and accessible online.** The 2001 Water Act specifies the datasets that need to be collected and who is responsible for them. There is an online portal that allows comparison of data across time and location and includes illustrative comments that provide an explanatory narrative alongside the data.
- **Grey infrastructure and nature-based solutions are combined.** The use of both technical and nature-based solutions has reduced the risk of flooding since 2010.
- **There is cooperation with neighbouring countries, through river basin organizations and in the framework of the UN.** Regular expert meetings about technical issues help to build trust and a spirit of shared responsibility.

**The experience of Czechia is highly relevant for other medium- and small-sized economies in transition.** Czechia is already sharing its experience through supporting water-related projects in Ethiopia, Iraq, Lebanon and the Kyrgyz Republic, as well as through international organizations such as the EU and the UN. Czechia is highly engaged at the basin, regional and global levels, including through the United Nations Economic Commission for Europe (UNECE) Water Convention and its Protocol on Water and Health. Czechia actively participated in the UN 2023 Water Conference and the World Water Forum. It also contributes to the Water Action Agenda. The government is currently updating the legal framework of water protection and water management. This will further accelerate progress towards SDG 6.



# 1. Country context

**The Czech Republic, also known as Czechia, is a country located in Central Europe. About three-quarters of its almost 11 million inhabitants live in cities (Table 1). In rural areas, there are a lot of small municipalities. Czechia’s Gross Domestic Product for 2022 was 27,226 United States dollars (USD) per capita, which has been growing steadily over the last two decades. This positions Czechia among high income countries, according to the World Bank. The country is a parliamentary democracy with a president as head of state. The prime minister is the head of government and is responsible to the Chamber of Deputies, which is in principle elected every four years. The Senate participates in law-making and is partially renewed every two years. The country is divided into 13 administrative regions plus the capital city, which has regional status. Czechia acceded to the EU in 2004.**

**Water management in Czechia follows a basin approach.** The country is covered by international river basins, namely the Elbe, which is the largest basin and drains into the North Sea; the Danube, which drains into the Black Sea; and, the Oder, which drains into the Baltic Sea. It was among the first countries in Europe to adopt a basin approach to water management. River basin management was institutionalized through five state-owned River Boards, which are state enterprises founded by the Ministry of Agriculture. They perform river basin and watercourse management. They are also responsible for the state-owned waterworks. A privatization process started in the 1990s. This resulted in several private water utilities operating water supply and sanitation alongside many small public utilities. In 2021, there were 7,896 owners and 3,066 operators. The Ministry of Agriculture and the Ministry of Environment oversee policymaking and planning in the water sector.

**At a glance, Czechia might be considered a country rich in water.** However, with 1,229 m³ of renewable freshwater resources per capita per year the country is often considered water stressed, according to the so-called Falkenmark indicator.<sup>2</sup> In fact, Czechia has among the lowest rates of water consumption per capita in the EU, i.e. 89.4 l/person/day in 2022. Still, several parts of the country face medium-high risk of drought.

**Most Czech rivers flow to neighbouring countries.** Czechia is therefore known as one of the ‘water towers’ of Europe. Transboundary cooperation is important to reduce the risk of drought, flooding and pollution downstream.

Czechia has concluded international agreements with all neighbouring countries, covering all transboundary basins. Czechia joined the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) in 2000 and was among the first countries to ratify its Protocol on Water and Health.

**More than one-third of the land area is covered by forest.** These ecosystems are of great importance for water retention and flood risk mitigation. Czechia faced catastrophic floods in 1997, 2002, 2009 and 2013. Forests also perform other important ecosystem services such as reducing the risks of drought and improving water quality. The country has relatively few natural lakes. There are 165 major water reservoirs, 47 water supply reservoirs and about 24,000 ponds. Water-related ecosystems (wetlands) are limited in number. Their area is small. Many wetlands were drained in the 20th century, and the land was reclaimed for agriculture.

**According to FAO, industry and municipal uses represent 97 per cent of freshwater withdrawals.** Water resources used to produce drinking water are almost equally divided between surface and groundwater. Irrigated agriculture is not widespread and represents only 3 per cent of withdrawals. Around 109,012 ha out of total 3,626,587 ha of agricultural land is irrigated. Hydropower development is also limited. There are 1,445 hydropower plants with an installed capacity of 2,299.2 MW. Hydropower supplies little more than 3 per cent of the power generated in the country.

