

# **Water Science and Technology Association**

## **The 14<sup>th</sup> Gulf Water Conference, Riyadh, 13-15 February 2022**

### **Conference Conclusion and Recommendations**

#### **In Achieving Water Sector Economic Efficiency and Financial Sustainability**

1. To achieve high levels of security and sustainability of the water sector, the GCC countries need to shift their focus from ensuring the “**sustainability of supply**”, which is currently prevailing in most of the water sectors in the GCC countries, to ensuring “**sustainability of consumption**”, which can be achieved by moving towards the approach of “demand management, efficiency, and conservation”. In this regard, economic tools (incentives and disincentives) represent the most effective tools for such transformation and to achieve economic efficiency and financial sustainability compared to the socio-political and structural-operational tools, and they can complement and reinforce them.
2. To incentivize the private sector to participate in the provision and management of water services, that is, in the entire water supply chain, which is expected to contribute to reducing the costs of water services and management and raising the levels of cost recovery, thus contributing to the financial sustainability of the water sector. However, this must be under a high-level and independent regulatory and supervisory system; experiences of some GCC countries in this field and the lessons learned to be disseminated.

#### **In Desalination**

3. Desalination represents the main source of drinking/domestic water, and its sustainability is an essential foundation for water security in the GCC countries. Therefore, there is an absolute necessity to enhance the joint GCC efforts to localize the desalination industry and increase its added value to their economies, including joint investment and manufacturing of spare parts and consumables, and coordinating research and education and training programs at the level of the GCC and Arab countries.
4. Intensifying research efforts in the field of reducing financial, economic costs and environmental costs of desalination, investment opportunities in desalination reject, and developing unified key indicators for the performance and operation of desalination plants and the desalination sector as a whole in the GCC countries.

#### **In Surface Water and Groundwater**

5. Improving groundwater reserves through managed aquifer recharge (MAR) various schemes (Aquifer Storage and Recovery, Aquifer-Storage-Transfer-Recovery, Soil Aquifer Treatment, rainfall harvesting), while taking into account health and environmental risks when using treated wastewater and the purpose for which it is stored, in order to assist in efforts to rehabilitate aquifers and to provide a strategic reserve of groundwater for emergency conditions, or for other uses such as meeting the requirements of the agricultural sector.
6. Regulating the use of groundwater basins through enacting and implementing comprehensive legislation that reaffirms the state ownership of groundwater and considers well owners as water users, establishing an appropriate institutional mechanism for stakeholder participation, and implementing economic stimulus tools by imposing appropriate tariffs on groundwater use on the basis of its economic value in order to provide a price-signaling mechanism and to raise awareness of the value of groundwater to aid groundwater rehabilitation efforts.
7. Maximizing surface water utilization through the development and implementation of rain and flood water harvesting programs to mitigate and take advantage of extreme events caused by climate change.

### **In Municipal Wastewater**

8. Increasing wastewater collection rates, raising treatment levels, and maximizing reuse rates in the appropriate sectors through integrated strategies and plans for its reuse, developing required health and environmental risk management plans for the treated wastewater reuse, and motivating the private sector to use this renewable source through appropriate economic incentives.
9. Support research and development efforts related to maximizing wastewater utilization in areas other than irrigation, such as waste-to-energy programs and the beneficial use of sludge in the fertilizer industry.
10. Ensure the separation of medical wastewater (i.e., those generated from medical institutions, such as dispensaries, hospitals and medical complexes) from domestic wastewater, as well as educating the public not to dispose pharmaceutical wastes into domestic sewage systems (as well as chemicals), to reduce the possibility of transferring pharmaceutical substances, hormones and other medical substance into treated wastewater when reused.
11. Conduct research on the possibility of the transfer of emerging substances and compounds such as pharmaceuticals, hormones, heavy metals to plants when reusing treated wastewater in the final product in the long run.

### **In Municipal Water Management**

12. Achieving best practices and international standards for drinking water supply and sanitation utilities in the GCC countries, which include customer satisfaction, service quality, capacity development and leadership programs, rationalization of operation and resilience, financial sustainability, infrastructure stability, and environmental commitment.
13. Management of non-revenue water levels in accordance with best international best practices and benchmarks to enhance the efficiency of municipal water supply and reduce its costs to contribute to enhancing the financial sustainability of municipal water supply utilities.

### **In Agricultural Water Management**

14. Raising irrigation efficiency through the use of modern farming and irrigation systems and techniques and adopting smart farming systems and selecting drought- and salt-tolerant crops appropriate for the region.
15. Supporting research and development efforts to enhance water productivity and water efficiency in the agricultural sector, and integrating drylands-desert farming curricula into academic and vocational programs with the aim of reducing overall water consumption in the agricultural sector.
16. Providing farmers with incentives and appropriate training to adopt modern farming systems, and support their participation in the decision-making process, with the aim of raising their awareness and facilitating the implementation of administrative procedures.

### **In Industrial Water Management**

17. Increasing water use efficiency and demand management in the oil and industrial sector, and enforcing industrial wastewater treatment and reuse programs through the enactment of appropriate legislation.
18. Ensuring that industrial wastewater is not discharged into the municipal wastewater collection networks by formulating and enacting necessary legislation as well as in the general land use planning and zoning.

## **In Addressing Climate Change Impacts**

19. Inviting and encouraging governments, research institutions and researchers to benefit from the technical outputs of the project of the “Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-economic Vulnerability in the Arab Region (RICCAR)” through the Regional Knowledge Platform to assess the vulnerability of the water sector to climate change and to help formulate Adaptation plans.

## **In Management of Water Information and Decision Support Systems**

20. Effective planning and management of water resources and making effective and sound decisions depends mainly on the availability of reliable water data and information for all major components of the water management system, including water sources, water users, water infrastructure, water quality, and system characteristics, spatially and temporally. Therefore there is an absolute necessity to establish a comprehensive national, or basin-wide, water management information system (MIS) to be used in the monitoring and modeling process and is linked to the decision-making and planning process.

21. To take advantage of the rapid developments in modern technologies in all aspects of hydroinformatics, such as data collection from on-site and remote sensors, cloud analytics and artificial intelligence, interactive dashboards and advanced access platforms, which are providing a new world of data and analytics open in the public domain. The GCC countries should take advantage of these developments to modernize all aspects of the water information data value chain - from data to information to knowledge - to generate insights to support decision making at all levels for planning and day-to-day operations.

*The conference authorizes the Board of Directors of the Water Science and Technology Association (WSTA) to raise these recommendations to the Secretariat General of the Cooperation Council for the Arab States of the Gulf to be presented in the meetings of the Ministerial Committee for Water and to follow up their implementation. The conference also requests WSTA to circulate these recommendations to the regional and national organizations related to water and water forums, and to the Arab regional preparatory meeting for the comprehensive mid-term review of the International Decade of Action on Water for Sustainable Development (2018-2028).*

**Prof. Waleed Al-Zubari**  
**Chairperson, Conference Scientific Committee**