

Maximizing Revenue, Minimizing Loss: Strategies for Tackling Non-Revenue Water

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President

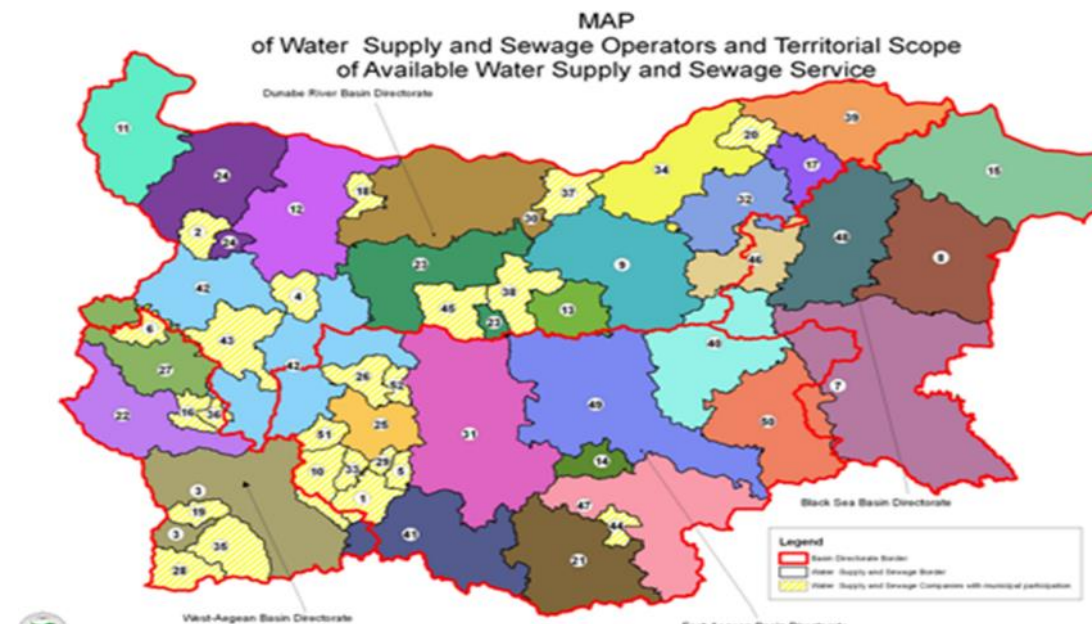
Bulgarian Water Association



Companies providing water supply and sewerage services in Bulgaria

51 companies in total:

- 14 companies, 100% state-owned (through a state holding structure)
- 15 companies, 51% state, 49% municipalities
- 10 companies, 100% municipalities
- 11 private, at the service of private properties
- 1 concession – Sofiyska Voda AD, part of Veolia



Bulgarian Water and Sewerage Holding EAD



- Bulgarian Water and Sewerage Holding EAD has existed since 05.05.2020.
- The sole owner of Bulgarian Water and Sewerage Holding EAD is the state, represented by the Minister of Regional Development and Public Works.
- Bulgarian Water and Sewerage Holding EAD is currently being managed by a four-member Board of Directors and also has a five-member Supervisory Board.

