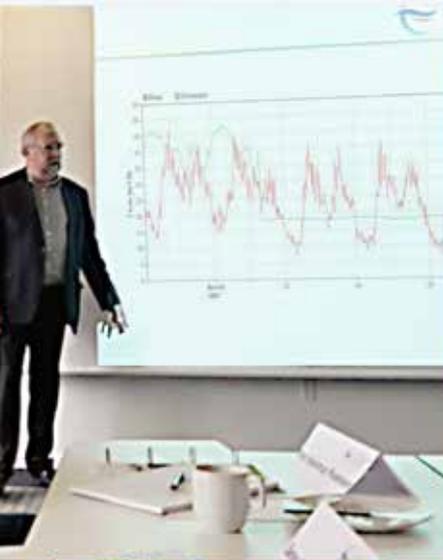


# COURSE IN NON-REVENUE WATER PROGRAMS FOR PLANNERS AND DECISION MAKERS



## NON-REVENUE WATER PROGRAMS



ENERGY AND  
CLIMATE  
ACADEMY

IN  
COOPERATION  
WITH



DANVA  
The Danish Water  
and Wastewater Association



## **COURSE IN NON-REVENUE WATER PROGRAMS FOR PLANNERS AND DECISION MAKERS IN WATER UTILITIES, CITIES AND COMPANIES**

### **Purpose of International NRW-reduction course in Denmark**

Water loss in the water distribution networks is of great concern for cities and utilities almost all over the world. When you calculate the physical loss of water using the Infrastructure Leakage Index (ILI), you will find that in Denmark actual loss is typically less than 1%. In many other countries in Europe the same figure is often well over 5-10 and even higher in the rest of the world. Also when it comes to the apparent loss you will find Denmark in the top 3 in the world.

The impressive figures for Danish NRW-reduction are achieved by a combination of planning and policy, operations and management, metering, equipment and workmanship as well as training and awareness.

By attending this training course in Denmark you will get vital information about NRW reduction programs and get live-demonstrations of how we have come this far by visits to water utilities in the country.

The global population is growing. Fresh, clean drinking water is becoming scarcer. We are looking towards a global population of 9 billion people, which leads to an increase in water consumption of up to 30%. Increased understanding of the importance of stable and sustainable water supply can also be seen from the fact that water in 2015 was granted a Sustainable Development Goal by the UN for the first time.

In order to meet the future demand for water, a strong focus on efficient water management, operations and management and especially a reduction of Non-Revenue Water (NRW) is called for. Losing as much as 25-50% of the distributed water in the piping networks is a challenge for those who are left without water or receive polluted water due to leakages. However

it is important to understand that at the same time it is bad business for utilities that they pay for pumping and discharging clean drinking water to the distribution system and that is not being paid for by consumers.

We call it Non-Revenue Water (NRW) – the amount of water that is lost or never invoiced due to illegal connections, inaccurate billing systems, inaccurate metering, leakages, deteriorating infrastructure and wrong water pressure management etc.

A high level of Non-Revenue Water has not only a serious impact on the financial viability of water utilities due to revenue losses and unnecessarily high operating costs, but also high environmental consequences. In order to bring down and maintain a low level of NRW, several aspects need to be addressed – from the initial planning phase to the day-to-day operations as well as the use of high quality installations and good workmanship.

Reduction of water losses is the aim of our NRW-course, organised by Energy and Climate Academy in cooperation with DANVA, Danish Water and Wastewater Association.



### Who should attend

Three groups of staff need to pay attention to reduction on NRW to secure sustainable solutions:

- CEO's and top level management in order to prioritize and channel funding towards investments in NRW-reduction
- Planners and middle level management, who recommend interventions, decisions and actual solutions
- Staff at operations and maintenance level, who identify leakages, carry out repairs and are responsible for daily maintenance of pumps, pipes and networks

This course is targeting planners and middle level management and will ensure that they are able to assess the situation and identify key challenges and recommend the solutions that are sustainable for utilities, communities and the environment. Courses targeting other staff categories are also offered by us and our partners.

Contact us if you are interested in this.

### Course elements for reduction of Non-Revenue Water

During this course we will address key elements for NRW-reduction. Among these are:

- **Planning and prioritising NRW initiatives**  
Securing that available data to get an overview of challenges and prioritise investments, which includes development of an NRW Master Plan based on an analysis of the current NRW and the state of the water distribution network.
- **Keeping NRW low in a long-term perspective**  
After NRW reduction activities focus must be on maintaining a low NRW level. Initiatives to secure this can be breaking down the distribution system into District Metering Areas.
- **Equipment**  
The quality of installed components such as valves, pumps, pipes and meters etc. plays a key factor in reducing water loss. For long-term sustainability we need to focus on Total Cost of Ownership rather than simply the initial price.

Program				
	Tuesday	Wednesday	Thursday	Friday
Morning	NRW reduction programs and Master Plan	Operation phase	Equipment and workmanship	Training and capacity building
	Definition of NRW elements	Reducing apparent loss	Quality equipment and cost of ownership	Communication with consumers, local society and NGO
Afternoon	NRW Master Plan content and implementation	Divide in to DMA and PMA	Pipe renovations programs and No Dig technology	Benchmark and NRW management systems
	IWA water balance, KPI's and ELL	GIS, databases, hydraulic models, Smart meters	Water Utility workshop and field work	Visit to training facility for NRW Reduction
Visits	Aarhus Water Company	Skanderborg Water Utility	WaterCenter South (VCS, Odense)	Nordvand, Greater Copenhagen Area
Evenings	Networking, social and cultural programme			

# THE LECTURERS:



**JENS B. PEDERSEN** CAND. SCIENT. (HYDRO GEOLOGIST)

Working in the water sector since 1979, Jens has an impressive international experience from many different countries both as a specialist and as a lecturer. He is the CEO and owner of Danwater and Chairman of the Boards in 5 international companies in the water industry. Together with John Kristensen, Jens is Technical Editor at the Danish White Paper on NRW, published June 2016 by State of Green.



**JOHN B. KRISTENSEN** BACHELOR OF SCIENCE IN ENGINEERING (B.E.)

With more than 25 years experience from the Water Sector, John B. Kristensen is one of the leading experts in Non Revenue Water programs. John has worked many years as a lecturer in different international educational programs and holds a position as Market Director at NIRAS. Together with Jens Baadsgaard, John is Technical Editor at the Danish White Paper on NRW, published June 2016 by State of Green.



## About DANVA:

DANVA is the industry organisation for water companies. DANVA unites all companies involved in the daily supply of clean drinking water, wastewater management and flood prevention based on traditional and innovative methods for adapting to climate change. DANVA supports all companies involved in developing and implementing innovative water solutions for Denmark and the rest of the world. DANVA tells everyone about the value and impact of Danish water solutions – solutions that create better living conditions and contribute to growth in Denmark.

[www.danva.dk](http://www.danva.dk)



## About Energy and Climate Academy

Founded in 2013 and provides superb and leading edge training for companies in the energy and climate industries as well as cities, regions, and states. We combine theory with practical experience in a high-impact learning environment. We cooperate with some of the world's leading universities, private and public companies and organizations.

[www.energyandclimateacademy.com](http://www.energyandclimateacademy.com)

## Information and enrollment:

**Venue:** 30. May - 2. June, Denmark  
19. - 22. September, Denmark

**Price:** Including tuition, materials, hotels, all meals, transportation in Denmark. € 3.425 excl. VAT.  
*This course is also available as in-house educational program.*

**Enrollment:** [www.energyandclimateacademy.com](http://www.energyandclimateacademy.com)



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