

**Expert Group Meeting on  
“Resource Efficiency in the Arab Region: Monitoring  
Progress of SDG 12 and Building Back Better from COVID-19”**

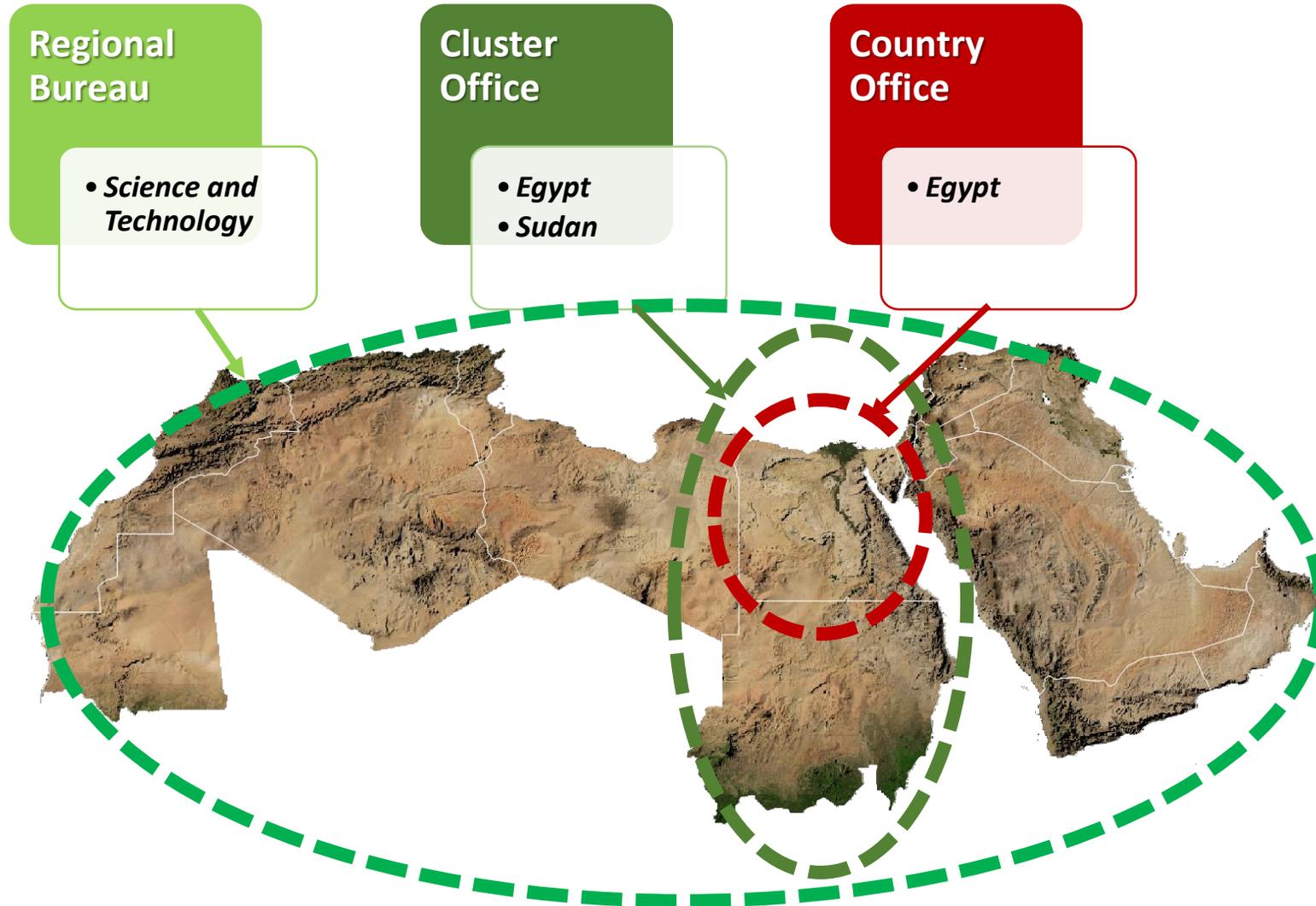
**UNESCO’s Experience in Addressing  
Wastewater Treatment**