Table 1: Overview of water-related key data

Population	10,900,555 (74% urban) Source: Czech Statistical Office (2023)
Gross domestic product	27,226 USD per capita/year (high income) Source: World Bank (2022, current USD)
Renewable freshwater resources	1,229 m³/habitant/year (0% external) Source: FAO Aquastat (2020)
Surface water	Elbe (63.3%), Danube (27.5%), Oder (9.2%) Source: Government of Czechia (2007)
Renewable groundwater	1.43 billion m³/year Source: Food and Agriculture Organization (FAO) Aquastat (2020)
Water areas	2.2% of the total area of the state Source: State Administration of Land Surveying and Cadaster
Agricultural land	53.2% of the total area of the state Source: State Administration of Land Surveying and Cadaster
Forest area	34.7% of land area Source: FAO (2021)
Water withdrawal	51% industry, 46% domestic, 3% agriculture Source: FAO Aquastat (2020)
Total withdrawals of surface and groundwater	1.446 billion m³/year Source: Czech Environmental Information Agency
Irrigated land	3% of agricultural land Source: River Basin Management Plans (2021)
Hydropower	3.6% of electricity generation Source: IEA (2022)
Total wastewater production	1.497 billion m³/year Source: Czech Environmental Information Agency
Drought risk	Medium (medium-high in the Morava, Vltava and Oder basins) Source: World Resources Institute (WRI) Aqueduct 4.0
Riverine flood risk	Low-medium (low in the Morava basin and around Prague) Source: World Resources Institute (WRI) Aqueduct 4.0

2. For definitions of water scarcity and water stress see inter alia White (2018).

# 2. What was achieved

Czechia's water and sanitation has been steadily improving since the 1990s, with access to safely managed drinking water reaching 98 per cent and safely managed sanitation achieving 89 per cent. The few areas where basic services remain prevalent are small villages in rural areas and remote locations, where people obtain their drinking water from springs or wells and sanitation can be limited. In these non-urban areas, according to World Health Organization (WHO) and United Nations Children's Fund (UNICEF) data, there is an associated increase in the use of sewers and a consequent reduction in the use of septic tanks.

Accelerated progress is observable starting in the early 2010s. The increase in use of sewers goes hand in hand with an increase in the percentage of sewage treated. According to the Czech Statistical Office, there are regional differences, with Central Bohemia Region, Liberec Region and Pardubice Region with lower levels of buildings connected to the sewerage system. In 2022, the share of treated wastewater was above 90 per cent in all 14 regions.

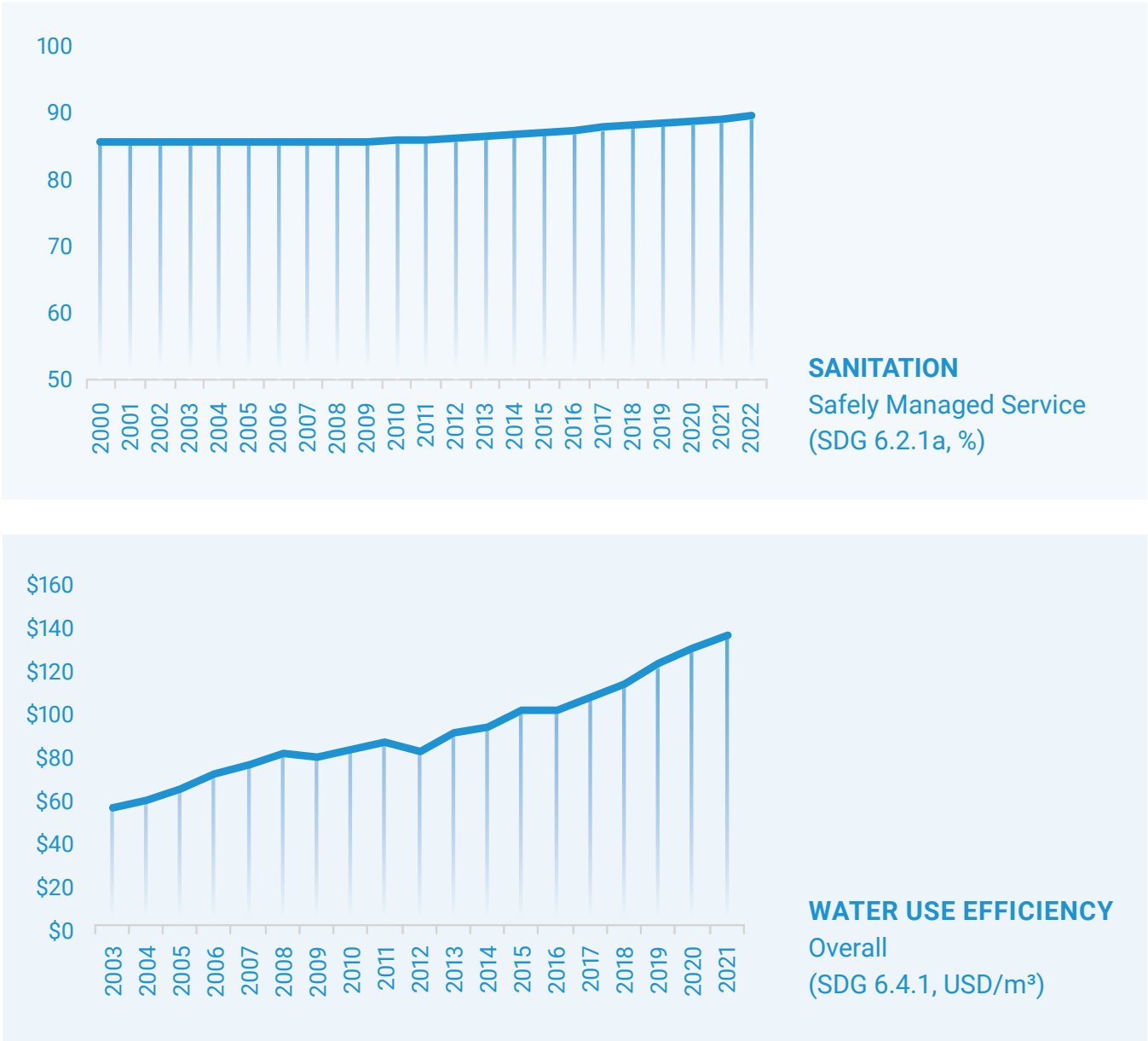
## All SDG 6 indicators for which data is available show a positive trend.

