

Challenges ahead in Agricultural Water Management: Partnering for effective response

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24 June 2019



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Global challenges in Agricultural Water Management

FAO response to coping with challenges

Strengthening technical network for a common goal

Guiding principles to synergize effort



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**GLOBAL CHALLENGES IN AGRICULTURAL WATER MANAGEMENT**

**Change**

- Changes in food markets
- Changes in water use
- Climate change
- Change in production technology

**Trend**

- World population due to increase to 9.1 billion by 2050
- Agriculture accounts for 70% of global water withdrawal
- Climate change could increase undernourished by 10-150 million
- Estimated yield gap of major crops exceeds 50% in low-income countries

**Prospects**

- Demand-induced food production to increase by 100% in developing countries
- Water demand to increase by 50% by 2050
- Net crop irrigation requirements could increase between 5-20% globally by 2080
- Irrigated land in developing countries are expected to increase by 35% by 2030



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**GLOBAL CHALLENGES IN AGRICULTURAL WATER MANAGEMENT**

The world's average **water stress** stands at almost **13%** with significant differences amongst countries

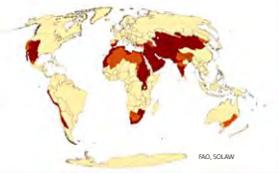
Global distribution of physical water scarcity by major river basin

Legend: Low (Yellow), Moderate (Orange), High (Red)

Globally:

- 32 countries experience water stress between 25 and 70 percent
- 22 countries experience water stress above 70 percent
- 15 countries experience water stress above 100 percent
- 4 countries experience water stress above 1 000 percent

Countries in Arabian Peninsula are hit by severe water stress, e.g. Kuwait at 2 603 percent, Saudi Arabia at 1 243 percent, UAE at 2 346 percent.

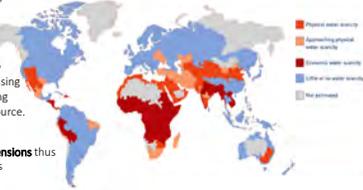



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GLOBAL CHALLENGES IN AGRICULTURAL WATER MANAGEMENT

- Scarcity is a **relative** concept, i.e., an imbalance between "supply" and "demand" that varies according to local conditions
- Water scarcity is fundamentally **dynamic**, intensifies with increasing demand and with the decreasing quantity and quality of the resource.
- Water scarcity has **varying dimensions** thus requiring integrated approaches

Global map of varying types of water scarcity



WMI 2007



FAO RESPONSE TO COPING WITH CHALLENGES

<p><b>Sustainably increase water-use efficiency</b> across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity</p>	<p><b>1 NO POVERTY</b></p>	<p><b>2 ZERO HUNGER</b></p>	<p>End hunger End all forms of malnutrition Double the agricultural productivity and incomes of small-scale food producers Ensure sustainable food production systems and implement resilient agricultural practices Increase investment in rural infrastructure</p>
<p><b>6 CLEAN WATER AND SANITATION</b></p>	<p>Build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters</p>	<p>Enhanced international cooperation to ensure that sufficient means of implementation exist to provide countries the opportunity to achieve the Sustainable Development Goals.</p>	<p><b>17 PARTNERSHIPS FOR THE GOALS</b></p>



FAO RESPONSE TO COPING WITH CHALLENGES

FAO MANDATE ON WATER AND WATER MANAGEMENT

- Contribute to the international water agenda, global knowledge and development as lead organization in the UN system on water in the context of food and agriculture
- Share information and knowledge on water in the context of food and agriculture to improve decision-making and timely availability of information for member countries and partners
- Provide legal, policy and technical advice and support to develop capacities of public institutions in water management, use and conservation



FAO RESPONSE TO COPING WITH CHALLENGES

Governance and management of food production systems	●
Provision of essential ecosystem services	●
Food security	●
Human health	●
Biodiversity conservation	●
Mitigation of, and adaptation to climate change	●

