



# NICE Transfer Conference

From Idea to Institutionalization  
The National Implementation Committee for Effective Integrated  
Wastewater Management in Jordan

28<sup>th</sup> September 2021; The W Amman Hotel

Roland A. Müller



## Some facts and figures about UFZ

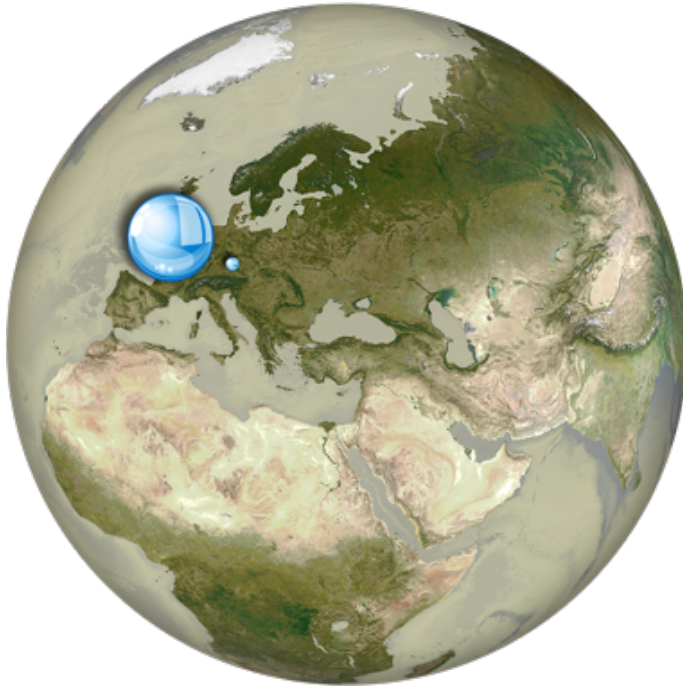
- Established in 1991, ca. 1,600 employees (incl. 250 Ph.D. students) in Leipzig, Halle & Magdeburg
- 37 departments in 7 thematic divisions
- Funding: BMBF 90%, Saxony 5% and Saxony-Anhalt 5%; approx. Systemic, interdisciplinary environmental research, solutions for managing complex environmental systems







# Water Scarcity - The Great Challenge:



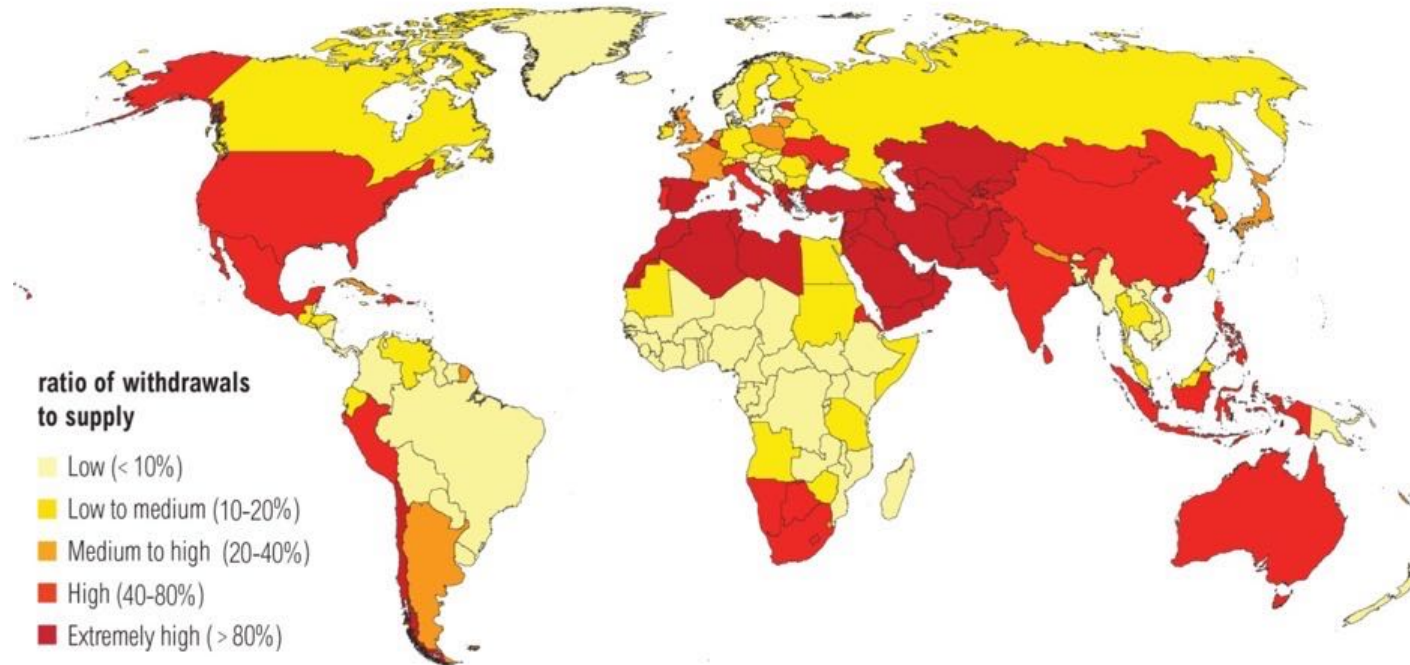
## National Implementation Committee for Effective Integrated Wastewater Management





