



International Association
of Water Supply Companies
in the Danube River
Catchment Area



NRW

A background image for the title section showing a close-up of a rusty metal pipe joint with water spraying out from several points. The image is overlaid with a green gradient.

Improved Non-Revenue Water Management in Water Utilities

GAIN hands-on, practical
experience on non-revenue
water reduction

LEARN from other
practitioners in the sector

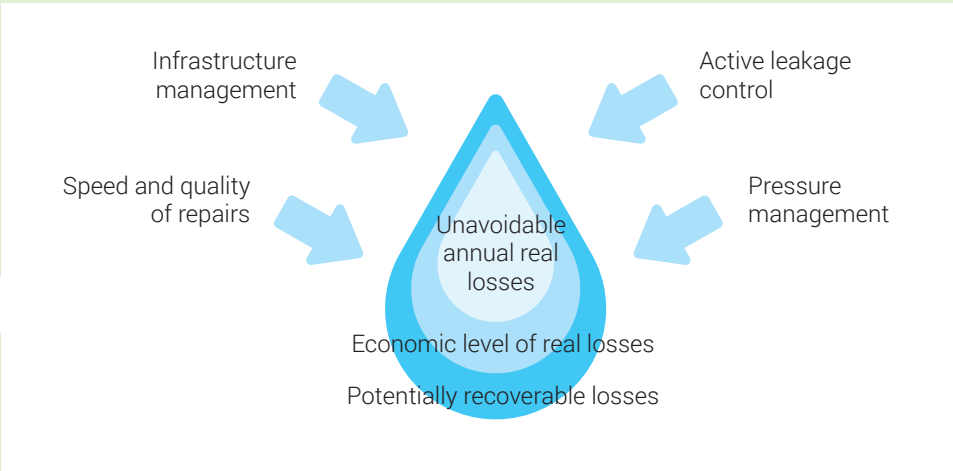
BE UP TO DATE on the
latest trends in the sector

BENEFIT from regional and
global experiences from
other utilities and experts

Improved Non-Revenue Water Management in Water Utilities

Understand the Non-Revenue Water (NRW) concept and components

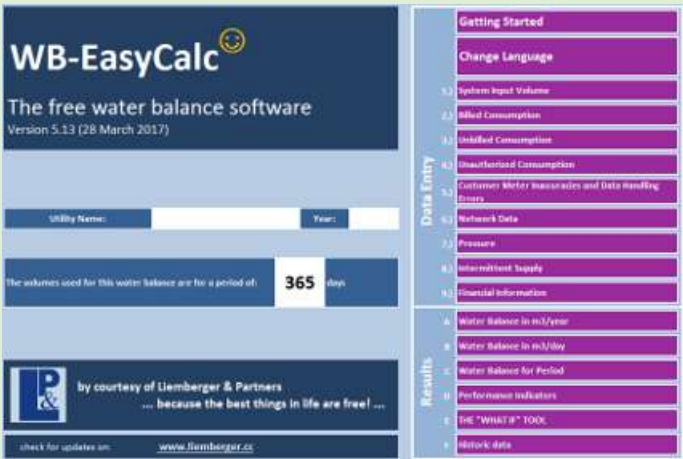
System Input Volume	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption	Revenue Water
			Billed Unmetered Consumption	
	Water Losses	Unbilled Authorised Consumption	Unbilled Metered Consumption	Non-Revenue Water
			Unbilled Unmetered Consumption	
		Apparent Losses	Unauthorised Consumption	
			Metering Inaccuracies and Data Handling Errors	
		Real Losses	Leakages on Transmission and Distribution Mains	
			Leakages on Service Connections	
			Leakages and Overflows at Storage Tanks	



