

***TECHNICAL ASSISTANCE ON SUPPORT TO REDUCE WATER LOSS WITHIN THE
REFORM OF THE WATER SECTOR IN CROATIA***

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OUTPUT 4

Development of a knowledge base and indicators for performance evaluation of the public water service providers

December 2022

Project carried out with funding by the European Union in cooperation with the European Commission's DG REFORM



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22HR06 CROATIA: SUPPORT TO REDUCE WATER LOSS WITHIN THE REFORM OF THE WATER SECTOR

OBJECTIVE

Support the economy and efficiency of operations of Croatia's water utility sector by improving capacity of the Public Water Service Providers (PWSP) to reduce excessive losses from water supply systems. This is expected to contribute to sustainability and affordability of water service provision, and to water security and resilience more broadly.



**Funded by
the European Union**

ACTIVITY 4: DEVELOPMENT OF A KNOWLEDGE BASE AND INDICATORS FOR PERFORMANCE EVALUATION OF PUBLIC WATER SERVICE PROVIDERS

The support is provided for the PWSP aggregation processes and the development of a Regulation on the evaluation of performance of water service providers, including the delivery of training workshops.

PERFORMANCE INDICATORS – DRAFT

November 2022

TABLE OF CONTENTS:

LIST OF TABLES4

1 BASELINE.....5

2 STATUS OF BENCHMARKING SYSTEM.....6

3 BENCHMARKING PLATFORMS7

3.1 Existing benchmarking platform of Croatian Waters 7

3.2 Best international practices 7

4 PROPOSAL OF INDICATORS FOR PERFORMANCE EVALUATION9

4.1 Legal basis 9

4.2 Terminological explanations 9

4.3 Benchmarking value..... 10

4.4 Establishment of system for evaluation of operational efficiency 10

4.5 Indicators and benchmarks..... 11

LIST OF TABLES

Table 1.1. Timeline of project activities 5

Table 4.1. Key performance indicators 11

1 BASELINE

Measures within this Project directly contribute to the implementation of the reform of the water utility sector and investments under the National Recovery and Resilience Plan 2021-2026 as well as the Operational Program Competitiveness and Cohesion 2021-2027 (in preparation).

The Project is financed by the European Union through the Technical Support Instrument and is implemented by the World Bank in cooperation with the Directorate-General for Structural Reform Support (DG REFORM).

Project activities:

- ACTIVITY 1: Baseline assessment of the status of water supply services, an estimation of losses and technical capacities of PWSPs
- ACTIVITY 2: Preparation of a draft National Loss Reduction Action Plan (NLRAP)
- ACTIVITY 3: Building the capacities of PWSPs for the implementation of the NLRAP
- ACTIVITY 4: Development of a knowledge base and indicators for performance evaluation of PWSPs
- ACTIVITY 5: Development of recommendations for the establishment of a national monitoring body on water loss reduction
- ACTIVITY 6: Preparation of a final draft National Loss Reduction Action Plan (NLRAP)

Table 1.1. Timeline of project activities

ACTIVITY	Q2 - 22			Q3 - 22			Q4 - 22			Q1 - 23			Q2 - 23			Q3 - 23			Q4 - 23			
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Activity 1 - Stocktaking exercise																						
Activity 2 - Draft NLRAP																						
Activity 3 - Capacity building and p2p exchange																						
Activity 4 - Utility performance evaluation																						
Activity 5 - National Monitoring Body																						
Activity 6 - Final proposed NLRAP																						

This report concerns Activity 4, which implies:

- Development of a list of proposed indicators for utility performance evaluation building upon international best practices and the existing CW benchmarking platform, in consultation with MESD, CW and PWSP representatives. The Infrastructure Leakage Index (ILI) rating method or another appropriate method will be used as a key performance indicator for the comparison of leakage management in water supply systems.
- Delivery of 4 training workshops¹ to PWSPs, in cooperation with the MESD/Croatian Waters, with the purpose of explaining the proposed benchmarking approach, including indicators, data collection and reporting requirements of PWSPs.

When establishing a functional benchmarking system, it is necessary to make sure that the reporting requirements are not unnecessarily or baselessly repeated (as specified in the Water Services Act):

- Benchmarking requirements, PWSPs shall collect and submit/report data;
- Requirements to monitor the achievement of the general and special conditions for the performance of water services;
- Requirements for the level of analyses that have to be made through Business Plans.