***Abdelaziz Zaki***

***UNESCO Regional Bureau for Science in the Arab States (Cairo Office)***

**Online Virtual Meeting, 7-8 October 2020**

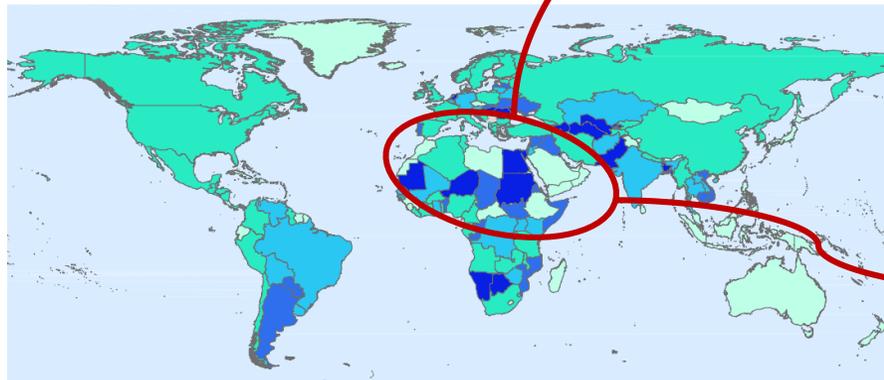
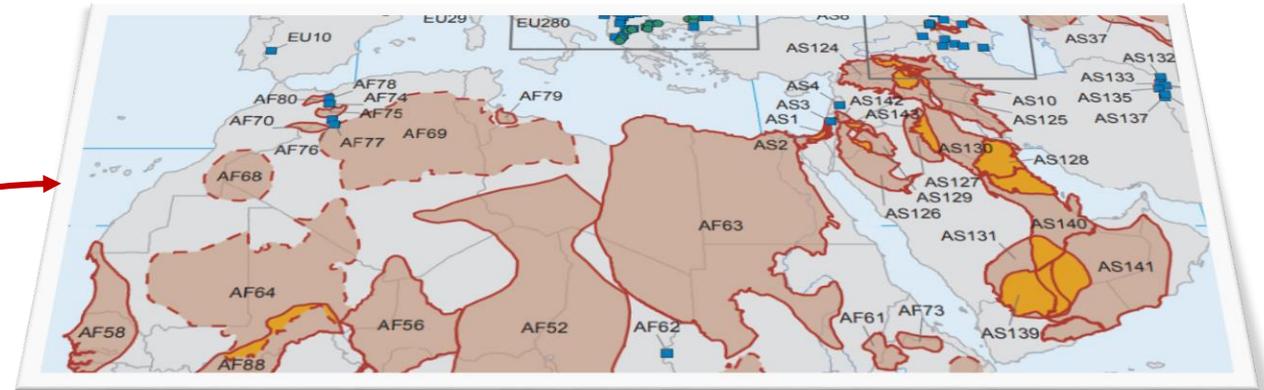
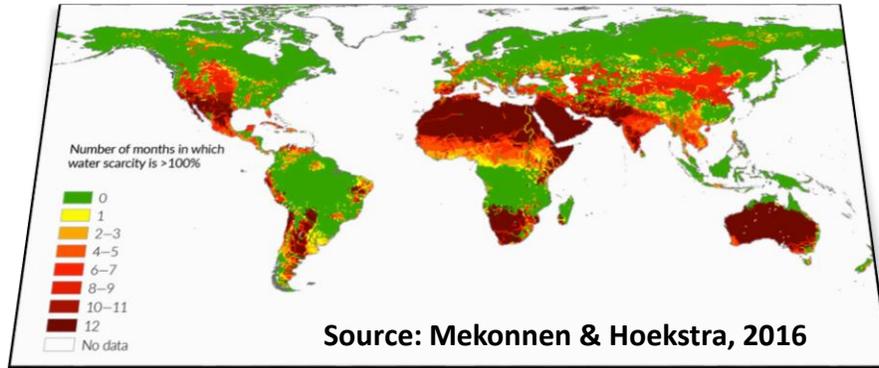
# UNESCO Cairo Office