Get an overview of the methods of intervention to improve NRW management

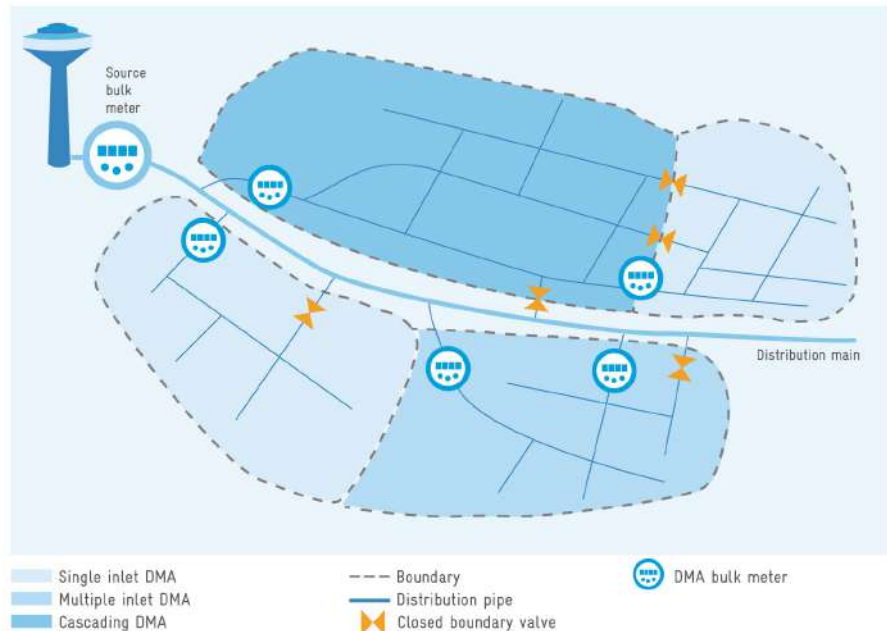
Based on Pilcher, R., Leak detection practices and techniques: a practical approach. Water 21, 2003

Gain practical experience in developing and evaluating a water balance in your utility and use the state-of-art tools for the water balance development

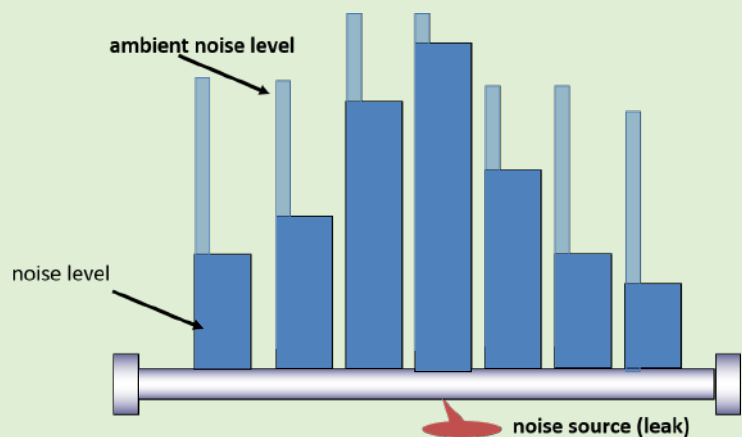
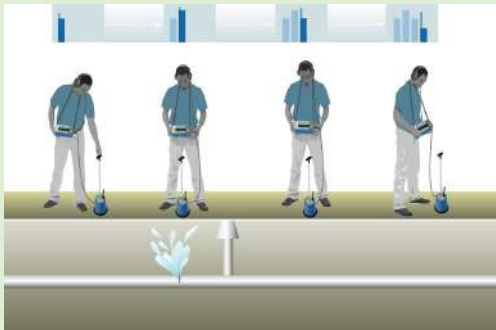


Understand the purpose of establishing DMAs and enhance your knowledge about rules and preconditions for DMA definition and maintenance

Based on Farley, M.,
Leakage Management and Control.
WHO, 2001



Improve your knowledge and skills on active leak detection



Learn about the operation principles of flow and pressure measurement equipment and gain hands-on experience on how to work with it



Acknowledge the benefits of developing and implementing a NRW action plan and acquire the approach and methodology for its development

Gain practical experience in developing your utility's NRW action plan with focus on key priority measures to be implemented

