



## Webinar Series for Unlocking the Potential of Treated Wastewater and Drainage Water for Agriculture Development

Wednesday - October 21<sup>st</sup>, 2020

11:00 AM - 12:30 PM  
(Tunis, Tunisia time)

## Webinar #2:

## Worldwide Successful Experiences for Treated Wastewater and Drainage Water Reuse for Agricultural Development

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### Introduction

The Near East and North Africa region has the lowest reserves of freshwater resources in the world. Water availability has been decreasing by two thirds over the last 40 years. In light of this growing water scarcity, changing climatic conditions and increasing water demands, the region is expected to experience economic losses estimated at 6 -14% of GDP by 2050. By that time, 60% more freshwater resources will be needed to satisfy growing global demand for food.

In this context and within the framework of the Regional Water Scarcity Initiative (WSI), FAO and its partners are continuing to support - more than ever before - countries in the region in addressing their most pressing challenges: assessing food and water security for sustainable economic and social development. To prevent acute water shortages, reuse of non-conventional water resources for agricultural development is emerging as a priority for most of the countries.

So far, the potential of non-conventional water resources remains untapped. The role of these resources in strengthening water security in the region is undervalued. Indeed, countries in the region have different levels of reuse of these resources. Oman - ranked 16th on the list of countries experiencing water stress - treats 100% of collected wastewater and reuses 78%. About 84% of all wastewater collected in the Gulf countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) is treated at high levels, but only 44% is reused. Jordan, which had a low to almost zero reuse rate in the early 2000s, has reached a rate of over

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80% through promoting indirect reuse. For the Maghreb countries the rate of reuse is still very low - below 20%. The amount of drainage water resources is insufficiently recorded and reused in the region. Figures for drainage water resources and their reuse rate at the national level are often missing.

Over the last several years, several projects have been implemented in the region to tap into the potential of treated wastewater and drainage water for agricultural development.

ICBA, for example, has done extensive research in the UAE on the costs and benefits of using in agriculture treated wastewater, which accounts for 12% of the total water supply in the country and undergoes tertiary treatment.

These activities are aimed to produce a diagnostic analysis on the production, storage and reuse of these non-conventional water resources through national and sub-regional assessments highlighting the potential for collaboration. They will propose a regional approach with visions, strategies, action plans and solutions through pilot field projects in several countries throughout all the region. They also envisage preparations for determining funding for an ambitious regional project as an investment program for the development of the reuse of non-conventional water resources for agricultural development.

Within this framework, FAO and its partners - ICBA, IWMI, WHO and IME - joined forces to organize a webinar series for improved regional cooperation between countries in the field of non-conventional water reuse for agricultural development. These webinars will contribute to enhancing knowledge and information on the safe use of treated wastewater and drainage water in agriculture. Some of them will focus on policy dialogue for strategies and initiatives promoting non-conventional water reuse in the region.

Webinar #2 in the series will discuss successful experiences in treated wastewater and drainage water reuse around the world and a new holistic approach to boosting the rate of reuse for agricultural development.



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## Discussion questions

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This webinar #2 will be discussing the success stories around the region and the world. More specifically, it will discuss technical, social and management issues of the reuse of drainage water and treated wastewater for agriculture. Following presentations are planned under this webinar #2:

1. **Dr. Redouane Choukrallah**, Senior Water Expert: *Successful experiences for Treated Wastewater (TWW) reuse in North Africa countries.*
2. **Eng. José Carlos González Martínez**, Area Chief for water quality at CHS (Segura River Basin Authority): *Water Reclamation and Reuse in South Eastern Spain.*
3. **Dr. Mazen Malkawi**, WHO Regional Advisor: *WHO experience in Jordan vis-a-vis WW Reuse project for agricultural production.*
4. **Dr. James Oster**, Emeritus Soil and Water Specialist, University of California, Riverside, Fellow, American Society of Agronomy: *Worldwide successful experiences for Drainage Water reuse.*
5. **Dr. Ragab Ragab**, Professor, PH & WRM Specialist, UK CEH Oxfordshire, UK &. Vice President of ICID: *Non-conventional water resources management for food production.*

## Audience

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The webinar #2 is designed for national multidisciplinary teams, including policymakers and stakeholders from ministries of agriculture, water, environment and health and other authorities, research and development sectors, civil societies and private sector entities involved and interested in the non-conventional water sector.