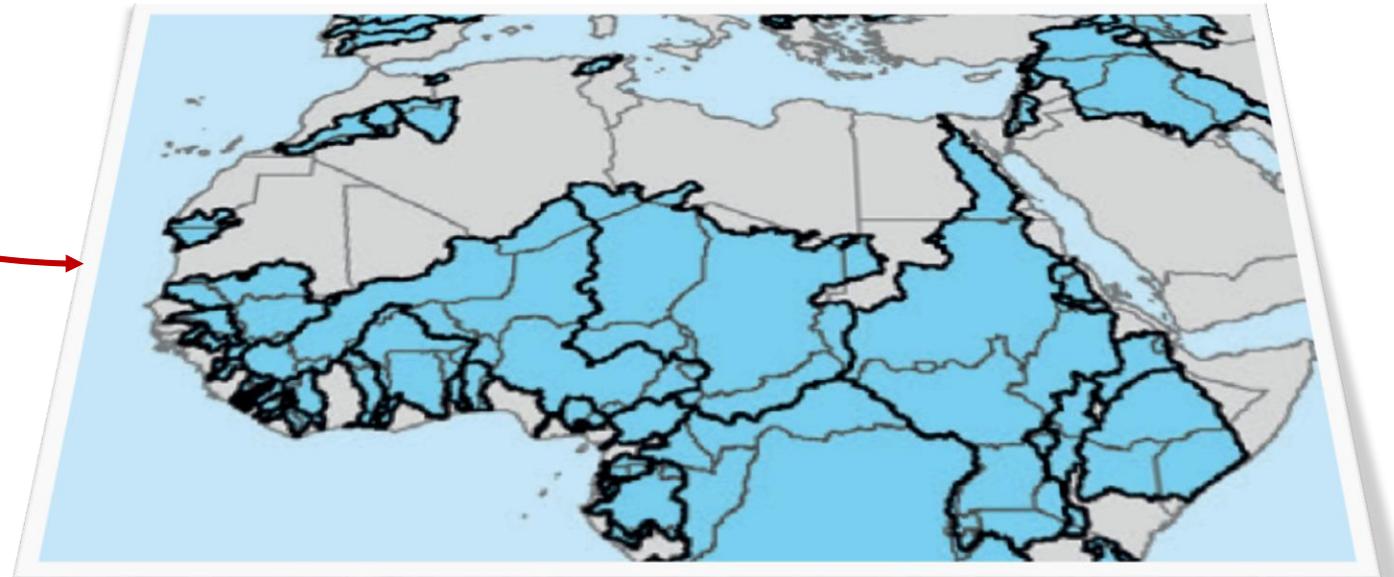
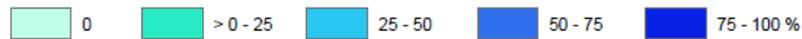
# Why Wastewater Treatment and Reuse in the Arab Region?