¹ 6 workshops (organized according to CW's Water Management Departments) were delivered in October 2022 with the representatives of PWSPs and the Association of Water and Wastewater Companies, presenting in detail the relevant information related to the establishment of the benchmarking system in Croatia.

2 STATUS OF BENCHMARKING SYSTEM

An IT System for Reporting on Water Directives to the EC and Croatian Waters' SOV database have been established on the national level. On the annual level PWSPs enter data into the SOV through the Application for input of data on wastewater collection and treatment, and water supply. The SOV database contains data about the characteristics of water supply systems (lengths by mains categories, data about storage tanks, pumping stations, water intakes, water treatment plants, user connection rates, etc.), as well as multi-annual data series about the abstracted volumes, volumes supplied to the system, delivered volumes, and NRW calculations. PWSPs also report whether they prepared the extended water balance, and if so, in what year and the ILI.

However, it can be concluded that a system to evaluate PWSPs' operational efficiency hasn't been established yet in the water services sector on the national level.

Namely, an important step in the implementation of the full reform of the water services sector, in addition to operational implementation of the integration of PWSPs, is the adoption of a number of pieces of subordinate legislation, including the establishment of benchmarks and indicators of operational efficiency of public providers of water services. Its purpose is to improve performance and achieve the quality and standard of provision of water services complying with the requirements of the EU water directives, the purpose of which is to regulate and improve the sector of water services in order for it to become efficient and effective in the implementation of national investments, financially stable and self-sustainable, ensuring an affordable price of water services for households and industry even after the implementation of investments.

The Water Services Act (2019) defines the following:

- Monitoring the fulfillment of general and special conditions to perform water service activities, where the ministry in charge of water management (MESD) shall monitor the fulfillment of general and special conditions to perform water service activities, submit an annual report to the Croatian Government and publish it on its website. The MESD shall agree on the draft report with the Council for Water Services.
- With regard to evaluation of operational efficiency, PWSPs shall collect data on their operational efficiency, submit data on their operational efficiency to the Council for Water Services, and report on it.
- The Council for Water Services shall keep a record of data about the benchmarks and indicators of operational efficiency of PWSPs and publish it, if required. The MESD shall have a permanent and unlimited access to the record of data about operational efficiency of PWSPs.
- The Croatian Government shall adopt a regulation on the evaluation of operational efficiency of providers of water services. The regulation shall lay down the benchmarks and indicators of operational efficiency, the method of collecting and submitting data to calculate the indicators, the method of measuring, evaluating, and reporting on operational efficiency, and the method of data record keeping.

The key performance (operational efficiency) indicators will make it possible for the national bodies to monitor the PWSPs and will provide information about the possibilities to improve the operational efficiency of public providers. They will also encourage the providers in their efforts to improve their performance and will improve the internal adoption of decisions based on the analysis of data about efficiency, with the assistance of the improved management information tools and reporting by key indicators.

A combination of adequate indicators can give an insight into the overall status of a public provider. However, indicators are a discursive tool, so they have to be easily understandable.

3 BENCHMARKING PLATFORMS

3.1 Existing benchmarking platform of Croatian Waters

The existing benchmarking platform of Croatian Waters had been developed in the 2011-2012 period (Adriatic part) and was extended in the 2014-2015 period. This system of monitoring and comparing performance indicators covered all the providers of water services in Croatia. The system was implemented through the Sigma3 web application and lasted only in the 2014-2015 period.

A total of 36 key indicators were proposed calculated from 130 variables, all based on the IWA methodology.

Upon project completion, a Consolidated Final Report was prepared (Croatian Waters, December 2016). The analyses made within the project form a basis to define the best practice of PWSPs' performance. Concerning its use, the purpose is to sector-wise implement systematic improvements of PWSPs' performance through optimization of performance. It is equally important to systematically monitor the planning obligations related to the water and sanitation sector, deriving from the commitments Croatia assumed by becoming an EU Member State.

Since it is a platform through which the benchmarking system was implemented over a period of one year and since all the public water service providers were included, it was concluded that the said platform of Croatian Waters presented a good basis for the preparation of a proposal of indicators within this Project (Activity 4).

Due to the time elapsed since the preparation of the proposed indicators (2016), the list of proposed indicators within this Project will be extended with the indicators estimated as useful in relation to the state of the water and sanitation sector in Croatia, using recent best international practices.