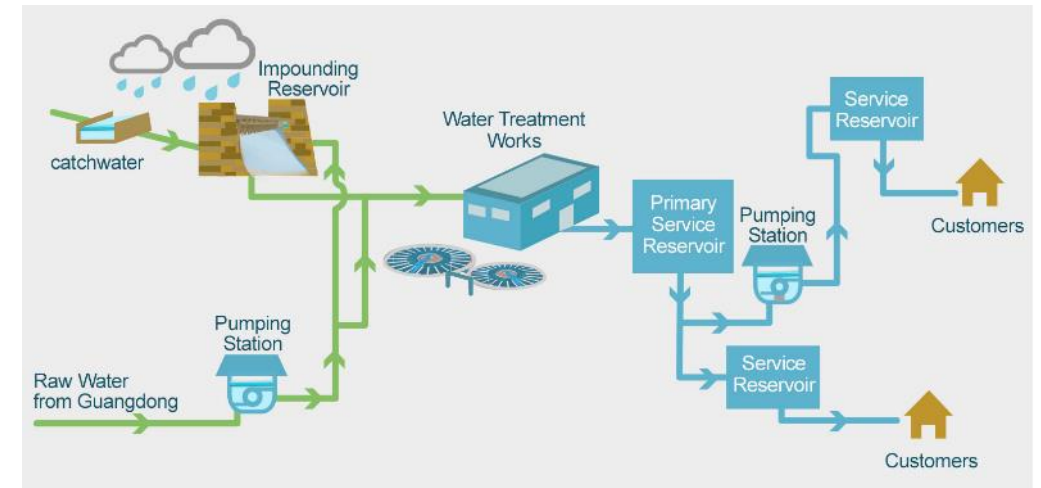
Results achieved 2022 vs 2021

Quality Indicator – ПК4



Total network length – approximately 90,000 km

ПК	Quality Indicator	Measure	Total 2022	Total 2021	Progress
ПК4а	Total Water Losses in the Water Supply Systems	m ³ /km/day	19.06	18.39	0.67
ПК4б	Total Water Losses in the Water Supply Systems	%	61.00%	59.78%	1.22%



Year	2022	2021	2022-2021	Year	2022	2021	2022-2021
	ПК4а				ПК4б		
ПК	Total Water Losses in the Water Supply System			ПК	Total Water Losses in the Water Supply System		
Water Operator	m ³ /km/day	m ³ /km/day	m ³ /km/day	Water Operator	%	%	%
"Вик" ЕООД, гр. София	19.53	10.44	9.09	"Вик" ЕООД, гр. Хасково	73.40%	57.46%	15.94%
"Вик" ЕООД, гр. Хасково	16.65	8.07	8.58	"Вик" ЕООД, гр. София	70.87%	56.30%	14.57%
"Вик" ООД, гр. Перник	47.96	41.37	6.59	"Вик" ЕООД, гр. Смолян	52.57%	45.17%	7.40%
"Вик" ЕООД, гр. Плевен	18.85	14.50	4.35	"Вик" ЕООД, гр. Плевен	69.21%	62.24%	6.97%
"Вик" ЕООД, гр. Смолян	8.75	6.45	2.30	"Вик" АД, гр. Ловеч	57.62%	54.74%	2.88%
"Вик - Шумен" ООД, гр. Шумен	32.82	31.46	1.36	"Вик" ООД, гр. Перник	82.60%	80.08%	2.52%
"Вик - Варна" ООД, гр. Варна	26.31	25.27	1.04	"Вик" ООД, гр. Габрово	59.21%	57.37%	1.84%
"Вик" ЕАД, гр. Бургас	19.76	19.02	0.74	"Вик" ООД, гр. Търговище	70.42%	68.66%	1.75%
"Водоснабдяване - Дунав" ЕООД	13.91	13.29	0.62	"Вик" ООД, гр. Монтана	77.84%	76.54%	1.31%
"Вик" АД, гр. Ловеч	7.97	7.37	0.60	"Водоснабдяване - Дунав" ЕООД	70.31%	69.16%	1.14%
"Вик" ООД, гр. Габрово	10.33	9.79	0.54	"Вик - Шумен" ООД, гр. Шумен	82.12%	81.30%	0.83%
"Вик" ООД, гр. Търговище	12.88	12.34	0.54	"Вик" ООД, гр. Русе	45.32%	44.51%	0.81%
"Вик" ООД, гр. Кърджали	8.76	8.58	0.18	"Вик" ЕООД, гр. Стара Загора	57.41%	56.64%	0.77%
"Вик" ООД, гр. Русе	8.45	8.41	0.04	"Вик - Варна" ООД, гр. Варна	64.85%	64.28%	0.58%
"Вик" ООД, гр. Силистра	8.37	8.47	-0.09	"Вик" ЕООД, гр. Пазарджик	61.56%	61.14%	0.42%
"Вик-Видин" ЕООД, гр. Видин	4.51	4.61	-0.10	"Вик" ООД, гр. Кърджали	48.67%	48.79%	-0.12%
"Вик" ООД, гр. Монтана	21.76	21.92	-0.15	"Вик-Видин" ЕООД, гр. Видин	46.95%	47.16%	-0.22%
"Вик" ЕООД, гр. Стара Загора	13.84	14.05	-0.21	"Вик" ООД, гр. Силистра	57.79%	58.30%	-0.51%
"Вик Добрич" АД, гр. Добрич	15.01	15.60	-0.59	"Вик" ЕАД, гр. Бургас	53.19%	53.74%	-0.55%
"Вик Йовковци" ООД	11.44	12.11	-0.67	"Софийска вода" АД	39.27%	39.99%	-0.71%
"Вик" ЕООД, гр. Пловдив	26.47	27.51	-1.03	"Вик Йовковци" ООД	57.12%	57.98%	-0.86%
"Кюстендилска вода" ЕООД	10.29	11.37	-1.09	"Вик" ЕООД, гр. Пловдив	56.94%	57.93%	-0.99%
"Софийска вода" АД	36.51	37.65	-1.14	"Вик - Сливен" ООД, гр. Сливен	83.43%	84.62%	-1.19%
"Вик" ЕООД, гр. Пазарджик	23.61	26.01	-2.40	"Вик Добрич" АД, гр. Добрич	73.11%	74.51%	-1.40%
"Вик" ЕООД, гр. Благоевград	20.55	22.95	-2.40	"Вик" ЕООД, гр. Ямбол	74.53%	76.41%	-1.88%
"Вик" ЕООД, гр. Ямбол	20.98	23.41	-2.43	"Кюстендилска вода" ЕООД	63.43%	66.17%	-2.74%
"Вик - Сливен" ООД, гр. Сливен	46.72	49.20	-2.47	"Вик" ЕООД, гр. Благоевград	55.33%	58.22%	-2.88%
"Вик" ООД, гр. Пазарджик	6.22	15.77	-9.55	"Вик" ООД, гр. Пазарджик	57.21%	62.22%	-5.01%