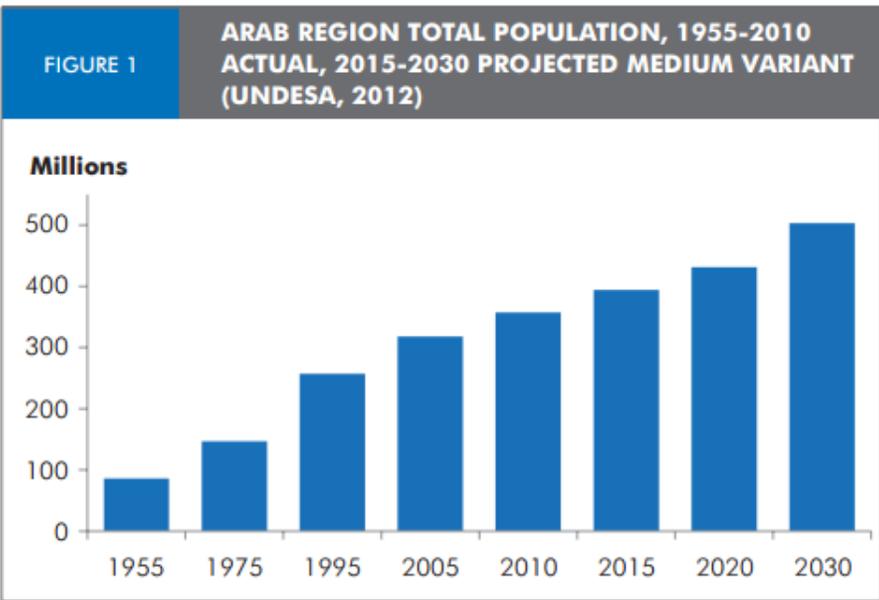
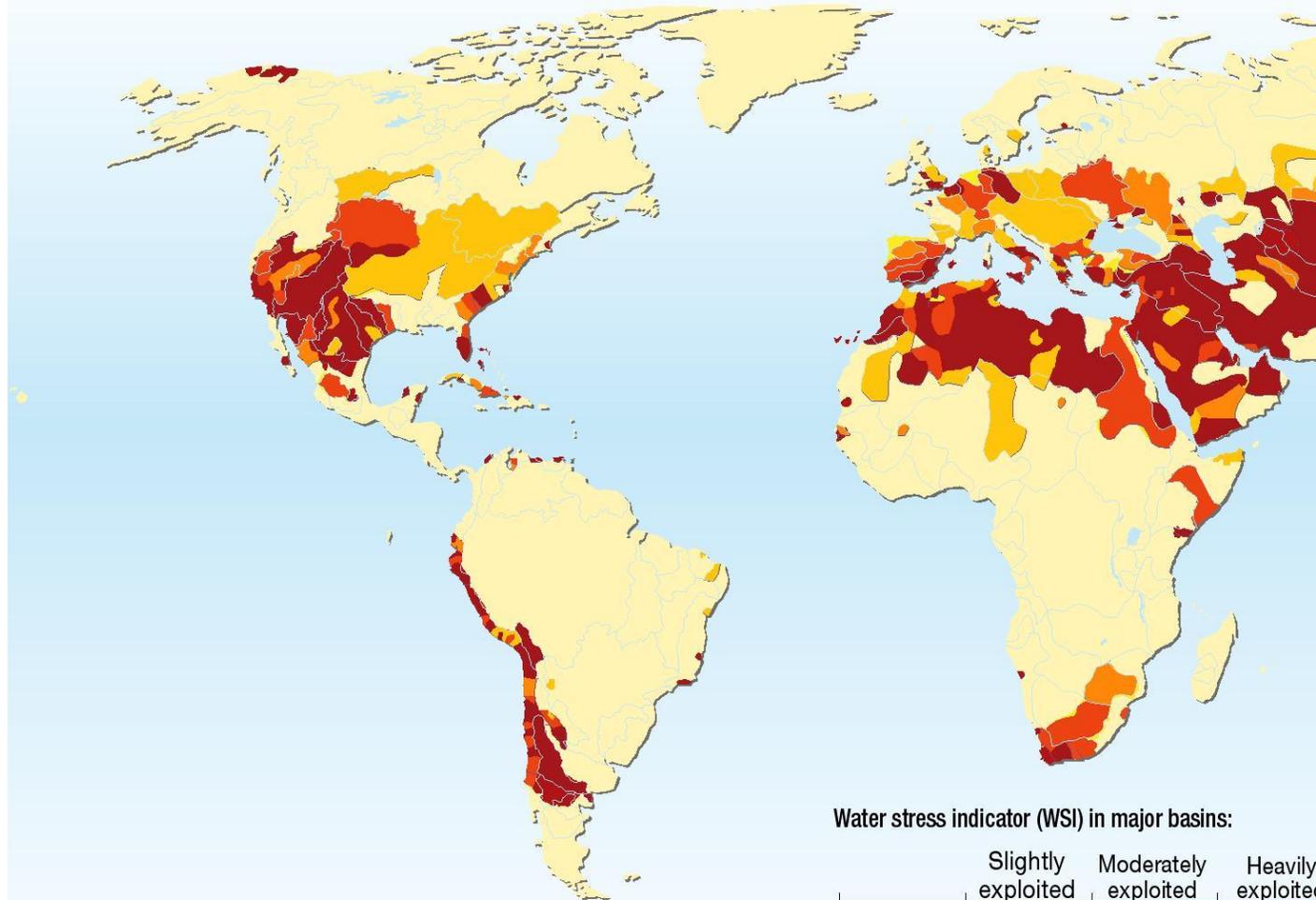
# Water scarcity and high level of transboundary water dependency