Czechia is making progress on all SDG 6 indicators, for which data has been made available to the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI-SDG6) (Figure 1). According to the indicators on access to safely managed drinking water (SDG 6.1.1) and the proportion of transboundary area with an operational arrangement (SDG 6.5.2), the respective targets on drinking water and transboundary cooperation can be considered achieved. Based on the available data, few countries have been making this much progress across so many indicators. Regarding access to safely managed sanitation (SDG 6.2.1), making the last connections to achieve universal access is a huge effort, which typically takes decades, as it is difficult to connect and ensure treatment in small and often declining rural towns and villages. Czechia's acceleration in sanitation progress, starting in the early 2010s, has been remarkable. Concerning water-related ecosystems (SDG 6.6.1), for many decades, they have been in decline, typically because of land reclamation. This stopped and the trend is reversing.

The country wants to go beyond the SDGs. In 2017, the government adopted the Strategic Framework Czech Republic 2030, where some water-related issues were emphasized. Czechia aims to reverse two trends: the increase of soil and forest degradation and the decrease of their ability to retain water; and the increase in surface water contamination by discharge from diffuse and point sources of pollution. Czechia is therefore aiming to significantly slow down the outflow of water from the

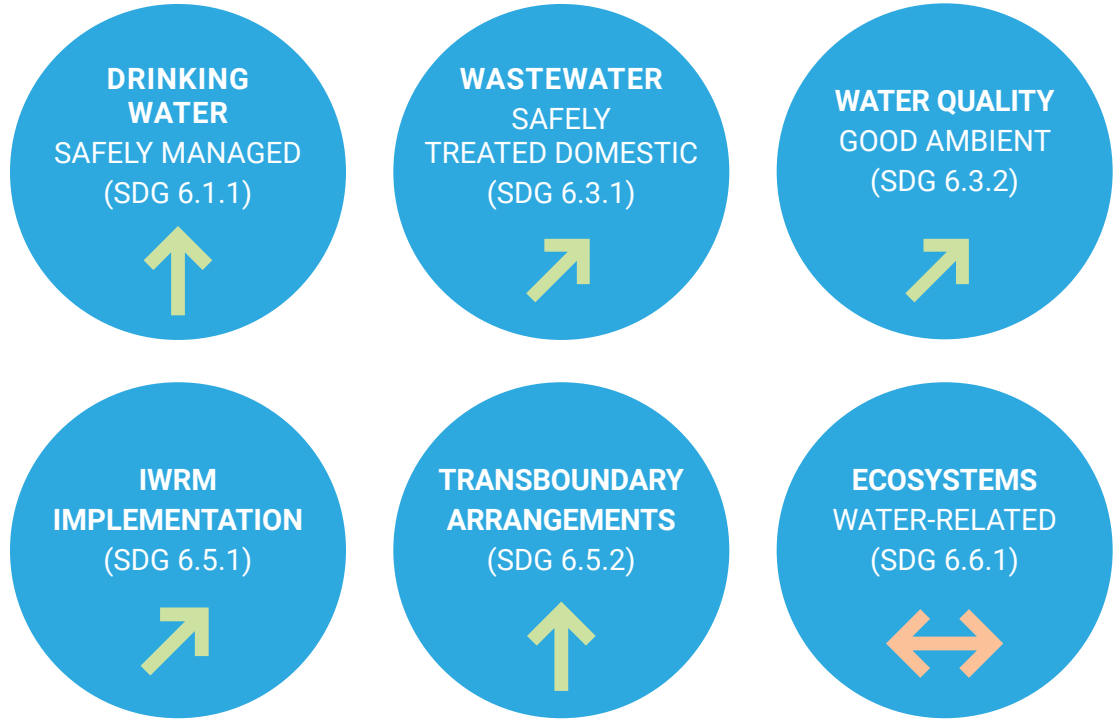
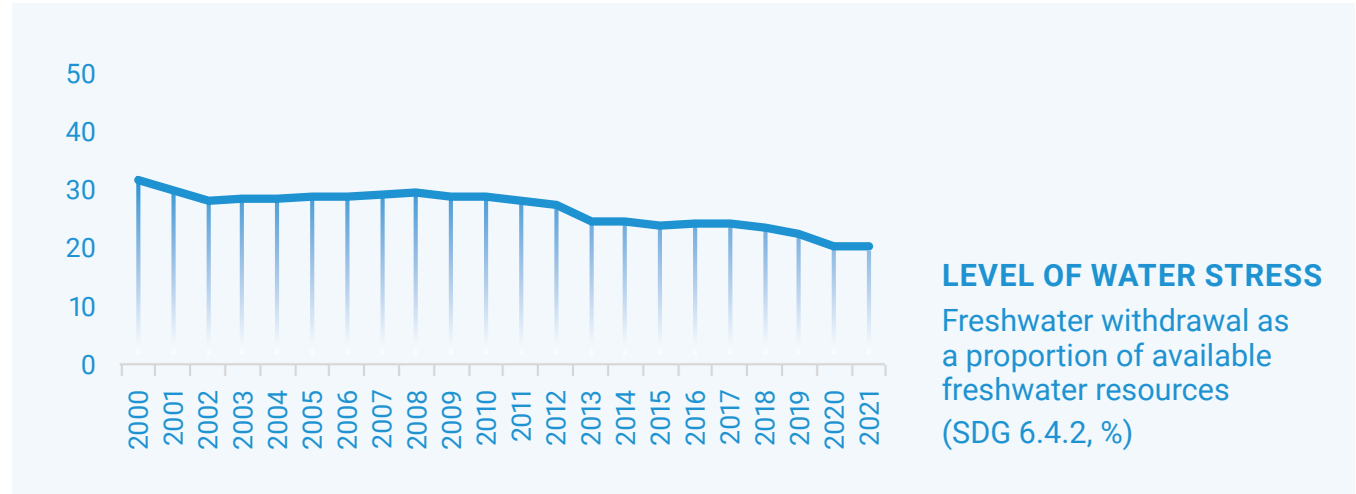
landscape (target 14.1) and to improve the quality of surface and groundwater (target 14.2). So far, progress on the first target is considered insufficient, while for the second one the situation is considered stable. The large-scale construction of high-quality wastewater treatment plants equipped with modern technologies has led to a significant reduction in the share of heavily and severely polluted water courses throughout Czechia.