# Climate Change & Global Dryland Systems

## Water Stress by Country: 2040

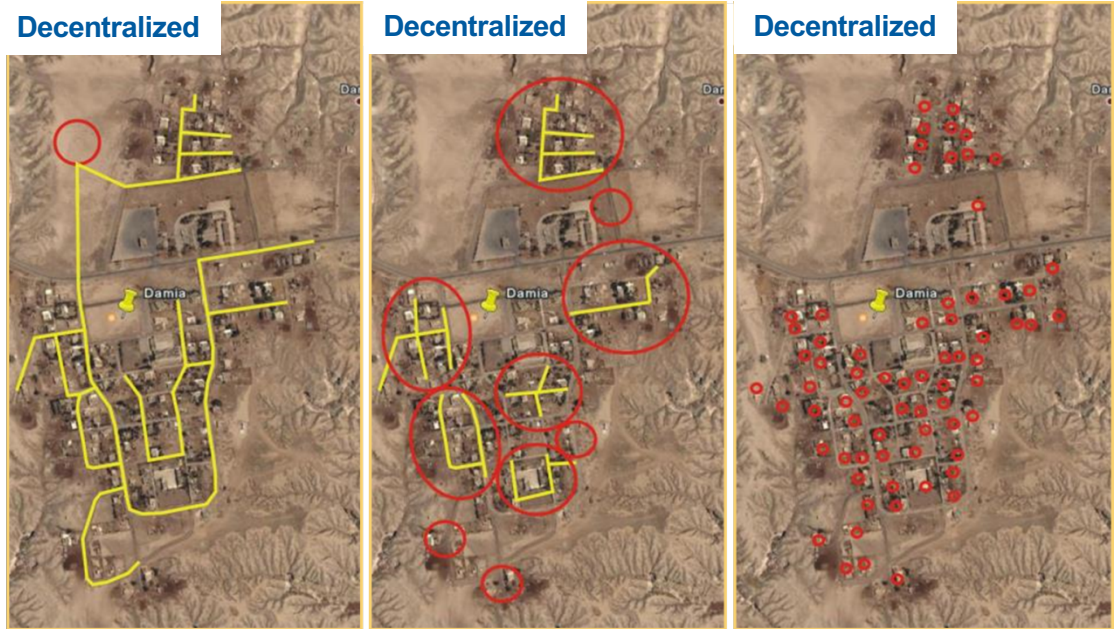




# Decentralized Wastewater Treatment: Definition & Scale of Services

Decentralised wastewater systems collect, treat and reuse or dispose wastewater at or near its point of generation.