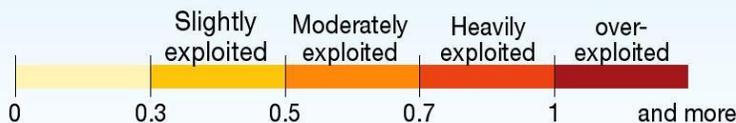
Dependency ratio



# Conventional Resources: Heavily Overexploited– and more



Water stress indicator (WSI) in major basins:



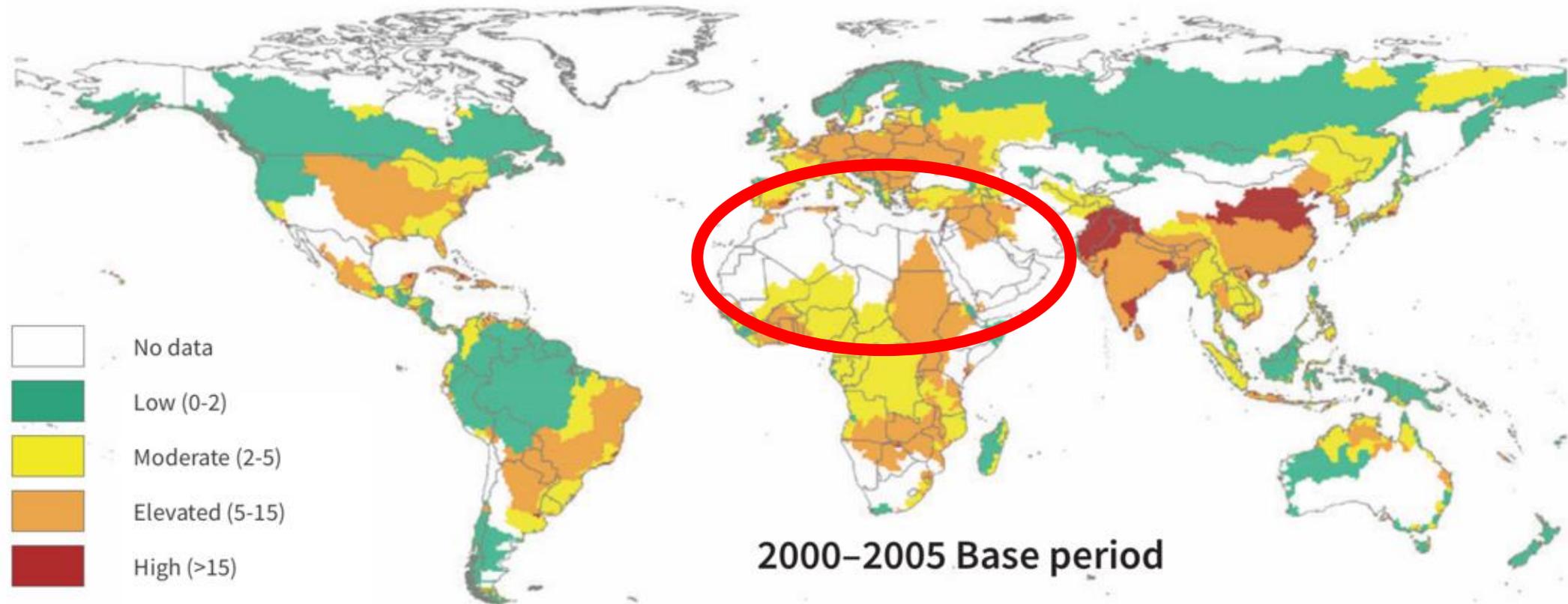
Sources: Smakhtin, Revenga and Döll, 2004.