3.2 Best international practices

An overview of the best international practices was published in a WAREG (European Water Regulators) Report².

IBNET (International Benchmarking Network) platform³, 92 indicators in total, 113 variables, structured in 12 categories:

- Service coverage
- Water consumption and production
- Non-revenue water
- Metering practices
- Network performance
- Costs and staffing
- Quality of service
- Billing and collections
- Financial performance
- Assets
- Affordability of services
- Process indicators

IWA (International Water Association) platform, a set of 170 performance indicators has been developed based on 232 variables that need to be monitored regularly, categorized as follows:

- Water resources
- Personnel
- Physical performance

² <https://www.wareg.org/documents/an-analysis-of-water-efficiency-kpis-in-wareg-member-countries/>

³ https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ib-net.org%2Fwp-content%2Fuploads%2F2015%2F06%2FIBNET_Toolkit_100_XXX_20161201.xlsx&wdOrigin=BROWSELINK

- Operational performance
- Quantity of water supplied
- Economic and financial performance

DCM⁴ platform, a set of 97 performance indicators has been developed based on 276 variables. The system is largely based on the IBNET indicators. The platform was established for the needs of the DANUBIS Data Collection and Management Project.

UBP⁵ platform, a set of 315 performance indicators has been developed based on 470 variables. The system is based on the IWA indicators, including the coding system. The platform was established within the Danube Water Program.

⁴ <https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.danubis-dcm.org%2F&data=05%7C01%7Crmair%40worldbank.org%7Caa622ed7f36540a46c9d08dab2678c9d%7C31a2fec0266b4c67b56e2796d8f59c36%7C0%7C0%7C638018455060691382%7CUnknown%7CTWFpbGZsb3d8eyJWljoic4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiil6k1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sd=FxXGLGXhs9PD9xBltuapJWy%2FCQXYq8PeBNPUdsxY5g%3D&reserved=0>

⁵ <https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.iawd.at%2Feng%2Fdanube-toolbox%2Fd-leap%2Fprograms%2Futility-program%2F&data=05%7C01%7Crmair%40worldbank.org%7Caa622ed7f36540a46c9d08dab2678c9d%7C31a2fec0266b4c67b56e2796d8f59c36%7C0%7C0%7C638018455060691382%7CUnknown%7CTWFpbGZsb3d8eyJWljoic4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiil6k1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sd=QXEM7VfH84xGSXdLOcCZ8aOYOIOfOZMFdnB8BdWB3iA%3D&reserved=0>

4 PROPOSAL OF INDICATORS FOR PERFORMANCE EVALUATION

4.1 Legal basis

Article 35 of the Water Services Act lays down the following:

(1) Water service providers shall collect data about their operational efficiency, submit data about their operational efficiency to the Council for Water Services, and report about it in accordance with the regulation referred to in paragraph 3 of this Article.

(2) The Council for Water Services shall keep record of data about the benchmarks and indicators of operational efficiency of water service providers and make it public, if so specified. The Ministry shall have a permanent and unlimited access to the record of data about operational efficiency of providers of water services.

(3) The Croatian Government shall adopt a regulation on the evaluation of operational efficiency of providers of water services. The Regulation shall lay down the benchmarks and indicators of operational efficiency, the method of collecting and submitting data to calculate the indicators, the method of measuring, evaluating, and reporting on operational efficiency, and the method of data record keeping. The Regulation may also lay down the obligation to publish data about the operational efficiency of providers of water services.

4.2 Terminological explanations

In the process of evaluating operational efficiency data is collected (m³, liter, km, kWh, number of connections, users, employees, etc.). This data is in literature also referred to as variables or inputs. By applying an appropriate formula, data is put into a mutual relation in a period of evaluation (**reference period**) or outside of that period. The result of this mutual relation is an **individual indicator**⁶ of efficiency in a more specific aspect of performance (the indicator is additionally in literature also referred to as: benchmark, reference point, performance indicator, or output). Indicators show the relation between usually two pieces of data in the reference period which is expressed in a certain ratio: such as l/c/d – billed authorized consumption by the population or the number of employees per 1,000 connections.