Figure 1: Progress on SDG 6 indicators in Czechia



**SDG indicator 6.1.1 “Proportion of population using safely managed drinking water services** monitors the proportion of population using safely managed drinking water services. A safely managed service is defined as an improved drinking water source that is accessible on the premises, available when needed, and free of fecal and priority chemical contamination. Improved water sources include piped water, boreholes or tubewells, protected dug wells, protected springs and packaged or delivered water.

**SDG indicator 6.2.1a “Proportion of population using safely managed sanitation services”** tracks the proportion of population that is using an improved sanitation facility, which is not shared with other households, and where the excreta produced is either treated and disposed in situ, stored temporarily and then emptied and transported to treatment off-site or transported through a sewer with wastewater and then treated off-site. Improved sanitation facilities include flush/pour flush to piped sewer system, septic tanks or pit latrines, ventilated improved pit latrines, composting toilets or pit latrines with slabs.



Source: [UN-Water SDG 6 Data Portal](#)

### 3. Understanding the achievement

**This section describes how and why progress took place.** It examines the direct and indirect factors that enabled the achievement, paying attention to which factors could be replicated in other countries. Four main drivers have been identified in the case of Czechia: governance, financing, data and information, and innovation. They correspond to four global accelerators of the SDG 6 Global Acceleration Framework. They are presented in order of relevance.

#### Governance: planning tradition and *acquis communautaire*

**Municipalities are aware of the importance of water.** According to a survey conducted by the Association of Towns and Municipalities of the Czech Republic, SDG 6 ranks first among the SDGs in terms of importance for Czech municipalities. Such awareness is reflected in the actions undertaken to improve water management and protection.