Reasons for high water losses

- Morally and physically outdated infrastructure (over 60% of water pipes are made of asbestos cement), which is a prerequisite for frequent failures and numerous hidden leaks
- Incorrect measurement and/or lack of measurement of input and output of the system, which is a prerequisite for widespread unregulated/illegal use of water
- Lack of a systematic approach in infrastructure maintenance - mostly reactive actions, very rarely preventive, and never predictive.
- Sporadic/piecemeal application of modern methods to reduce losses.
- Lack of interest in the actors in the final result.
- Lack of personnel and systematic upgrading of the knowledge of the existing ones.

New challenges: water shortage

- Considered to be rich in water resources, the Republic of Bulgaria has not been overlooked by the global climate change.
- In the last few years, there has been a trend of drought, which has adversely affected drinking water sources.
- In 2020, an entire regional town - Pernik remained in a harsh regime due to the emptying of its potable water supply dam - Studena.
- There were serious fears that a similar situation could arise in the summer of 2020 in the Burgas region.
- Other settlements experience chronic water shortages at certain times of the year.



REGULATORY/ LEGAL FRAMEWORK

DIRECTIVE (EU) 2020/2184 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2020 on the quality of water intended for human consumption

Article 4 General obligations

3. In accordance with Directive 2000/60/EC, Member States shall ensure that an assessment of water leakage levels within their territory and of the potential for improvements in water leakage reduction is performed using the infrastructural leakage index (ILI) rating method or another appropriate method. That assessment shall take into account relevant public health, environmental, technical and economic aspects and cover at least water suppliers supplying at least 10 000 m³ per day or serving at least 50 000 people. The results of the assessment shall be communicated to the Commission by **12 January 2026**.

