

NRW

Sofiyska water JSC

Veselin Dimitrov
21.05.2026



Contents

1

**Water Balance
Components
KPI's**

2

Losses reduction

3

**Monitoring
Optimization,
DMA's and PMA's
Programme**

4

**NRW
Results**

1

Water Balance Components KPI's

**Resilient and efficient
of water supply system**

System Input Volume (corrected for known errors)	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption (including water exported)	Revenue Water
			Billed Unmetered Consumption	
		Unbilled Authorised Consumption	Unbilled Metered Consumption	Non- Revenue Water (NRW)
			Unbilled Unmetered Consumption	
	Water Losses	Apparent Losses	Unauthorised Consumption	
			Customer Metering Inaccuracies	
		Real Losses	Leakage on Transmission and/or Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
			Leakage on Service Connections up to point of Customer metering	

Figure 3. IWA Standard International Water Balance and Terminology

2025

Q9 = 36.84%

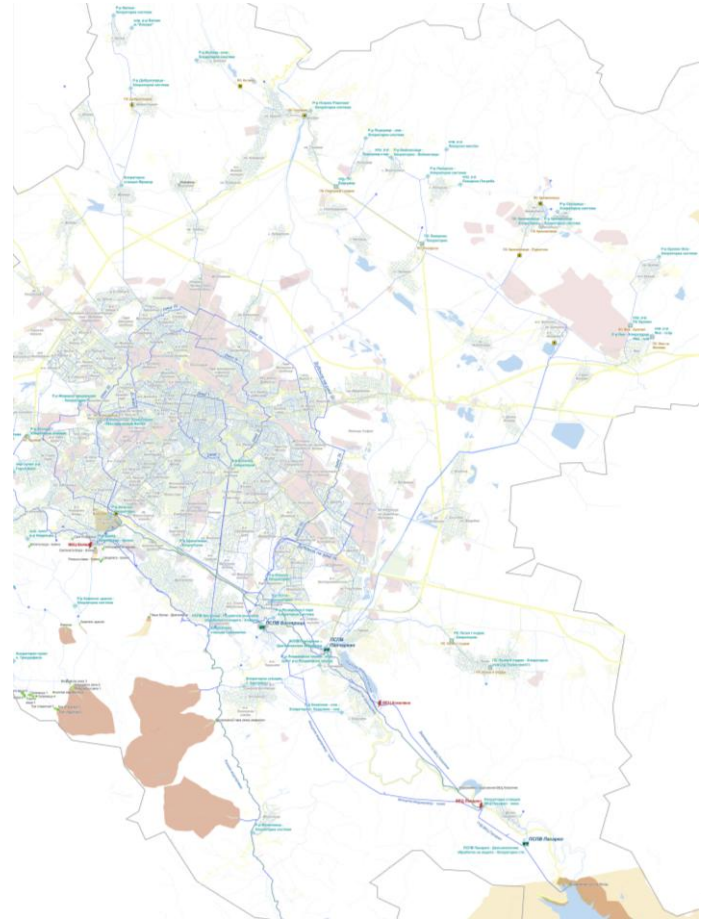
Regulatory Compliance

Financial Sustainability

Environmental Sustainability

Network review

- **VILLAGES: SOFIA CITY (CAPITAL)**
- **+ 3 SMALLER CITIES AND 35 VILLAGES**
- **BELI ISKAR DAM 1876M/ 13 400 000 M3**
- **ISKAR DAM 816M / 655 300 000M3**
- **POPULATION ≈ 1,3 M**
- **CUSTOMERS: ≈ 650 K**
- **HOUSE CONNECTION: 112 905**
- **WATER NETWORK LENGTH = 3 598 km**
- **DWTP: 5**
- **RESERVOIRS: 52 (volume≈ 320 000 m3)**
- **PUMPING STATIONS: 14**
- **DMA: 216**
- **PRV installed in the system: 283**