1. Basic information					
Full name of the PUC:		Country:			
Address:		Service coverage area:			
Number of municipalities / cities covered by the service (Cities and municipalities that the PUC supplies with water)		Service coverage name (Name of the water supply system in general managed by the PUC)			
Type of service delivered by the PUC (List other types of services provided by the PUC)		Year of establishment of the PUC:			
Is there a special state-level regulatory agency that conducts monitoring? (Circle the correct answer)		YES		NO	
2. Technical information (year: _____)					
Number of inhabitants covered by the water supply service:		Water supply coverage: [%]			
Annual volume of produced water: [m ³]		Number of water service users:			
Total length of water supply network (above ground profile): [km]		Number of employees in the PUC:			
Average hours of water supply during the day:		Wastewater treatment plant capacity:			
3. Financial information (year: _____)					
The total annual revenue from the sale of water:		Domestic currency (L)		Revenue per unit of product (average fee)	
Cost per unit of product:		Domestic currency (L/m ³)		Collection rate:	
		Ejm 1		[%]	
				Operational Costs Return Ratio:	
4. Non-revenue water management (year: _____)					
Non-revenue water:		m ³ %		Is the network divided in district metered areas (DMAs)?	
Do you measure volumes of system input / water produced?		YES/ NO		Percentage of consumers covered with water meters:	
Are system input / produced water meters regularly calibrated?		YES/ NO		Is there a programme for testing and replacing consumer meters?	
Is a non-revenue water department / unit set up and functioning?		YES/ NO		Is there an active program for investigating illegal connections?	
Is the network pressure regularly measured?		YES/ NO		Are there any pressure reducing valves in the network?	
Do you have a leak detection equipment?		YES/ NO		Do you conduct active leak control (search for invisible leaks)?	
Do you have an asset management plan developed?		YES/ NO		Do you have a system to obtain and manage information on leaks, time required for response, and consumer complaints?	
Do you conduct annual water quality checks?		YES/ NO		Do you have water balance been developed?	

Improved Non-Revenue Water Management in Water Utilities

Program description and covered topics

This Program develops capacities of and provides technical support to water utilities for effective Non-Revenue Water (NRW) management to improve their performance and sustainability of water services. The establishment of efficient NRW management routines assists the participating utilities to reduce water production and distribution costs, improve financial and operational performance and create conditions to apply for financial resources needed for capital investment projects.

Through theoretical presentations and practical exercises, the Program expands knowledge on technical aspects of NRW management and strengthens their individual, organizational and institutional capacities to apply the skills developed in their day-to-day work. In addition, the Program contributes to the exchange of experiences and good practices amongst water utilities and thus involves a strong networking component.

The Program has been developed at the regional level in cooperation with the Technical Partner Una Consulting, who ensures that the Program is technically sound and develops guidelines, tools, training material and manuals and delivers the Training of Trainers. The Program is delivered through national or regional Hubs in local language. Participating utilities pay a registration fee, which is communicated by the Hub.

Set-up of Program

The Program is designed on learning-by-doing principles. It includes a mix of face-to-face training workshops providing tools and techniques to address the challenges faced and see them applied in practice, followed by on the job training, in which participating utilities apply the tools and techniques to their particular situation and develop concrete products (diagnostics, action plans etc.). The principles of blended learning are applied, i.e. face-to-face training is accompanied by e-learning material provided within the D-LeaP Academy.

For more information on the Program concept and design please visit www.d-leap.org!

Learning goals

- How to develop and evaluate the IWA water balance?
- How to establish DMAs and implement working procedures in them?
- How to implement active leak detection in your utility?
- How to develop a simple Non-Revenue Water management plan with a focus on key priorities and immediate actions?

Hubs



AQUASAN, Aquasan Network in Bosnia and Herzegovina



SHUKOS, Water and Wastewater Works Association of Kosovo / **SHUKALB**, Water Supply and Sewerage Association of Albania

Technical Partner



UNA CONSULTING
Resource Centre and Consultancies
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DANUBE WATER PROGRAM