By **12 January 2028**, the Commission shall adopt a delegated act in accordance with Article 21 in order to supplement this Directive, by setting out a threshold, based on ILI or another appropriate method, above which Member States shall present an action plan. That delegated act shall be drafted using the Member States' assessments and the Union average leakage rate determined on the basis of those assessments.

Within two years of the adoption of the delegated act referred to in the third subparagraph, Member States having a leakage rate exceeding the threshold set out in the delegated act shall present an action plan to the Commission laying down a set of measures to be taken in order to reduce their leakage rate.



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1. Leak Detection and Repair

- **Regular Audits:** Conduct regular water audits to identify areas with high leakage rates.
- **Acoustic Devices:** Use acoustic leak detection devices to listen for leaks in underground pipes.
- **Pressure Management:** Implement pressure management systems to reduce stress on pipes and minimize leaks.

2. Metering and Billing Improvements

- **Accurate Metering:** Install accurate and modern water meters to ensure proper measurement of water usage.
- **Regular Calibration:** Regularly calibrate and maintain meters to ensure they are functioning correctly.
- **Automated Meter Reading (AMR):** Use AMR or smart meters to improve reading accuracy and detect unusual consumption patterns.

3. Infrastructure Upgrades

- **Pipe Replacement:** Replace old and deteriorating pipes that are prone to leaks.
- **Advanced Materials:** Use durable and advanced materials for new installations to reduce future leak potential.
- **Zoning:** Divide the water distribution system into smaller zones for easier monitoring and management.



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4. Water Loss Management Programs

- **Establish Teams:** Create dedicated water loss management teams responsible for continuous monitoring and response.
- **Software Solutions:** Use water management software to track water loss and identify trends.
- **Training and Awareness:** Train staff on the importance of reducing UFW and techniques for detection and repair.

5. Theft Prevention

- **Regular Inspections:** Conduct regular inspections to detect illegal connections and water theft.
- **Public Awareness Campaigns:** Educate the public on the impacts of water theft and encourage reporting of suspicious activities.
- **Legal Measures:** Implement and enforce stringent penalties for water theft.

6. Improved Data Management

- **Data Integration:** Integrate data from various sources such as meters, sensors, and billing systems to get a comprehensive view of water usage and losses.
- **GIS Mapping:** Use Geographic Information System (GIS) mapping to visualize the water distribution network and identify problem areas.
- **Analytics:** Employ data analytics to predict potential leaks and prioritize maintenance.

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7. Customer Engagement

- **Leak Notifications:** Notify customers of potential leaks on their property based on unusual usage patterns.
- **Usage Reports:** Provide detailed water usage reports to customers to help them monitor their consumption.
- **Incentive Programs:** Offer incentives for customers to repair leaks and reduce water wastage.

8. Regulatory and Policy Measures

- **Regulations:** Establish regulations that mandate regular water audits and reporting of UFW.
- **Funding and Grants:** Provide funding and grants for utilities to upgrade infrastructure and implement water loss reduction programs.
- **Benchmarking:** Implement benchmarking programs where utilities can compare their performance against peers and identify areas for improvement.

BULGARIAN WATER ASSOCIATION

- ❑ Non-profit association with
- ❑ About 100 corporate and over 250 individual members which
- ❑ MISSION IS:
 - To actively assist in the preparation and implementation of a professional, nationally responsible and European-oriented
 - Activities:
 - ❑ Organizes and conducts national and international seminars, workshops and conferences
 - ❑ Publishes Bulaqua magazine
 - ❑ Assists in establishing business contacts between Bulgarian and foreign companies and investors in the water sector
 - ❑ Develops Certified Professional Training Center
 - ❑ Maintains a Youth Water Specialists Section
 - ❑ Participates in international water projects and conducts Benchmarking project for the WS&S Utilities
 - ❑ Through its subsidiary company – BULAQUA Standart performs regular quality control of construction products by physical tests in accredited laboratories and thus proving their conformity with the product standards.



shared experience shortens the path to success



Thank you for your attention!

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