The national sector of water services can on its own define the set of indicators it monitors (**Key Performance Indicators, KPIs**), having the sector specifics in mind. It is preferable, for easier comparison of the national sector of water services on the European level or per basins of the associated European region (Danube), and more cost-efficient to use the **benchmarking methodologies** developed on the international level: the International Benchmarking Network (IBNET initiated by the World Bank), the European Benchmarking Co-operation (EBC, initiated in cooperation of the Nordic countries) and the International Water Association (IWA), with possibilities to choose between the offered performance indicators, associated definitions and descriptions with formulas for the calculation of indicators, or use a hybrid of several methodologies (e.g. one basic methodology supplemented with certain indicators which are more successfully or exclusively defined in another methodology). The authors of methodologies or academic institutions also have software applications developed for the input of data and calculation of indicators (e.g., DANUBIS Data Collection and Management Platform uses the IBNET methodology as the basis, additionally the IWA methodology as well, etc.; SIGMA mostly uses the IWA methodology, etc.).

The values of individual indicators for a certain more specific aspect of performance won't give a definitive result (score) of performance efficiency of one observed provider of water services compared to several providers or the whole sector. Some platforms have therefore developed **indexation by sets of key indicators** (service coverage, financial indicators, operational efficiency, energy efficiency, etc.), with indexes ranging from 1 to 100 (100 the most successful, 1 the least successful), giving a more comprehensive picture of the performance of the sector as a whole and of particular providers in the sector (e.g., WUPI).

⁶ In competitive industries a claim persists that indicators and benchmarks are terms with different substance: "While a benchmark has a company comparing its processes, products and operations with other entities, a key performance indicator (KPI) measures how well an individual, business unit, project and company performs against their strategic goals." In the water service activity there is no such terminological distinction.

In order for the KPIs to be compared based on the similarity rule, it is necessary to classify the providers with similar characteristics (size, scope of delivery, physical characteristics of systems, etc.) into sets (**clusters**).

The entire process of collecting data, clustering of entities, comparison, evaluation and publication of indicators is called **benchmarking** or, in accordance with the Water Services Act, **evaluation of operational efficiency** of providers of water services.

When defining KPIs, each meaningful KPI needs to indicate performance levels, thus requiring the establishment of objectives or thresholds (**indicator target value or indicator reference value**) in order to put the results into context and show whether performance (operations) is on track or not.

4.3 Benchmarking value

Benchmarking is an essential method of measuring and providing insight on performance. It is most useful as an internal management tool for water service providers and has also developed as a tool for public authorities and regulators to learn best practices from each other, to continuously improve services.

The European Commission's interest in benchmarks and indicators for water services was part of a response to the European Citizens' Initiative on the Right2Water. In its Communication (COM(2014)177), the Commission stated that: transparency can play a key role in improving citizens' access to water and sanitation, impacting on its three main dimensions (i.e., accessibility, affordability and quality).

Likewise, in order to encourage the orientation of water service providers towards renewable sources of energy, the European Commission has through the Recovery and Resilience Plan specified the reference value of energy efficiency indicator of 0.5 kWh/m³.

4.4 Establishment of system for evaluation of operational efficiency

The main settings of establishing the benchmarking system should be the following: that the key requirements are specified by the Regulation, and that details are regulated by guidelines of the Council for Water Services, as follows:

- The Regulation shall specify operational efficiency indicators, i.e., the indicator name and the unit in which it is expressed.
- The Regulation shall authorize the Council for Water Services to define by means of a guideline the data (variables) collected and the benchmarking methodology used (IBNET, IWA or hybrid).
- The method of collecting and submitting data for the calculation of indicators – The Regulation shall specify that the data is collected through its submission to the Council for Water Services in the form of filled-in tables until the establishment/adoption of a software platform, and after the establishment/adoption of the software platform PWSPs shall themselves enter the data into the application.
- The software platform (DANUBIS Data Collection and Management Platform, UBP Platform, Sigma, or other) shall be defined by a guideline of the Council for Water Services.
- It shall be specified that the cost of using the platform shall be borne by water service providers through direct payment to the platform operator.
- Measurement method – this refers to the way in which data is collected, which data to include and which data to exclude (e.g., does the calculation of energy efficiency include the totally consumed kWh or the totally consumed kWh minus the totally sold kWh from own renewable sources); therefore, the measurement method shall be defined in accordance with a guideline of the Council for Water Services.
- Evaluation method – the majority of platforms calculate indicators on their own, in accordance with the selected methodology, applying the formula from the selected benchmarking methodology; until the establishment of the platform, indicators shall be calculated by the Council in accordance with the selected methodology.
- Reporting on operational efficiency – The Council for Water Services shall include a Report on operational efficiency into its annual Report about the state of the sector of water services and its work presented to Croatian Parliament.