## Technical specifications – Registration

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The webinar #2 will use Zoom as a technical platform and will run for two hours. It will be conducted in French and English. Translation will be organized. All needed materials, documentation and presentations will be made available to all registered participants.

Participants will have the opportunity to ask questions, make comments and share relevant information and material through a chat function.

The webinar #2 will be recorded and will be made available along with the associated materials and documents on the web pages of FAO, WHO, IWMI, ICBA and IME.

Register in advance for this webinar #2:

[https://fao.zoom.us/webinar/register/WN\\_7KLdNDXBSXeQrzjg7CEGCw](https://fao.zoom.us/webinar/register/WN_7KLdNDXBSXeQrzjg7CEGCw)

After registering, you will receive a confirmation email containing information about joining the webinar #2.

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## Agenda

Wednesday October 21 <sup>st</sup> , 2020	
11:00 - 11:10	Moderator of the Webinar #2: <b>Dr. Faycel Chenini</b> , Project Coordinator (FAO SNE)  <u>Opening remarks:</u> <b>Dr. Khalil Ammar</b> , Principal Scientist (ICBA)
11:10 - 11:50	<b><u>Presentations of the keynote speakers:</u></b>  6. <b>Dr. Redouane Choukrallah</b> , Senior Water Expert: <i><u>Successful experiences for Treated Wastewater (TWW) reuse in North Africa countries.</u></i>  7. <b>Eng. José Carlos González Martínez</b> , Area Chief for water quality at CHS (Segura River Basin Authority): <i><u>Water Reclamation and Reuse in South Eastern Spain.</u></i>  8. <b>Dr. Mazen Malkawi</b> , WHO Regional Advisor: <i><u>WHO experience in Jordan vis-a-vis WW Reuse project for agricultural production.</u></i>  9. <b>Dr. James Oster</b> , Emeritus Soil and Water Specialist, University of California, Riverside, Fellow, American Society of Agronomy: <i><u>Worldwide successful experiences for Drainage Water reuse.</u></i>  10. <b>Dr. Ragab Ragab</b> , Professor, PH & WRM Specialist, UK CEH Oxfordshire, UK & Vice President of ICID: <i><u>Non-conventional water resources management for food production.</u></i>
11:50 -12:10	<b><u>Discussion with the Keynote Speakers</u></b>
12:10 -12:25	<b><u>Questions and answers with all participants</u></b>
12:25 -12:30	<u>Concluding remarks:</u> <b>Dr. Maki Abdourahman</b> , Land and Water Officer (FAO SNE) <b>Dr. Asad Sarwar Qureshi</b> , Senior Scientist – Irrigation and Water Management (ICBA)

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## Keynote Speakers



### **Dr. Redhouane Choukrallah**

A horticultural, soil and water environmental expert with more than 35 years of experience in the use of saline water and the use of pre-treated sewage in Horticulture. He holds a PhD in environment Horticulture from the University of Minnesota, St Paul USA. He served as head of the Horticulture Department from the period 1983 to 1996, and as head of the salinity and plant nutrition laboratory since 1996 and He served at ICBA as a senior scientist in Horticulture and as a Section Head of Crop Diversification and Genetics, and he serves now as Senior fellow at ICBA. He has written numerous authoritative texts and books in the field of non-conventional water.



### **Mr. José Carlos González Martínez.**

Area Chief for water quality at CHS (Segura River Basin Authority), he is Engineer MD (Universidad Politécnica de Madrid), 1999 with Law Degree (Universidad Nacional de Educación a Distancia) in 2016. He is Researcher at National Center for Civil Engineering Research and Experimentation (CEDEX). Public Servant in the National Civil Engineering Corps since 2002. Posted at the Segura River Basin Authority, Water Policing Unit, developing several Jobs over the years (Service Chief in Water Quality Control 2002-2011, Deputy Water Commissioner 2011-2012, Head Water Commissioner 2012-2018, Area Chief in Water Quality. 2018- currently).