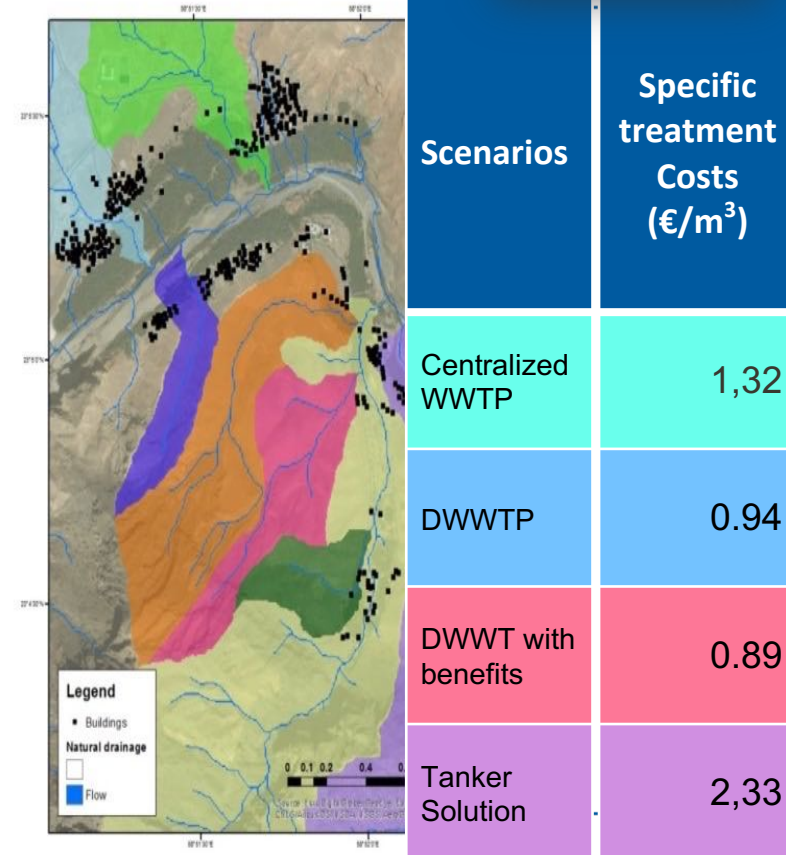
Flexible in size/PE: from household level up to a centralized management of a clustered solution > 5000 PE





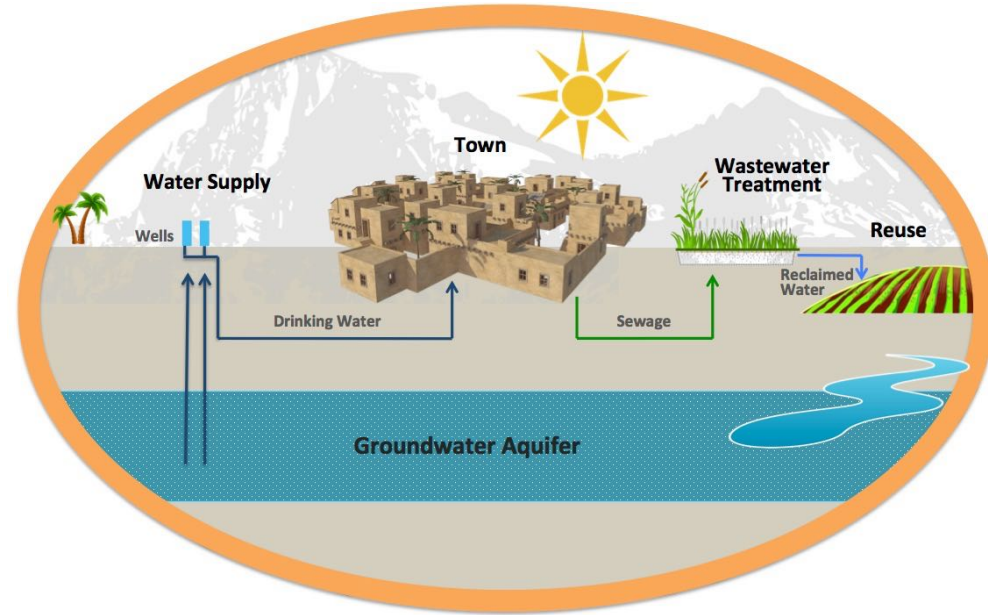
# Potentials of Decentralized Wastewater Infrastructures

- Reuse of treated wastewater provide the communities with additional water resources in the *local scale*
- DWWT is a flexible tool for infrastructural planning: Helps to cope with the dynamics of demographic/climatic change (*suburban scale*)
- DWWT in rural settlements help to support groundwater protection in a *regional scale*
- Reduction of Investments and O&M costs on *national Level*





- Providing Jordan with additional water resources
- The Protection of groundwater resources and
- Closing local water cycles by decentralized wastewater management solutions.