- The Regulation shall specify that benchmarking data is published on the level of the entire sector or cluster, and not on the level of a particular provider, within the Council’s annual Report about the state of the sector of water services and its work presented to Croatian Parliament.
- The Regulation shall authorize the Council to define the indicator reference values (thresholds), where necessary, except where the Ministry is responsible for their definition for the purpose of the Regulation on special conditions to perform water service activities.

4.5 Indicators and benchmarks

The proposal of 7 sets of indicators with 81 key performance indicators of public providers is presented in **Error! Reference source not found.**

Table 4.1. Key performance indicators

Set of indicators	Ref.	Key indicators	Unit
Financial	1	Total unit costs in water supply	EUR/m ³
	2	Total unit costs in wastewater collection and treatment	EUR/m ³
	3	Total operational costs in water supply	EUR/m ³
	4	Total unit operational costs in wastewater collection and treatment	EUR/m ³
	5	Cost coverage with water service revenue (Ratio of total revenue from water services and total costs related to water supply and wastewater collection and treatment activities)	%
	6	Internal staff costs (Share of staff costs in operational costs related to water supply and wastewater collection and treatment activities)	%
	7	External services costs (Share of costs of external services in operational costs related to water supply and wastewater collection and treatment activities)	%
	8	Electric energy costs (Share of electric energy costs in operational costs related to water supply and wastewater collection and treatment activities)	%
	9	Electric energy costs (Share of electric energy costs in operational costs related to water supply activity)	%
	10	Electric energy costs (Share of electric energy costs in operational costs related to wastewater collection and treatment activity)	%
	11	Total cost coverage (Ratio of total revenue from all permitted activities and total costs related to water supply and wastewater collection and treatment activities)	%
	12	Operational cost coverage (Ratio of total revenue and operational costs related to water supply and wastewater collection and treatment activities)	%
	13	Capital expenditure coverage (Ratio of total revenue and capital costs related to water supply and wastewater collection and treatment activities)	%
	14	Coverage of total water supply costs (Ratio of total revenue and total costs related to water supply activity)	%
	15	Coverage of operational costs of water supply (Ratio of total revenue and operational costs related to water supply activity)	%
	16	Coverage of capital expenditures for water supply (Ratio of total revenue and capital costs related to water supply activity)	%
	17	Coverage of total wastewater costs (Ratio of total revenue and total costs related to wastewater collection and treatment activity)	%
	18	Coverage of operational costs for wastewater (Ratio of total revenue and operational costs related to wastewater collection and treatment activity)	%
	19	Coverage of capital expenditures for wastewater (Ratio of total revenue and capital costs related to wastewater collection and treatment activity)	%

Set of indicators	Ref.	Key indicators	Unit
	20	Debt ratio (Ratio of total assets minus shareholders equity and total assets used for the performance of water supply and wastewater collection and treatment activities)	%
	21	Asset turnover ratio (Ratio of sales revenue/revenue from the provision of water services and total assets used for the performance of water supply and wastewater collection and treatment activities)	%
	22	Debt service coverage ratio (Annual ratio of cash flow and financial debt)	%
	23	Rate of collection of water services revenue (during the selected assessment period, e.g., a year)	%
Staffing	24	Adequacy of staff skills (Ratio of positions covered by adequately suited staff according to a general act on organizational structure and total number of positions)	%
	25	Number of staff in relation to the length of the water supply system operated by the provider	Number of staff/ 100 km of water supply system
	26	Number of staff at drinking water treatment plants in relation to the population using public water supply services	Number of staff/ 1000 population
	27	Number of staff at wastewater treatment plants (WWTP) in relation to the plant capacity expressed as population equivalent (PE)	Number of staff/ 1000 PE
	28	Number of staff in wastewater collection activity (without treatment) in relation to the length of the public sewer system	Number/100 km of sewer system
	29	Total number of staff in relation to the total number of connections to water and wastewater systems	Number of staff /1000/water and wastewater connection
	30	Total number of staff in relation to the volume of water supplied into the water supply system and volume of discharged treated wastewater	Number of staff/ 10 ⁶ m ³ /year
	31	Number of staff in technical services of public provider in relation to the total number of connections to water and wastewater systems	Number of staff /Water and wastewater connection/1000
	32	Number of staff in technical services of public provider in relation to the total number of population connected to water and wastewater systems	Number of staff/ Population connected to water and wastewater systems/1000
	33	Number of staff in technical services responsible for water supply in relation to water supply connections	Number of staff/ Water supply connection/1000
	34	Number of staff in the technical service responsible for water supply in relation to the number of connected population	Number of staff/ Population connected to water supply/1000
	35	Number of staff in a special organizational unit responsible for the reduction of water losses who work in the office and on the field in relation to the number of water supply connections	Number of staff/ Water supply connection/1000
	36	Number of staff in technical services responsible for water supply in relation to the total number of staff	%
	37	Number of staff in technical services responsible for wastewater per sewer system connection	Number of staff/ Sewer system connection/1000
	38	Number of staff in technical services responsible for wastewater in relation to the population connected to the sewer system	Number of staff / Population connected to sewer system/1000/
	39	Number of staff in the wastewater activity in relation to the total number of staff	%
Operational	40	Complaints about the pressure in the public water supply system in relation to the number of service connections	Number of complaints/ Number of connections
	41	Infrastructure leakage index (ILI)	Index
	42	Non-revenue water	m ³ /year
	43	Non-revenue water in relation to water supplied	%
	44	Real annual water losses per connection	m ³ /connection/year
	45	Real daily water losses per connection	liter/connection/day
	46	Real hourly water losses in relation to water supply network length	m ³ /km/hour
	47	Real daily water losses per connection in relation to network pressure	liter/connection/ day/mH ₂ O