### **Dr. Mazen Malkawi**

Regional Advisor on Environmental Health, at the World Health Organization (WHO), Eastern Mediterranean Region Office (EMRO), Regional Center for Environmental Health Action (CEHA). He holds: High Diploma in Water and Environment Information Management from the Free University of Brussels (1998), M.Sc. in Water Resources and Environmental Engineering from the Jordan University of Science and Technology (1988), and B.Sc. in Civil Engineering from the University of Jordan (1985). Mr. Malkawi has served since 1988 at different positions in the WHO Centre for Environmental Health Action (CEHA): Technical Assistant (1988-2011): Coordination of the regional health and environment information program, and managing the activities of the environmental health information network (CEHANET), Technical Officer (2012-2017). Regional Advisor (2018-Present): Managing the environmental health exposures program focusing on air pollution, chemical safety, and urban environment, and supporting the implementation of the Arab Strategy and Framework of Action on Environmental Health 2017-2030).

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	<p><b>Dr. J.D. (Jim) Oster</b></p> <p>Following graduate work and studies at Purdue University the research career started as a Soil Scientist employed at the U.S. Salinity Laboratory between 1965 and 1981. Published research dealt with in-situ measurement of soil salinity, modeling changes in soil salinity with water content based on the physical chemistry of mixed salt solutions and impacts of water quality on water infiltration. As a Soil and Water Specialist with the University of California at Riverside Ca (1981-2000), the focus of work shifted to advising Farm Advisors employed by the University of California, and consultants employed by private companies, about water management related to salt effects on soils and plants. Research dealt with use of saline-sodic drainage water for irrigation and demonstrations of the utility of sub-surface drip irrigation. Sabbaticals included research work done in Israel, Australia, and Chile. After retirement in 2000, a major consulting project involved assessing the use of municipal wastewater for irrigation of golf courses and trees by a large city in California. Published papers and book chapters since retirement have dealt with comparison of transient state computer models to assess impacts of both soil matrix and osmotic stress on plant growth, the dual effects of salinity and applied water on the yield of avocados, assessment of the coefficients of Cation Ratio of Structural Stability (CROSS), and the history of irrigation development in California related to problems with drainage and Se toxicity. A role as Editor in Chief of Agricultural Water Management, published by Elsevier, began in 2003 and ended in 2013.</p>
	<p><b>Dr. Ragab Ragab</b></p> <p>Professor, Fellow Principal Hydrologist &amp; Water Resources Management Specialist, UK Centre for Ecology and Hydrology (UK CEH) Wallingford, Oxfordshire, UK. Vice President of the International Commission on Irrigation &amp; Drainage, ICID (<a href="http://www.icid.org">www.icid.org</a>), (2010-2013), Chairman of the UK national Committee on Irrigation and Drainage (2007-2011), Chairman of the Permanent Committee on Strategies and Organization, ICID (2011-2014), (2000-present), Founder of the Work Group on the Use of non- conventional Water resources for Food Production, ICID, (1997-present), Editor, Journal of Agricultural Science, Cambridge University Press (2013-present), Adjunct Professor, Alexandria University, Egypt (2007-present). Areas of work included, Hydrology, Irrigation and Drainage, remote sensing, urban hydrology, climate change impact on water resources, uncertainty analysis of predicted river flows, modelling, human intervention impact on water resources, and use of non-conventional water resources. Reviewer and evaluator to several Scientific Journals and funding organizations. Recipient of several awards and has numerous number of publications. Developer of two widely used models for water resources management at field (SALTMED model) and at Catchment Scale (The Integrated Hydrological Modelling System, IHMS), <a href="https://www.icid.org/res_tools.html">https://www.icid.org/res_tools.html</a></p>

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