2 Losses reduction multicomponent task

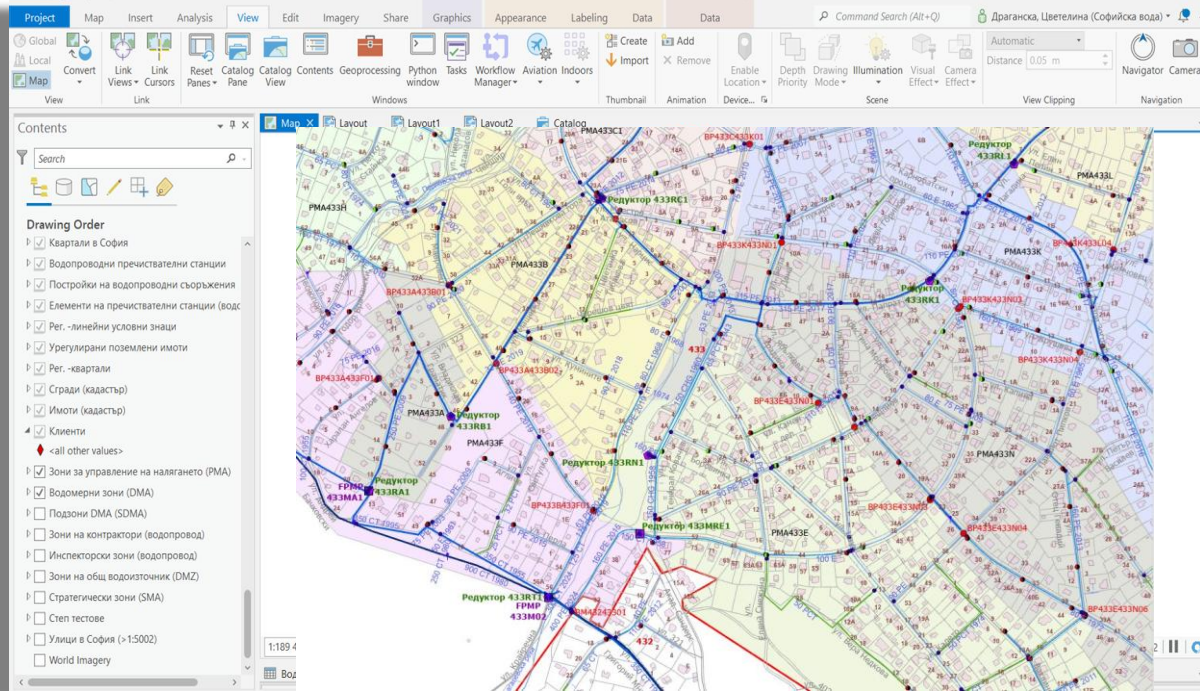
Physical losses

- ✓ PRVs upgrade with dynamic pressure management system
- ✓ Additional pressure reduction in existing PMA zones
- ✓ Creating a new PMA zones
- ✓ TOP 100 DMA – MNF analysis
- ✓ Proactive leaks detection
- ✓ Hydraulic model of water network optimizing and upgrading

Commercial losses

- ✓ Revenue meters in metrological validity
- ✓ Reduction of illegal usage of water campaign
- ✓ Building of SMART metering system
- ✓ Consumption profile for each property

Physical losses reduction DMA, PMA – program tools



Up to Now:

216DMA established

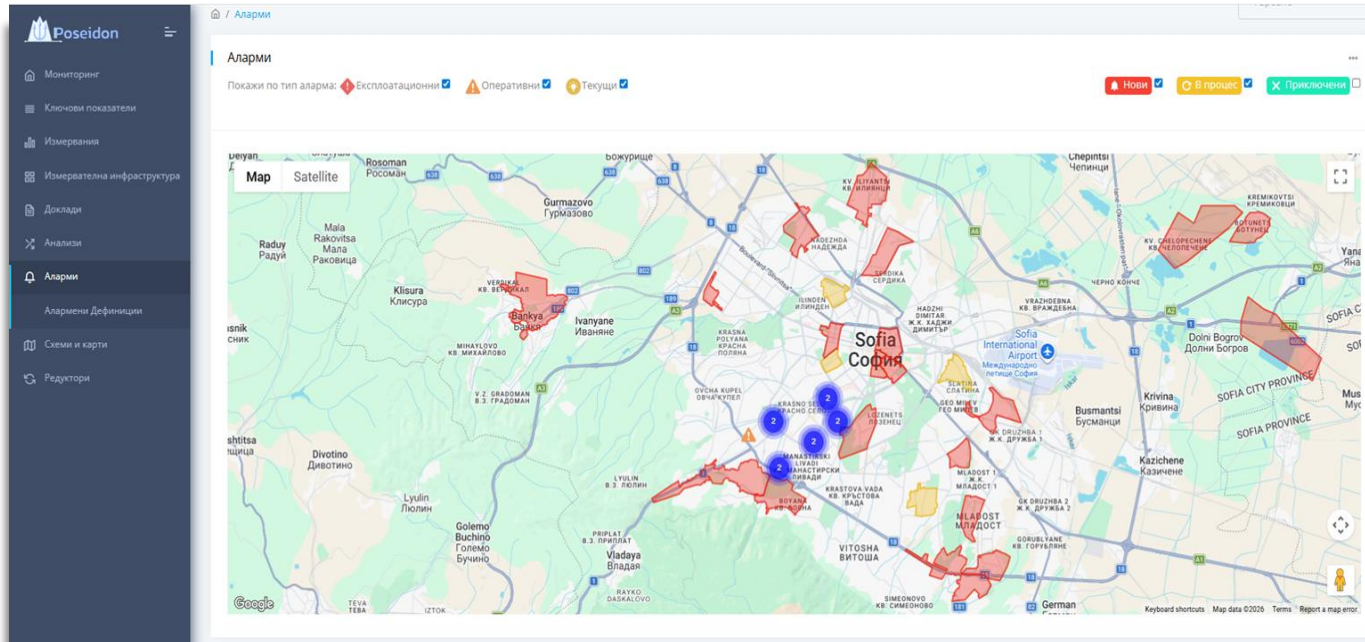
- ✓ Field campaigns
- ✓ Permanent boundary establishment
- ✓ Metering and 24 hours telemetry service
- ✓ Zero test conducted
- ✓ Motivated team

Challenges:

- ✓ Knowledge for assets

3

DMZ monitoring DMA monitoring SDMA monitoring

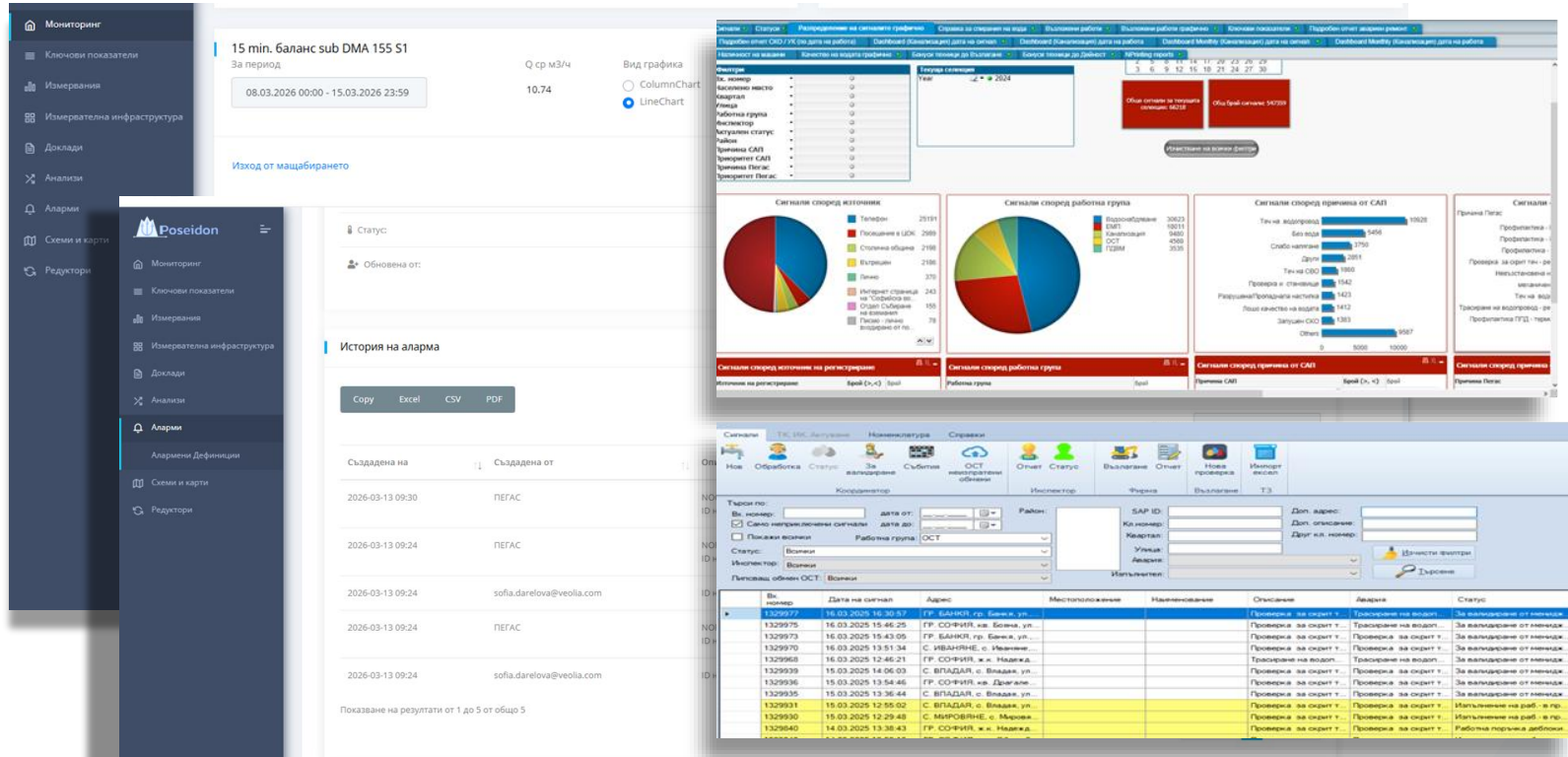


- ✓ DMA zones balances – total volumes per day
- ✓ MNF trends monitoring
- ✓ Data for each measurement point
- ✓ Zones ranking
- ✓ Alarms