# Long-Lasting Cooperation with MWI

## - Chairs of NICE

- H.E. Eng. Khaldoun Khashman
- H.E. Eng. Maysoon Alzoubi
- H.E. Dr. Basem Telfah
- H.E. Eng. Ali Subah
- H.E. Eng. Mohammad Ershaid
- H.E. Dr. Jihad Mahamid





# The Beginning



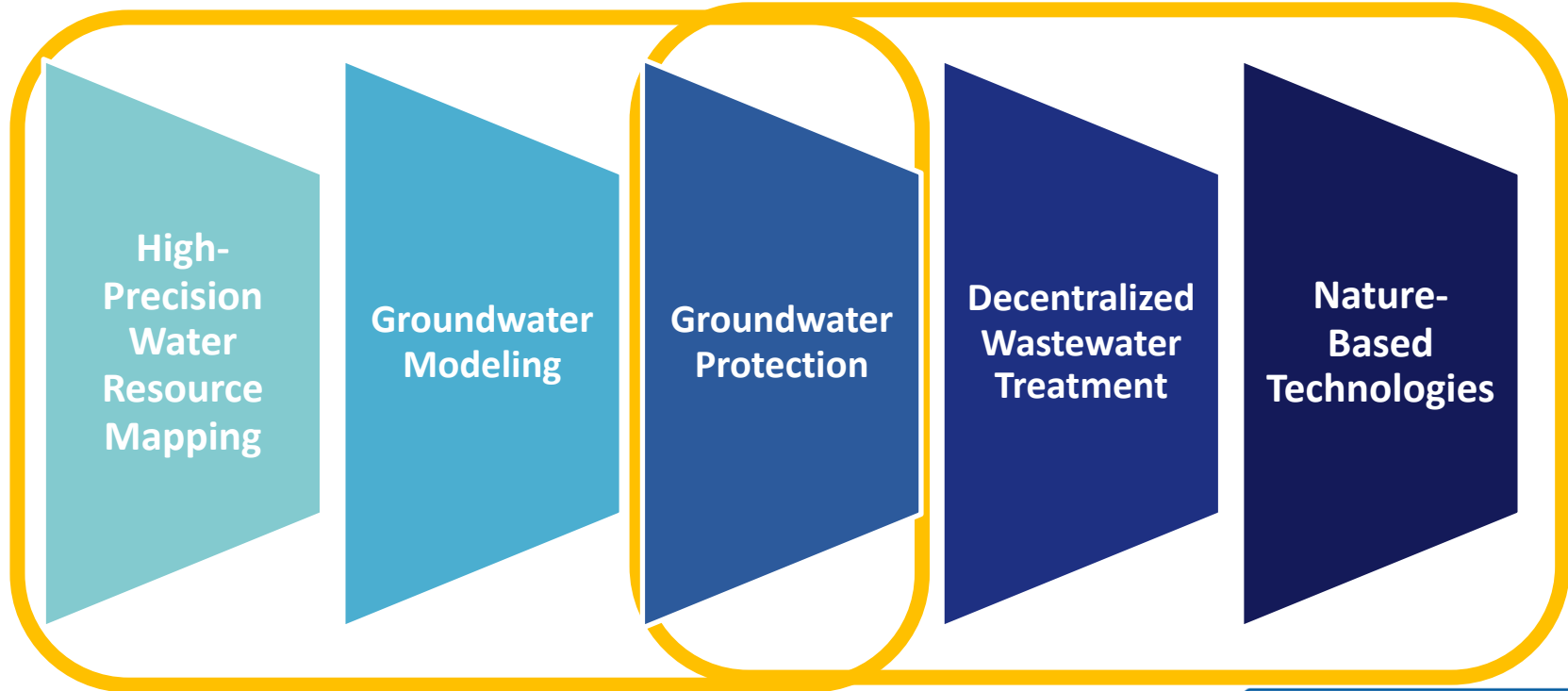


# Where we come from: Integrated Water Resource Management in the Middle East



## Water Quantity

## Water Quality





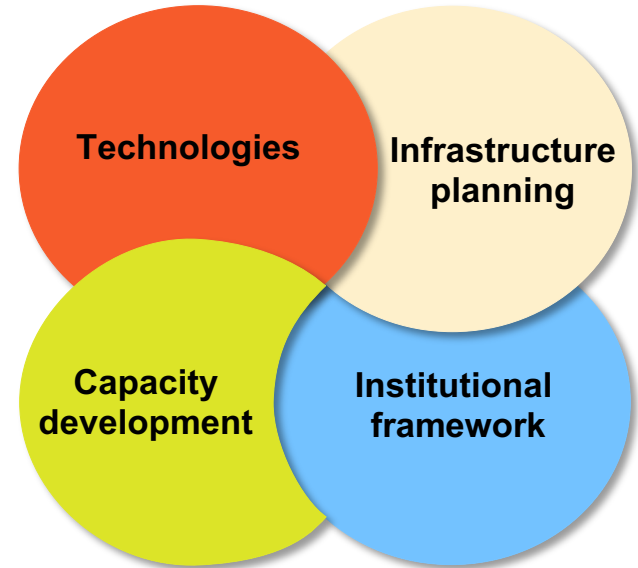
# Buidling Decentralized Wastewater Sector in Jordan

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## Initial Situation (2006)

- No existing commercial sector on DWWM.
- Extension of central sewer not affordable (topography, population, density).
- Lack of experience with implementation (technology selection, planning, investment).
- Conservative planning.
- Lack of appropriate regulations/standards.
- Unclear responsibilities.
- Uncertain acceptance.