PHILIPPE REKACEWICZ  
FEBRUARY 2002

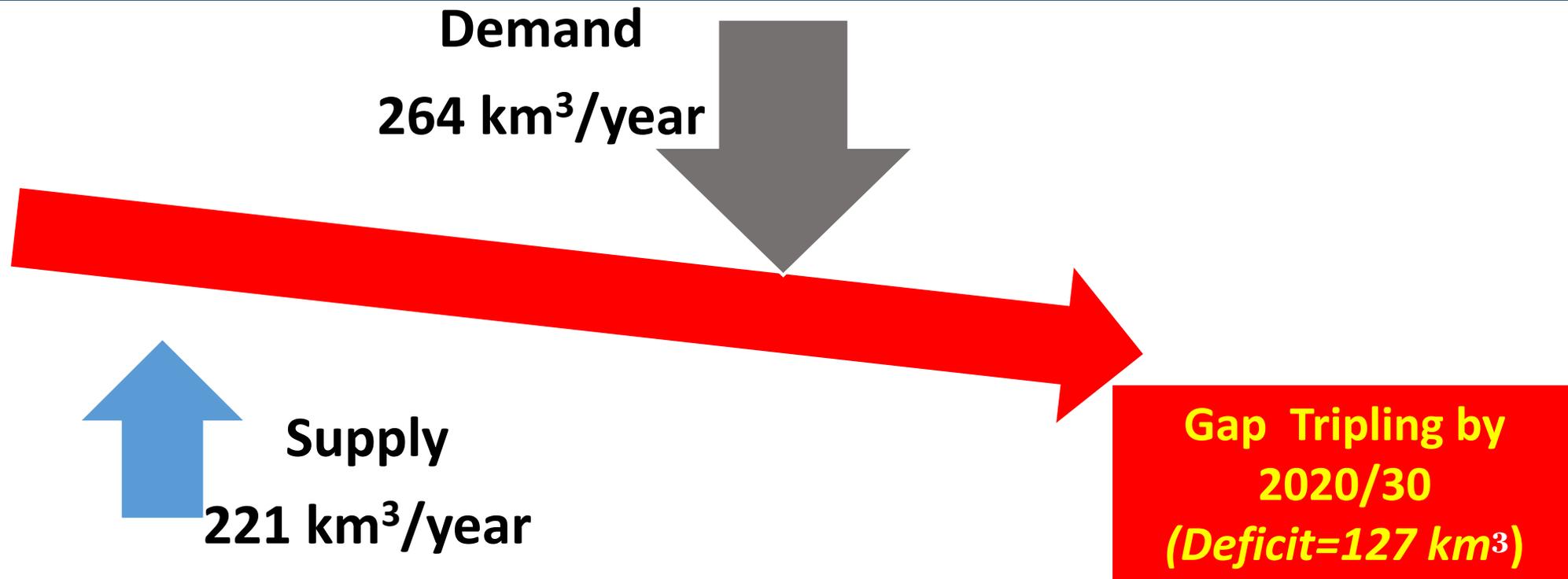
# The World's Water: Global Trends

## Water quality degradation

*Water quality risk indices for major river basins during the base period (2000–2005) (nitrogen index)*