Set of indicators	Ref.	Key indicators	Unit
	48	Control of losses (length of network under active control during one year in relation to total network length)	%/year
	49	Apparent losses (apparent losses in relation to water supplied)	%
	50	Service connection failures	Number of failures/1000 connections/year
	51	Volume of treated wastewater per population equivalent per year	m ³ /1000 PE/year
	52	Interruptions in water supply (Population affected by the interruption in relation to total population using the public water supply service)	%
	53	Water supply rendered more difficult due to unfavorable hydraulic conditions – low pressure in the system (Number of days in the year with low pressure in the system in relation to total number of days in the year)	%
	54	Water supply rendered more difficult due to unfavorable hydraulic conditions – low pressure (Number of days with water supply rendered more difficult in relation to the number of water supply service connections/1000)	Number of days in the year with water supply rendered more difficult/Number of connections/1000
	55	Water supply rendered more difficult due to unfavorable hydraulic conditions – low pressure (in relation to the number of hours per day and per water supply connection)	Number of hours per day/ Water supply connection/1000
	56	Number of days with limitations in water delivery caused by deviations from statutory parameters of quality compliance of water intended for human consumption	Number of days/ year
	57	Public sewer system blockages	Number of blockages/100 km of public sewer system/year
	58	Average repair costs for failures on water supply mains	EUR/failure
	59	Average repair costs for failures on internal water supply pipes (water supply service connections)	EUR/failure
	60	Average repair costs for failures on sewage mains	EUR/failure
	61	Average repair costs for failures on internal sewage pipes (sewage service connections)	EUR/failure
Service quality	62	Water supply service coverage	%
	63	Wastewater collection service coverage	%
	64	Wastewater treatment service coverage	%
	65	Quality of supplied water – Compliance of supplied water with statutory quality parameters for water for human consumption determined by internal laboratory tests (ratio of the number of compliant tests and total number of tests)	%
	66	Quality of supplied water determined by an authorized laboratory (Ratio of the number of compliant tests and total number of tests)	%/year
	67	Compliance of treatment with permitted parameters for wastewater discharges (Ratio of the number of compliant tests and total number of tests)	%/year
	68	Affordability of water price for households (Monthly household expenditure for water services in relation to average net available household income in the service area)	%
Energy efficiency	69	Unit energy consumption of WWTPs per volume of treated wastewater	kWh/m ³ / year
	70	Unit energy consumption of drinking water treatment plants per volume of water supplied	kWh/m ³
	71	Unit energy consumption in the public water supply system per volume of total water supplied	kWh/m ³
	72	Unit energy consumption in the public sewer system per total volume of discharge wastewater	kWh/m ³
	73	Share of consumption of individually produced energy in relation to total energy consumption per year (water supply and wastewater collection and treatment)	%
Asset management	74	Gross fixed assets – water and wastewater (gross value of fixed assets per population served)	EUR/ population
	75	Gross fixed assets – water	EUR/