## NICE-Approach





# Formation of an Interministerial and –sectorial Committee

## Chaired by the Ministry of Water and Irrigation

Water Authority of Jordan

Jordan Valley Authority

Ministry of Environment

Ministry of Municipal Affairs

Ministry of Health

Ministry of Agriculture

Jordan Standard & Metrological Org.

Ministry of Planning and International Coop.

Al-Balqa Applied University

German Jordan University

University of Jordan

Royal Scientific Society

Helmholtz Centre f. Env. Research



# NICE - Working Groups

- Recommendations
- Regulations
- Strategies & Policies







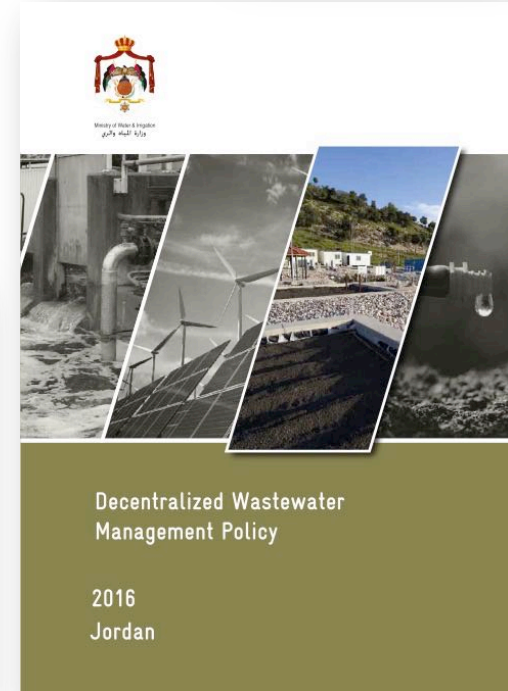


# First decentralized Wastewater Management Policy in the Middle East

- NICE works as a Science Policy Interface
- Preparation of Jordan's Framework for DWWM in 2015
- Submission of Framework to the Jordanian Cabinet in January 2016
- Adoption of the Framework and Policy, February 2016.