Source: WWAP/WWDR 2017: Wastewater, The Untapped Resource



Increasingly, non-conventional water resources are becoming **the only** source capable of filling the gap between water supply and demand, especially in the water scarce Arab Region.

# UNESCO International Hydrological Programme

## Thematic areas of IHP-VII (2013-2021)

WATER-RELATED  
DISASTERS AND  
HYDROLOGICAL  
CHANGE



GROUNDWATER  
IN A CHANING  
ENVIRONMENT



ADDRESSING  
WATER SCARCITY  
AND WATER  
QUALITY



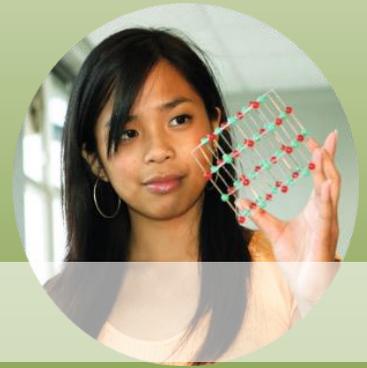
WATER AND  
HUMAN  
SETTLEMENTS OF  
THE FUTURE



ECOHYDROLOGY  
ENGINEERING  
HARMONY FOR  
A SUSTAINABLE  
WORLD



EDUCATIONM,  
KEY TO WATER  
SECURITU



<<< WATER SECURITY, ADDRESSING LOCAL, REGIONAL AND GLOBAL CHALLENGES >>>

## THEME 2: GROUNDWATER IN A CHANGING ENVIRONMENT

Focal Area 2.2 – Addressing strategies for management of aquifer recharge

## THEME 3: ADDRESSING WATER QUALITY AND WATER SCARCITY

Focal Area 3.2 – Dealing with present water scarcity and developing foresight to prevent undesirable trends

Focal Area 3.5 – Promoting innovative tools for safety of water supplies and controlling pollution

## THEME 4: WATER AND HUMAN SETTLEMENTS OF THE FUTURE

Focal Area 4.1 – Game changing approaches and technologies

Focal Area 4.2 – System-wide changes for integrated management approaches

Focal Area 4.3 – Institution and leadership for beneficiation and integration

Focal Area 4.5 – Integrated development in rural human settlements

## THEME 5: ECOHYDROLOGY, HARMONY FOR A SUSTAINABLE WORLD

Focal Area 5.3 – Ecohydrology system solution and ecological engineering for the enhancement of water and ecosystem resilience and ecosystem services

## THEME 6: WATER EDUCATION, KEY TO WATER SECURITY

Reuse

Augment

Treatment

Technology

Institutions

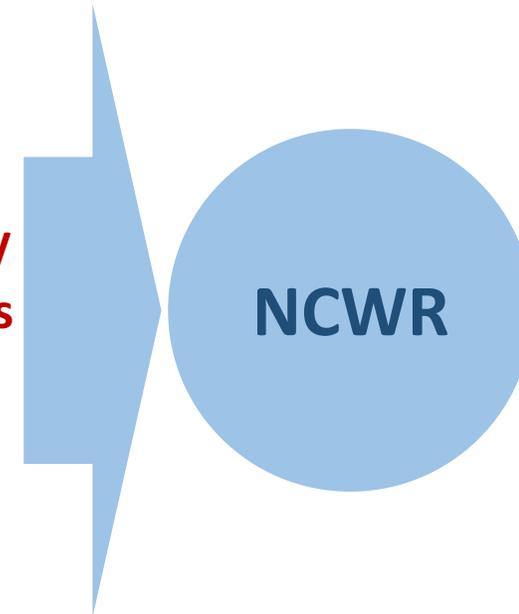
Valuation

Equity

NBS

Acceptance

Conservation



# UCO/IHP Program: From Challenges to Opportunities: Managing Non-Conventional Water Resources in the Arab Region 2020-2021