Set of indicators	Ref.	Key indicators	Unit
			population
	76	Gross fixed assets – wastewater	EUR/ population
	77	Average assets age (Ratio of total written-off value of assets and total purchase value of assets)	%
Fixed assets depreciation	78	Average depreciation rate (Ratio of depreciation costs and total purchase value of fixed assets)	%
	79	Average depreciation rate for fixed assets (water and wastewater)	%
	80	Average depreciation rate for fixed assets (water)	%
	81	Average depreciation rate for fixed assets (wastewater)	%

It is pointed out that it is necessary to make sure that the Regulation on the evaluation of performance of water service providers starts applying only once the Council for Water Services has laid down the guidelines with all the details about variables, i.e., has provided detailed definitions and methods of calculation of individual indicators (formulas).

The fulfilment of 7 specific conditions for PWSP performance (in accordance with the Draft proposal of the Regulation on specific conditions for the provision of water services, November 2022) will be assessed based on **13 key performance indicators**⁷ of PWSPs (from **Error! Reference source not found.**):

1. The capacity to manage losses from water supply systems through which the public water supply service is provided in the service area – which is demonstrated by achieving the indicator: **Infrastructure Leakage Index (ILI)** or the indicator **“Real annual water losses per service connection (m³/service connection/year)”** in accordance with the regulation governing the evaluation of performance efficiency of public water service providers, both in reference values and calculated in accordance with the guideline of the Council for Water Services.
2. The capacity to manage wastewater treatment plants, including facilities for treatment of sludge generated in the wastewater treatment process – which is demonstrated by achieving the indicator **“Compliance of treatment with permitted parameters for wastewater discharges (%/per year)”** in accordance with the regulation regulating the evaluation of performance efficiency of public water service providers at all wastewater treatment plants managed by the public provider, in reference value and calculated in accordance with the guideline of the Council for Water Services.
3. The capacity to manage treatment plants for water for human consumption – which is demonstrated by achieving the indicator **“Quality of supplied water determined by an authorized laboratory (%/per year)”** in accordance with the regulation governing the evaluation of performance efficiency of public water service providers at all water treatment plants managed by the public provider, in the reference value and calculated in accordance with the guideline of the Council for Water Services.
4. The capacity to react in an emergency, which is demonstrated by the indicator **“Interruptions in water supply (%)”** or **“Public sewer system blockages (Number of blockages/100 km of public sewer system/year)”** in accordance with the regulation governing the evaluation of performance efficiency of public water service providers, in reference values and calculated in accordance with the guideline of the Council for Water Services, as well as the indicator **“Number of days with limitations in water delivery caused by deviations from statutory parameters of quality compliance of water intended for human consumption (number of days/year)”**, in accordance with the regulation governing the evaluation of performance efficiency of public water service providers, in reference value and calculated in accordance with the guideline of the Council for Water Services.
5. Establishment of a commission for consumer complaints in accordance with regulations on consumer protection, including the appointment of the commission, proof that its dedicated e-mail address has been opened, and about the start of work and continuous operation (e.g. annual report on the timely resolution of consumer complaints/claims).
6. Achievement of the indicators **“Total cost coverage (%)”**, **“Operational cost coverage (%)”**, **“Capital expenditure coverage (%)”**, **“Affordability of water price for households (%)”**, **“Unit energy consumption in the public water**

⁷ The Council for Water Services shall issue a guideline on the method of calculating indicators and reference values referred to in the Regulation on specific conditions for the provision of water services as prescribed by the regulation governing the evaluation of performance of water service providers. The period for achieving the indicators is the calendar year preceding the year in which the fulfilment of the conditions or the continuation of the existence of the conditions is determined.

supply system per volume of total water supplied (kWh/m³)” and “Unit energy consumption in the public sewer system per total volume of discharged wastewater (kWh/m³)” in accordance with the regulation governing the evaluation of performance efficiency of public water service providers, in reference values and calculated in accordance with the guideline of the Council for Water Services.

7. The obligation of permanent professional training of employees.

22HR06 CROATIA: SUPPORT TO REDUCE
WATER LOSS WITHIN THE REFORM OF THE
WATER SECTOR

ACTIVITY 4:

DEVELOPMENT OF A KNOWLEDGE BASE
AND INDICATORS FOR PERFORMANCE
EVALUATION OF PUBLIC WATER SERVICE
PROVIDERS

December, 2022.