DMZ monitoring

DMA monitoring

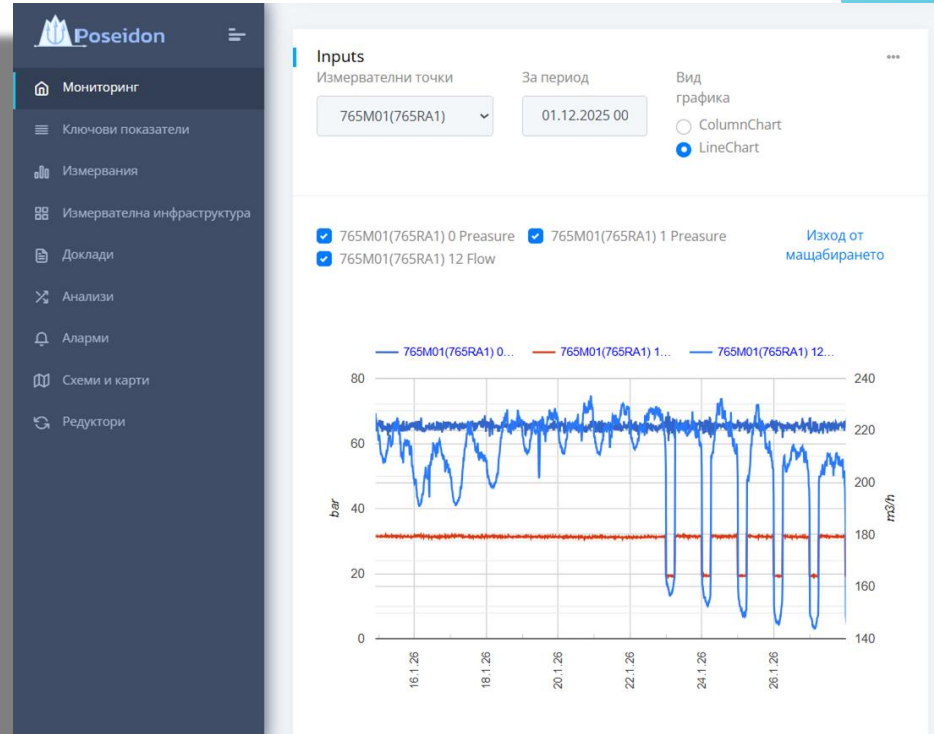
SDMA monitoring



PMA monitoring

PRVs upgrade with dynamic pressure management system

- ✓ Prolonging the life cycle of the main
- ✓ Failure reduction
- ✓ Physical losses reduction



Commercial losses reduction

SMART Metering

Current situation

- ✓ started in 2021
- ✓ LoRaWAN communication network

Challenges

- ✓ Location of meters
- ✓ Non-transmitting issues

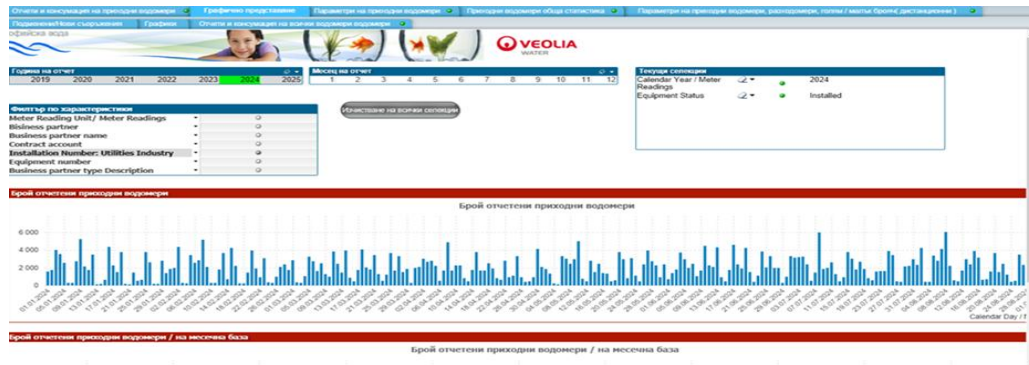
Effect of covering and decreasing of commercial losses:

- ✓ Margins in consumption – abnormal consumption
- ✓ Detecting leaks
- ✓ Correct billing to the customers
- ✓ Additional business opportunities

Up to now - 13 K smart meters installed on key customers, which represents 51% coverage

Commercial losses reduction

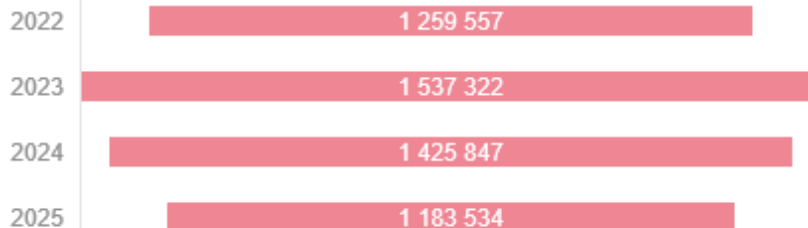
Results Dashboards:



Our Aim

any unregulated consumption
transformed into
Billed water quantity

Billed volumes from commercial losses projects



- ✓ Lack of consumption
- ✓ Lack of transmissions
- ✓ Increased/decreased consumption
- ✓ Constant consumption

Proactive leak detection system

🔧 Technology Used:

- ✓ NB-IoT (Narrowband IoT)
- ✓ Cloud Data Analysis

📍 Installation Points Loggers are installed in:

- ✓ Shafts
- ✓ Service connection pots/chambers
- ✓ Pressure hydrants or similar infrastructure points

⚙️ System Functionality:

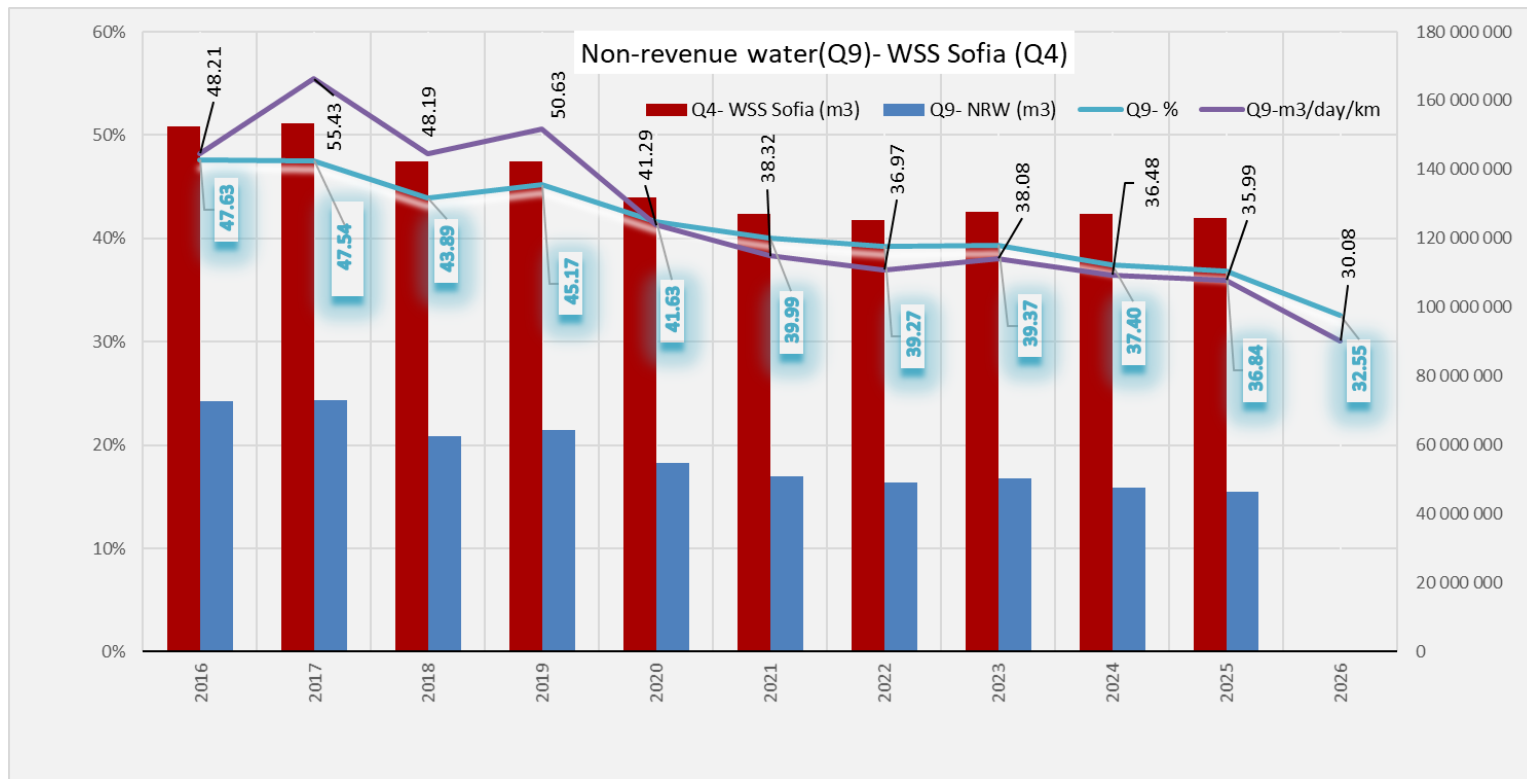
- ✓ Automatic water leaks Identification
- ✓ Localization
- ✓ User Alerts – real-time warnings/notifications

💡 Summary:

- IoT-based smart water network monitoring solution



4 NRW Results



Thank you for your attention!