## Main objective:

- Addressing the water scarcity challenges in the Arab region
- Enhancing knowledge, exchanging experiences on integrated and sustainable management of non-conventional water resources with elaboration on lessons learnt and success stories from the region



Securing water and studying its impact on the correspondent economic and social development.

Documenting case studies presenting and highlighting the achievements in proper management and efficient reuse of non-conventional water resources, mainly: waste water treatment, treated wastewater reuse, and desalination

# *Major Pillars*

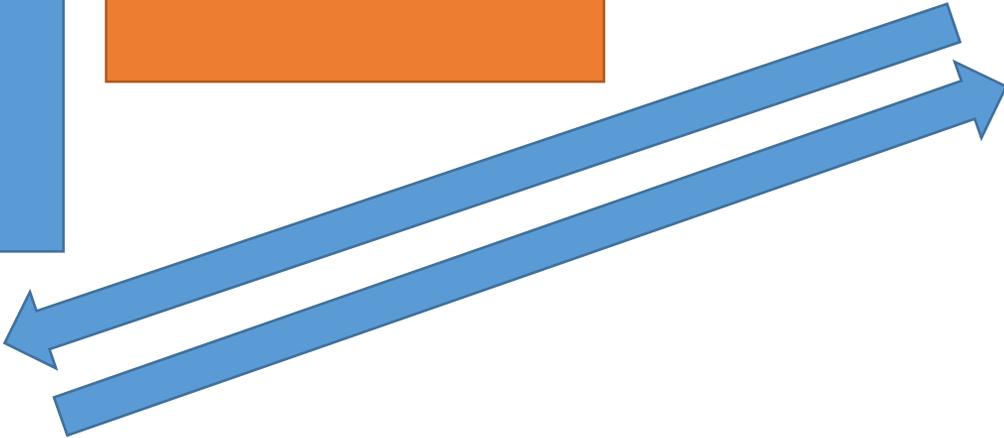
Data collection  
and analysis on  
non-conventional  
water resources

Revision of non-  
conventional legal  
framework

Revision of  
institutional  
framework for non-  
conventional water  
resources

Successful  
stories for non-  
conventional  
water resources  
management

Capacity and  
awareness  
building



# Major Activities

Review and investigate the water availability and assesses the water demands through Data collection and analysis on non-conventional water resources

Briefing on Best-practice case studies / local successful stories on non-conventional water resources management and use in agriculture and urban development;

Conduct review of institutional framework at national level for non-conventional water resources including:

- Main stakeholders
- Role and responsibilities of each stakeholder
- Legal framework, entities, laws and procedures governing: production, quality monitoring,

Propose required actions/modalities for enhancing the environmental and social safeguards for the nonconventional water resources;

Discuss the need and possible modalities for the adaptation of an efficient and integrated policy for water utilization and application of relevant conservation techniques in various water consumption sectors

- Possible cost recovery mechanisms and regulations;
- Recommendations to improve wastewater treatment
- Recommendation of inexpensive alternative to eliminate the discharge of untreated wastewater in coastal areas or terrestrial landfills.

Discuss possible future Regional Capacities building and awareness for promoting Integrated and sustainable non-conventional water resources.

# Thank you

*For more info on UNESCO Cairo / IHP Activities and interest to contribute to Wastewater Treatment Program by Contact:*

*Bisher Imam: [b.imam@unesco.org](mailto:b.imam@unesco.org)*

*and/or*

*Abdelaziz Zaki: [aa.zaki@unesco.org](mailto:aa.zaki@unesco.org)*