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SDG 6: CLEAN WATER AND SANITATION

Khalifa University of Science and Technology advances **SDG 6: Clean Water and Sanitation** by strengthening water security through cutting-edge research, sustainable campus water management, and capacity building. As a university based in an arid region, KU plays a critical role in addressing water scarcity and resilience challenges.

Key Contributions in 2025

1. Research and Innovation in Water Security

In 2025, Khalifa University continued to lead research in **desalination technologies, advanced membranes, water treatment, brine management, and water-energy nexus systems**. These research efforts support more efficient, affordable, and sustainable water solutions relevant to arid and water-stressed regions.

2. Sustainable Water Management on Campus

KU implemented measures to optimize water use across campus facilities, including **smart water metering, leak detection, efficient irrigation systems, and the use of non-potable water for landscaping**. These initiatives contribute to reduced water intensity and improved operational efficiency.

3. [Responsible Water Use](#) in Laboratories

The University promoted responsible water consumption in laboratories and research facilities through best-practice guidelines, monitoring, and equipment optimization, ensuring efficient use without compromising research excellence.

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Water Research

Strategic Commitment to Water Sustainability

Khalifa University places water sustainability at the core of its sustainability mission, aligning research, innovation, and partnerships with SDG 6 (Clean Water and Sanitation) and national priorities, including the UAE Water Security Strategy 2036. Water research is positioned as a key pillar under KU's Impactful Research and Innovation for Social Impact agendas.

Leadership in Water Research and Innovation

Through the Center for Membranes and Advanced Water Technology (CMAT), Khalifa University leads advanced research in:

- Sustainable desalination and water reuse
- Advanced membrane technologies
- Emerging contaminant removal (e.g., PFAS, microplastics, antibiotics)
- Resource recovery from wastewater and brine
- AI-enabled water systems, sensing, and modeling

These efforts contribute directly to improving water efficiency, reducing environmental footprints, and enabling climate-resilient water infrastructure.



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Research Outputs and Global Impact

- CMAT delivered 100+ Q1 high-impact journal publications in water and environmental technologies, reinforcing KU's global research leadership.
- The university generated significant intellectual property (15+) and advanced multiple technologies toward commercialization, including the launch of 3 water-focused spin-off companies.
- Research outcomes support evidence-based policymaking and technology deployment in arid and water-stressed regions.

Capacity Building and Knowledge Transfer

Khalifa University integrates sustainability into education and research training by:

- Supervising 30+ MSc and PhD students in water and environmental engineering
- Supporting interdisciplinary and AI-driven research approaches
- Hosting 4 international conferences, workshops, and hackathons focused on water security and sustainability. Examples include Industry-Academia Water Security & Hydrology Workshop, 5th WaterEnergyNEXUS 2025 International Conference, First Global Hackathon for Sustainable Water Desalination and Reuse, and Khalifa University-Saudi Water Authority-WATIRA Workshop

These activities strengthen national capacity and develop future leaders in sustainable water systems.



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Water Research

Partnerships and Stakeholder Engagement

The university actively collaborates with:

- UAE government entities (e.g., DoE, MOFA, water authorities)
- Industry partners in desalination, energy, and water infrastructure
- International academic institutions and multilateral organizations (e.g. VITO)

These partnerships enhance the translation of research into real-world water solutions and reinforce KU's role in regional and global water governance.

Contribution to Climate Action and Resilience

Water research at KU supports broader sustainability and climate goals by:

- Reducing energy intensity of desalination and treatment processes
- Improving wastewater reuse and circular water systems
- Addressing coastal resilience, brine management, and environmental protection

Overall Sustainability Impact

Khalifa University's water research activities demonstrate a holistic sustainability approach, integrating advanced science, innovation, policy engagement, and education to deliver clean water solutions with long-term environmental, economic, and social benefits, both nationally and globally.



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Campus Water Management

- 412,051 m3 inbound
- 62.66 m3 per person

Community Solutions

- Water access projects
- Sanitation initiatives
- Public awareness

Campus Water Management

- Water conservation
- Landscape renovation for SAN and Manin campus

Infrastructure improvements

- Replacement of leaking grp paneled water tank, existing building, main campus