## ***Responsible Writing Team:***

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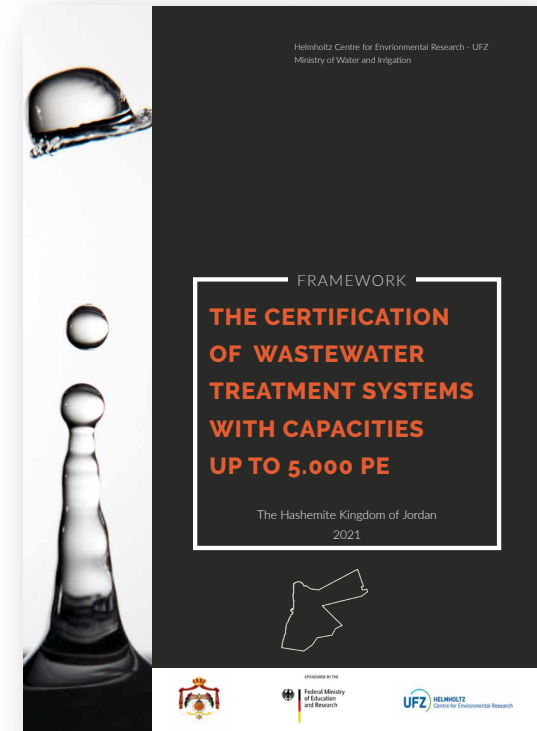


# National Framework Certification

Certification protocols developed by the NICE Technical Committee

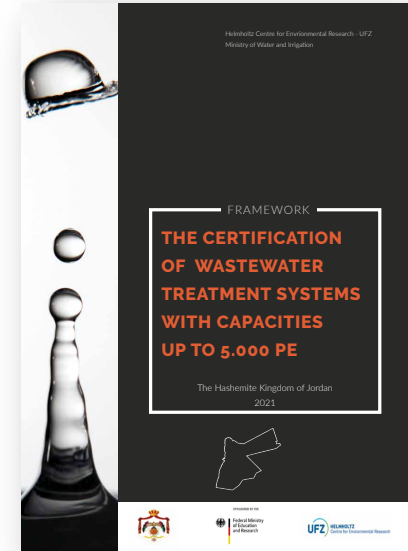
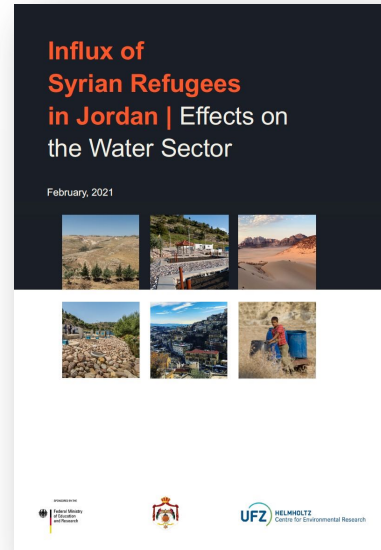
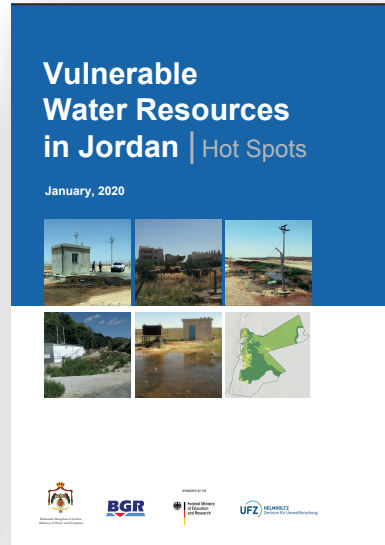
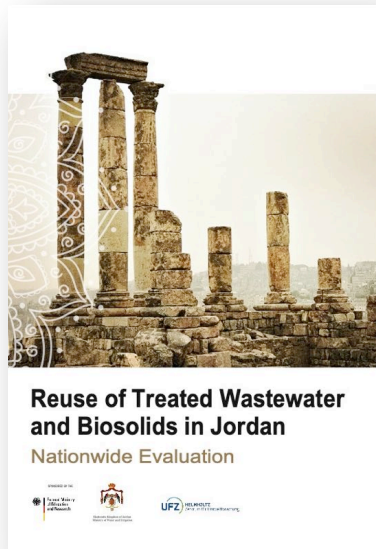


- National Requirements for the Certification of ***Prefabricated*** Wastewater Treatment Plants with capacities up to 500 PE.
- National Requirements for the Certification of ***Engineered*** Wastewater Treatment Plants with capacities up to 5.000 PE.
- National ***Installation, Operation*** and ***Maintenance*** Instructions for Wastewater Treatment Plants with capacities up to 5.000 PE.