**There is a long tradition of water management planning.** Czechia was among the first countries to adopt basin management in the first half of the 20th century. There are multiple water management and development plans, concepts, and strategies in place. These include River Basin Management Plans, Flood Risk Management Plans, Drought and Water Scarcity Management Plans, Water Supply and Sewerage System Development Plans. In recent years, a Concept for Protection Against the Impact of Drought was developed in the context of climate change and extreme events. There are also two regional strategies for water retention in Pardubice Region and Plzeň Region. River Basin Management Plans and Flood Risk Management Plans are updated every six years within a process with extensive public consultation. These are technical documents where only optimal solutions are usually considered. They are not political documents, but they are approved by the Government. Projects need to comply with plans to receive funding. Basin-level River Boards are consulted to issue building permits.

**There is a strong legal basis.** Czechia adopted comprehensive legislation for water management and water protection in the form of the Water Act

**The SDG 6 Global Acceleration Framework** is a unifying initiative that aims to deliver fast results, at an increased scale, towards the goal of ensuring the availability and sustainable management of water and sanitation for all by 2030. The Framework contributes to the new Water Action Agenda, an outcome of the UN 2023 Water Conference, held in March 2023.

More information: [www.unwater.org/our-work/sdg-6-global-acceleration-framework](http://www.unwater.org/our-work/sdg-6-global-acceleration-framework)

(No. 254/2001 Coll.), the Act on Water Supply and Sewerage for Public Use (No. 274/2001 Coll.), and other relevant acts and their implementing regulations, which are the relevant government regulations and decrees. Czechia is also equipped with a well-developed system of technical standards and certified methodologies for the field of water management and water protection. The Water Act mandated the creation of a Central Register of Water Permits, which stores all water-related documents. The legal basis was widened and enriched with the *acquis communautaire* when the country acceded to the EU in 2004 (Box 1). The combination of political commitment, sound planning and legal basis creates the conditions for public and private investment in water and sanitation.

**Investment policy evolves progressively.** For example, subsidies for the deployment of wastewater treatment used to be directed exclusively to municipalities of over 2,000 inhabitants. In 2010, Czechia ended the transitional period for the implementation of the EU Urban Wastewater Treatment Directive. Afterwards, subsidies started to be directed to smaller agglomerations where infrastructure development was also desirable. This contributed to accelerated progress on sanitation and wastewater treatment, starting in the early 2010s. In turn, this is having positive effects on the water quality of reservoirs, such as the Slapy Reservoir on the Vltava River near Prague.

**Adaptation to climate change is a priority.** Drought and water scarcity management is taken seriously and tackled at the conceptual, institutional, financial and operational



### Box 1: Implementation of the *acquis communautaire*

Before joining the EU, Czechia already had a well-developed legal and institutional framework. Since it became a Member State in the early 2000s, the ambition and scope of water law increased substantially. Guidance documents developed through a collaborative framework involving EU Member States, the European Commission and other stakeholders are also used. List of the key legal instruments of the EU (*acquis communautaire*):

- Water Framework Directive (2000/60/EC)
- Drinking Water Directive (2020/2184/EU)
- Urban Wastewater Treatment Directive (91/271/EEC)
- Sewage Sludge Directive (86/278/EEC)
- Nitrates Directive (91/676/EEC)
- Environmental Quality Standards Directive (2008/105/EC)
- Floods Directive (2007/60/EC)
- Bathing Waters Directive (2006/7/EC)



Flag of the European Union. Photo: Gpointstudio

levels. Drought management has been a priority for governments regardless of their political affiliation, who have passed legislation that clearly lays out steps to be taken in a situation of water scarcity and establishes a hierarchy of water allocation, where functioning of critical infrastructure and supply of drinking water are the two top priorities.

**International cooperation is strong.** Most of Czechia's water resources are shared with neighboring countries and transboundary cooperation has a long-standing tradition. Since the 1990s, Czechia has also been active in three International River Basin Commissions and the UNECE Water Convention. This has created an atmosphere of openness and understanding with neighbouring countries and other downstream states. Since 2023, Czechia has been an official member of the Association of European Regulators in the Drinking Water and Wastewater Sector (WAREG), whose main objectives are the exchange of common practices and information, as well as joint analyses and comparison of existing regulatory models in the water sector and the performance of water utilities.

#### Finance: government subsidies and sustainable tariffs

**A vibrant economy exists.** Since 2000, the yearly growth in Gross Domestic Product has exceeded 2 per cent almost every year. The country's robust economic health, buoyed

by substantial tax income, has kept the fiscal deficit relatively low. This has opened avenues for infrastructure investment. At the same time, water consumption by households and industry has been decreasing.

