

Regional Training, Activity No.: RW-4-REG

**Water Harvesting including through retention & aquifer recharge
with storm water**

Day 2/5 “Water re-use using distributed technologies in arid
countries coupled with groundwater recharge”



Presentation of the Workshop – Scope and
Objectives

11 October 2021 - From 11:00 to 14:00
pm (Athens time)

(Video-conference)

Presented by: Dr. Demetris ZARRIS: WES Non-Key Expert
(NKE1)



Introduction

The subject the Regional Activity (Training and P2P process) is planned under the following WES topics/subtopics:

- Topic 2: “Investigation and Introduction of Water Efficiency Gains at the **Decentralized Level**”,
- Subtopic 3 “**Non-Conventional** Water Resources” and Dimension 2 “Capacity Building”.
- “**Decentralized Level**”: means generally “small – scale” interventions where the distance between source (of water) and end-user is short. It is not expensive (lack of water transfer works) and is democratic since everyone has the capability to manage these interventions (from a single user to a community of users).
- “**Non-Conventional**”: means that source of water, mainly not directly for human consumption”, is not in the context of traditional engineering & water management (e.g. dams/reservoirs and/or GW pumping) but involves a variety of sources ranging from **reclaimed wastewater** to rainwater harvesting at plot scale.



Regional Training on Water Harvesting

Activity Number: RW-4-REG & RW-4-P2P



**Water and
Environment Support**
in the ENI Southern Neighbourhood region

The training sessions **will target** both the **designated participants** and **nominated peers** from the project countries.

Throughout the training event, participants will have the opportunity to:

- Get introduced to the overall concept of WH and NWRMs (hydrologic, environmental and economic components) and their various approaches.
- Learn about the benefits of WH and the use of NWRMs (e.g. assessment, planning, policy decision).
- Get familiar with the computational procedures needed to plan, design and assess the performance of WH and NWRMs.
- Get introduced to the design of WH and NWRMs as described by the EU through its Working Team for the Common Implementation Strategy (CIS) of the WFD.
- Review data needs and requirements for the design and implementation of WH and NWRMs both in urban and natural environments and its links mostly with irrigation and agriculture.
- Explore the real use of WH and NWRMs through countries' case studies (preferably from the MENA region).
- Implement rapid WH and NWRMs exercises and practical problems.



Introducing the Workshop's Theme



**Water and
Environment Support**
in the ENI Southern Neighbourhood region

Water re-use using distributed technologies in arid countries coupled with groundwater recharge

- Sewer Mining: Getting the water out of the sewage before the central WWTP and use it locally with two case studies.
- Artificial Groundwater Recharge with two case studies.



Introducing the Invited Speaker



**Water and
Environment Support**
in the ENI Southern Neighbourhood region

Dr. Christos MAKROPOULOS, Professor of Water Systems, School of Civil Engineering, National Technical University of Athens

Dr Christos Makropoulos is a Professor at the School of Civil Engineering of the National Technical University of Athens (NTUA), an adjunct Professor at the Norwegian University of Science and Technology (NTNU) and a Principal Scientist for KWR, the Water Research Institute in the Netherlands. He is the co-Editor in Chief of Urban Water Journal and a member of the Editorial Board of the Journal of Hydroinformatics and the Editorial Board of Water. Dr Makropoulos is an expert in hydroinformatic tools and methods for urban water management with an emphasis on distributed urban water infrastructure, critical infrastructure protection and whole cyber-physical system modelling for digital twins. His work addresses issues of resilience, risk and security analysis, uncertainty quantification, multi-objective evolutionary optimization, decision support, long-term policy scenario development and system stress-testing. He has authored more than 70 journal and 100 conference papers, as well as several book chapters and he is a co-author of the international textbook 'Urban Drainage'. He is a Fellow of the UK Higher Education Academy, a Fellow of the Royal Geographical Society and a Fellow of the OpenMI Association.





**Water and
Environment Support**
in the ENI Southern Neighbourhood region

Thank you for your attention!