# National Studies from NICE Technical Committee









# German Environmental Award 2018

## Decentralized Wastewater Management Solutions in Jordan



Prof. Mi-Yong Becker (Lee) (UFZ)  
Dr. Manfred van Afferden (UFZ)  
Prof. Roland A. Müller (UFZ)



# The Future





# Future of NICE Steering Comitee and corresponding Technical Comitees

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## *Chairman of NICE:*

- H.E. Dr. Jihad Al-Mahamid (MWI)

## *NICE-Representative & Speaker*

- Dr. Maha Halalsheh (Jordan University)

Dr. Marc Breulmann



Prof. Mi-Yong Becker (former Lee)

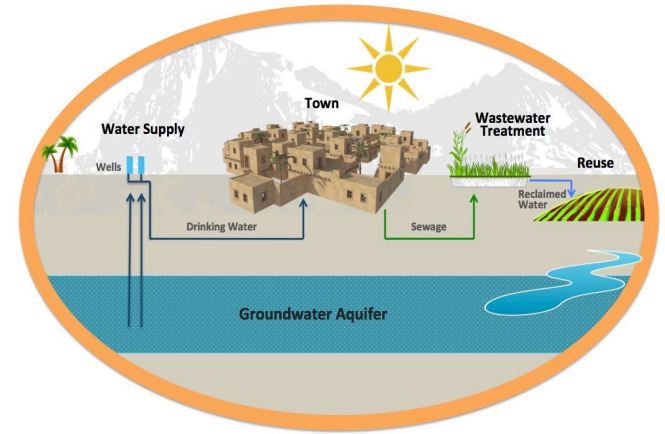




# Tasks and ongoing Priorities

- Climate Change in the Middle East – DWWM is an absolute necessary module of Jordan's Water Management keeping Water Resources Clean
- Groundwater contamination/ untreated wastewater in rural regions.
- Several pilots/ decentralized wastewater treatment – **no system solution approach.**
- Unclear responsibilities for a demonstration: (Sampling, Reporting, Operation & Management, City integration...).

## System solution approach



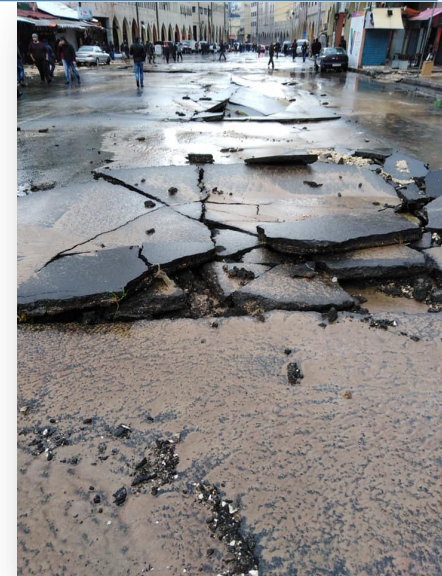
New NICE Working Group:  
Operation & Maintenance



# Under Discussion - Integrated urban storm water management in arid regions

## Extreme rain events in Jordan

- Main precipitation between October and May
- Frequency of heavy rainfall events expected to increase
- Flooding
- Pollution of drinking water resources (raw



Date (Location)	Damage	Notes
28/2/2019 (Amman)	2000 accidents: houses flooding, vehicles being swept away and 279 downtown traders affected by the flood. Estimated damage cost = 15 Million \$	Heavy rainfall: 68mm in 24hours.
10/11/2018 (Madaba and Petra)	12 people were killed and 29 were injured in Wala region, Madaba. Evacuation of thousands of tourists from Petra	Flash flood of 10.368 MCM /day
25/10/2018 (Zara)	21 school children were killed and several injured in Zara region near the Dead Sea	Heavy rainfall: 50mm in 20min.



# Integrated urban storm water management in arid regions

## The Problem

- sealing of urban areas leads to uncontrolled surface runoff and thus to flash floods
- affecting population and infrastructure

## Solution

- Decentralized storm water management (retention, infiltration, storage)
- Flat roofs as retention room





# ACKNOWLEDGEMENTS

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Federal Ministry of Education and Research



Ministry of Water and Irrigation Jordan



NICE Steering Committee Members

Department  
UBZ

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