**There is strong public investment with co-funding from the EU.** For water supply and sanitation, most of the expenditure for operation and maintenance comes from household contributions. Financing of investments is subsidized from national sources, the EU funds and loans from international banks, mainly the European Investment Bank. The participation of an investor with at least 20 per cent of the total investment is always required. The use of debt finance, including bonds and soft loans, is recent. According to the OECD, transfers from the EU represented less than 10 per cent of annual average expenditure for water supply and sanitation in 2011-2015. In 2014-2020, the European Cohesion Fund allocated approximately 860 million USD in grants to enhance Czech water infrastructure in poorer regions, where European co-funding can reach 80 per cent of the investment. The State Environmental Fund raises the Czech counterpart to the EU funding in form of subsidies, loans and contributions. However, there is still a significant funding gap for infrastructure modernization.

**Water consumption is low and decreasing, thanks to sustainable pricing models and awareness about water saving technologies.** The number of households connected to drinking water supply is growing, while total

consumption is decreasing. Industry and energy generation sectors are also lowering their water withdrawals thanks to the adoption of innovative technologies. The level of affordability for households is good. The price of water is regulated by the Ministry of Finance, while water operators must report to the Ministry of Agriculture, which supervises infrastructure. For drinking water supply and sanitation, the average price of water does not exceed the socially tolerable limit of 2 per cent of average net income. As a result, water consumption has reduced and is relatively low. The combination of high tariffs and low consumption creates a significant incentive to fight against leaks and other forms of water losses. The construction of new water supply networks and the maintenance and modernization of existing water supply networks led to a reduction in the share of losses from the total amount of produced drinking water from 28.8 per cent in 1993 to 14.8 per cent in 2023. As a result, Czechia has among the lowest levels of non-revenue water in the EU.

### Czechia is investing significantly in nature-based solutions.

**Grey infrastructure and nature-based solutions are combined.** To reduce the risk of flood and drought, Czechia has distributed over 400 million USD since 2014 to promote water soaking into the ground and being retained in the open landscape and in urbanized areas. Moreover, the post-COVID National Recovery Plan assumes investment of over 600 million USD to improve the sustainability of the agricultural and forestry landscape in the context of climate change, as well as investments in flood protection and small water reservoirs. Significant investments are targeted at increasing water retention in forests through various forest conservation measures that improve the soil, water and microclimatic conditions, reduce accelerated erosion, lead to modification of the water cycle in forest soil and to the protection and stabilization of forest watercourses.

Table 2: Development of key water and sanitation infrastructure

Infrastructure	1990	2000	2010	2020	2022	Change between 1990-2022 (%)
Water pipes (km)	44,907	53,288	73,448	80,912	82,034	+83
Sewers (km)	17,495	21,615	40,902	52,067	53,658	+207
Wastewater treatment plants (number)	626	1,055	2,188	3,288	3,416	+446

Source: Ministry of Agriculture of Czechia

#### Recent investments have been made in infrastructure.

According to the Ministry of Agriculture, state budget subsidies for the construction of water supply systems, water treatment plants, sewage systems and wastewater treatment plants more than tripled between 2018 and 2022 (Table 2). According to the OECD, investments result in high levels of compliance with the Drinking Water Directive and Urban Wastewater Treatment Directive and strong sector efficiency. In the future, higher levels of wastewater treatment will be required.

#### Payments for ecosystem services

Since 2019, the Vltava River Board distributes government subsidies to farmers in the area surrounding the Švihov Drinking Water Reservoir south of Prague along the Želivka River to adapt farming practices and reduce the leaking of pollutants from agriculture to reservoirs. This reduces the cost of water treatment before the bulk water is supplied to consumers. The pilot achieved positive outcomes and is therefore being replicated in four more drinking water reservoirs.



Data and information: publications and an online water information system

A Report on the State of Water Management in the Czech Republic (“Blue Report”) is published on a regular basis. The Ministry of Agriculture and the Ministry of the Environment share responsibility for the water sector. Every year, they jointly produce and publish a report on water management in the country, which is available online both in Czech and English. It contains all key information about water management and water resources in the country. This ensures public outreach and transparency.

The key facts about water are published online.

The strong planning culture at the national, basin, regional and municipal level results in regularly updated data and analysis, which is then compiled in the Blue Report and water information system. Moreover, the 2001 Water Act specifies the datasets that need to be collected and who is responsible for them. There is a geoportal pursuant to the Directive on Infrastructure for Spatial Information in the European Community (INSPIRE) but also an online portal with data since 2005. The online portal shows, among other features, water quality and quantity in different locations. The data is accompanied by illustrative comments and narrative.

All relevant data is visualized online.

Protected zones of drinking water resources are inventoried and the data is publicly available. The Water Resources Protection Zone Database (WRPZD) was created at the T.G. Masaryk Water Research Institute (VÚV), one of the oldest water research institutes in Europe, established in 1919, with support of the Ministry of Environment. The WRPZD contains around 15,000 digitalized polygons of protection zones and is updated annually. Relevant data and legal documents are attached to each zone in digital form.