DIMENSIONS OF SUSTAINABLE LAND AND WATER MANAGEMENT IN FAO'S WORK





**STRENGTHENING TECHNICAL NETWORK FOR A COMMON GOAL**



**SMART IRRIGATION – SMART WASH INITIATIVE**

Effective response to mitigate the impact of COVID-19 through multiple water use development:

- Intersectoral approach assessing the status of irrigated agriculture and WASH
- Evaluation of countries' resources to develop irrigation and WASH sector for balanced water availability
- Context-tailored investment packages to implement targeted response
- Technical solutions based on country context

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**STRENGTHENING TECHNICAL NETWORK FOR A COMMON GOAL**

**Irrigation management**

**I**

Improving the **productivity, performance, and sustainability** – financial, social and environmental, of **irrigated agriculture**

**Water quality and wastewater**

**II**

Working to provide guidelines, tools and state of art and fit for **safe use of wastewater in agriculture**, and reduce the amount of pollutants released from agriculture to the environment – **Securing food safety and human/environment health**

**Water governance**

**III**

Elements of water governance work structured around:

- Water Governance in river basins and watersheds
- Water tenure
- Irrigation water governance
- Groundwater governance

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**STRENGTHENING TECHNICAL NETWORK FOR A COMMON GOAL**

Water and rural poor

**IV**

Improving the livelihoods of the rural poor, including smallholders and family farmers, through the design of pro-poor strategies and investment plans that promote inclusive and sustainable access and management of water resources

Water and climate change

**V**

Assessing the impact of climate change on water in agriculture, and the design of water management solutions for climate change adaptation and mitigation

Drought risk management

**VI**

Shifting paradigms in drought management, from emergency response models towards proactive preparedness plans that reduce vulnerability and impacts:

- Integrating and aligning water and soil management strategies to maximize response to drought;
- Connecting farmers to technologies – changing threats to opportunities.

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**STRENGTHENING TECHNICAL NETWORK TO FIND STRATEGIES**

Water data and information

**VII**

- **AQUASTAT:**
  - Implementing country correspondents network
  - Streamline Information System to FAO – Standards
  - Include Geo-Spatial Information
- **Water Accounting and Auditing**
  - Water accounting partnership
  - Country support (Pakistan)
  - Additional / improved components (Gender)
- **WaPOR**
  - Version 1.0 on-line

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**STRENGTHENING TECHNICAL NETWORK FOR A COMMON GOAL**

**SYNERGIES WITH ICID TASK FORCE ON THE ROLE OF IRRIGATION ON POVERTY ALLEVIATION AND LIVELIHOODS**



Sound technical, professional and infrastructural ground to **“synthesize specific knowledge and experience from the irrigation sector, to design pro-poor actions in a wider understanding of irrigation”**



Expertise and experience from field to policy level to **“facilitate technical solutions within clearly defined socio-economic context, so that it can be mobilized on a case specific approach”**



Integrated approach to break out of silos, thus, to **“emphasize multiple-use irrigation systems (MUS) as a specific approach to alleviate poverty in this context”**



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**GUIDING PRINCIPLES TO SYNERGIZE EFFORT**



Increasingly **integrated approaches** required in sustainable land, water and soil management to improve the conditions of rural livelihoods and ensure access to healthy environments



Combined implementation of most advanced theory and practices to **overcome traditional silos-approaches**



**Increased investment** and tailored policies needed to foster the development and implementation of innovative solutions in line with mitigation strategies to combat climate change



Strengthened management capacities, communication of water-scarce conditions, and encouraging wise use of resources to create **responsible consumer patterns**



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**GUIDING PRINCIPLES TO SYNERGIZE EFFORT**

ICID Vision 2030, calling for water security and sustainable rural development

FAO's approach, calling for a holistic and broad framework to eliminate hunger and malnutrition, to make agriculture more productive and sustainable, and to reduce rural poverty by establishing sustainable pathways



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**HAPPY BIRTHDAY, ICID!**  
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