Czechia adopted a national SDG framework.

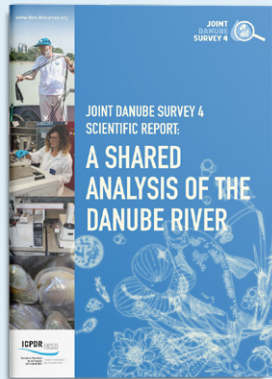
The Strategic Framework Czechia 2030 was adopted in 2017, where some water-related issues were emphasized. A specific system of targets and corresponding indicators was developed. The implementation of the Strategic Framework is evaluated on a regular basis.

Czech water utilities are continuously benchmarked.

The Ministry of Agriculture started continuous benchmarking of water utilities in 2015. The outcomes are published in yearly reports. Stakeholders, namely the Czech Water Association (CzWA), are also active in this field and carry out benchmarking with other countries.

Czechia participates in the Joint Danube Survey

Under the International Commission for Protection of the Danube River (ICPDR), the fourth Joint Danube Survey provided new information about the quality of the water and the state of ecosystems in the Danube River and Black Sea basin. The data will allow comparison of the development of the quality and state of water in the long term, including the presence of microplastics and resistance of bacteria to antibiotics. Two versions of the report are available: a scientific report and a public report, containing a snapshot of the scientific findings.



Cover of ‘A Shared Analysis of the Danube River’. ICPDR

Citizen science to increase landscape water retention

Živá Krajina, a local non-governmental organization, empowers citizens to perform digital mapping over a 10-15 km radius and analyze the data and historical sources through open-source geographic information system software. The project aims at understanding the drainage system in farmland and urban areas to propose measures to increase landscape water retention. So far, Živá Krajina has produced 80 feasibility studies covering 3,500 km².



Five small ponds cascade. Photo: Model Živá Krajina (Living Landscape Model)

Innovation: both the public and private sector leading the way

Visionary decisions have been made by the government.

These contribute to low levels of water withdrawals and will keep them low. The Concept for Solving the Problem of Flood Protection chose to use both technical and nature-based measures already in 2010. Czechia has been an early adopter of the concept of nature-based solutions. It continues to innovate, for instance, by introducing real-time monitoring and electronic registering of discharges into all watercourses.

Pilot initiatives inform learning. Pilots such as the Drinking Water Readiness for the Future (DWARF) project and the Dešťovka subsidy program, promoting sustainable rainwater management in urban areas, can be important tools for proving concepts that were later deployed across the country.

Czechia possesses significant know-how and technology

in water management and water treatment. Czech firms produce water turbines, pumps and hydrotechnical equipment, as well as water treatment systems and irrigation systems, including using solar technology. There is a lively private sector developing innovative solutions. This is important because the water cluster can push the central and local governments to act when technology is available. For instance, water treatment companies in Czechia lobby the public sector to employ their systems, which raises awareness about the importance of water and sanitation.

There is a conducive public and private sector, including public regulations, economic capacity, political vision and knowledge networks. As shown in Orderud et al. (2021), larger water treatment plants and other infrastructure tend to lead the way in terms of technological innovation. Active industry organizations allow transfer of know-how to smaller ones.

CleverFarm

This platform enables the development of precision irrigation. It provides a digital environment that interconnects data from various sources. This can increase irrigation and fertigation effectiveness and water monitoring for nitrate pollution.



Promotional image for CleverFarm. Photo: CleverFarm

3. The portal can be accessed at [www.voda.gov.cz](http://www.voda.gov.cz)

## 4. Recommendations for accelerated action in Czechia

Some recommendations emerged from the analysis of the drivers of progress towards SDG 6, particularly from interviews and published material. Moreover, the SDG 6 Global Accelerator Framework also provides some indications of where action may be required to make further accelerated progress.

### Czechia invested in four SDG 6 global accelerators.

For the country, it would have not been possible to achieve such impressive progress on SDG 6 if it had not employed four of the five global accelerators identified in the SDG 6 Global Accelerator Framework, namely governance, financing, data and information, and innovation. The available evidence shows that progress across all SDG 6 indicators is the result of a sound legal, institutional and planning system, funding from public sources, including support from the EU, a well-organized information system, as well as widespread innovation. A good data and information base allowed for better targeting of investments, particularly in recent years.

To achieve SDG 6, Czechia should invest more in capacity development in the water sector, including research, education and training, which may help sustain the observed improvements. Capacity development is the fifth global accelerator, which Czechia does not seem to have invested in specifically in recent years. The country has a good education system and higher education institutions, including programmes dedicated to water. Research institutions dedicated to water include the T.G. Masaryk Water Research Institute (VÚV) and

the Research Institute for Soil and Water Conservation (VÚMOP). Other public institutions, such as the Czech Hydrometeorological Institute, also play a key role. The Water Act has been revised, which is expected to update and further strengthen the legal and institutional basis. Public investment is increasing to further accelerate and bridge the remaining gaps in access to safely managed sanitation, especially in small towns and remote areas. This needs to be accompanied by capacity development at the local level and continued efforts on data gathering and analysis to make sure that financial resources are used efficiently and effectively. Innovation is also essential to ensure that solutions fit the specific needs of each locality.

Other recommendations that emerged from the case study include the need to increase sewerage connections in rural areas and, where this is not possible, to further invest in safe non-piped sewage systems, such as domestic wastewater treatment plans and septic tanks, and to focus on underserved areas, like Liberec Region, Central Bohemia Region and Pardubice Region, to connect and consolidate smaller water operators. The need to improve water and wastewater treatment standards, promote industrial water reuse, increase water productivity in agriculture and address falling surface and groundwater levels also emerged as priorities. The country may also consider increasing tariffs in some areas to improve cost recovery, provided affordability is maintained, as well as improving the ability to use debt finance and mobilize private investment in the water sector.

## 5. Replicability in other countries

The experience of Czechia is highly relevant for other medium- to small-sized economies in transition, starting from a relatively advanced baseline, to further improve. Key factors and drivers that may be replicated in other countries include:

- **Municipalities are aware of the importance of water.** SDG 6 ranks first among the SDGs in terms of importance for Czech municipalities.
- **Water planning is long-term, with financing tied to compliance.** There are multiple water management and development plans, concepts, and strategies in place to support a basin management approach. Projects need to comply with plans to receive funding.
- **There is a strong legal basis.** Czechia adopted comprehensive legislation and is equipped with a well-developed system of technical standards and certified methodologies for the field of water management and water protection. The legal basis was enriched with the *acquis communautaire* when the country acceded to the EU in 2004.
- **Investment policy evolves progressively.** Subsidies for the deployment of wastewater treatment used to be directed exclusively to municipalities of over 2,000 inhabitants. In 2010, subsidies started to be directed to smaller agglomerations, where infrastructure development was also desirable.
- **There is strong public investment with co-funding.** For water supply and sanitation, most of the expenditure

comes from household contributions and government spending from state and municipal budgets. In poorer areas, this is complemented by transfers from the EU.

- **Water tariffs are sustainable and socially responsible.** The combination of higher tariffs and low consumption represents a huge incentive to fight against leaks and other forms of water losses. As a result, water consumption has reduced and is relatively low. The level of affordability for households is good.
- **Reports on water management are published on a regular basis.** Every year, the Ministry of Agriculture and the Ministry of the Environment jointly produce and publish the “Blue Report” on water management. It contains all key information about water resources in the country.
- **The key facts about water are published online.** The 2001 Water Act specifies the data that needs to be collected and who is responsible for it. There is an online portal that allows comparison of data across time and location.
- **Grey infrastructure and nature-based solutions are combined.** The use of both technical and nature-based solutions has reduced the risk of flooding since 2010.
- **There is cooperation with neighbouring countries, through river basin organizations and in the framework of the UN.** Regular expert meetings about technical issues can help to build trust and a spirit of shared responsibility.



## Opportunities for experience sharing

**Czechia is already sharing its experience**, supporting water-related projects in Ethiopia, Iraq, Lebanon and the Kyrgyz Republic and through the EU and UN. Projects focus on drinking water supply, protecting water sources, developing waste management and sharing Czech experience and know-how.

**Czechia is engaged at the river basin and regional levels.** It has established international commissions for all its transboundary rivers (Danube, Elbe, Oder) and concluded bilateral agreements on transboundary waters with all neighbouring countries (Austria, Germany, Poland, Slovakia). In 1990, Czechia adopted the Agreement on the International Commission for the Protection of the Elbe River; in 1994, the Convention on Cooperation for Protection and Sustainable Use of the Danube River; and, in 1996, the International Commission for the Protection of the Oder River against Pollution was established. Basin and regional arrangements provide further platforms for experience-sharing.

**Czechia is a party to and actively participates in global water and environment conventions and processes**, such as the UNECE Water Convention, its Protocol on Water and Health, as well as the Ramsar Convention on Wetlands.

### Participation in the UN 2023 Water Conference

**Czechia took part in the UN 2023 Water Conference**, held in New York in March 2023. The delegation was led by Mr. Tomáš Tesař, Deputy Minister of the Environment. Czechia has contributed to the Water Action Agenda.

Its new commitments to further invest in sanitation and to upgrade the legal framework for water could represent further contributions to the Water Action Agenda.



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## Notes



**United  
Nations**

