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Gulf Research Center
Knowledge for All

EU-GCC Water Cooperation

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The limited availability of fresh water in the Gulf Cooperation Council (GCC) countries has presented a major challenge to the people and the governments of the region for decades. Scarce rainfall together with high evaporation and consumption rates leads to deficits in the water budgets. Water investment needs in the GCC countries are driven by extreme scarcity, with most members falling under the "acute scarcity" category (less than 500(m^{3}\)/capita/year), and over 95% of water withdrawals exceeding renewable freshwater availability. To meet growing demand, the region requires massive investment in non-conventional water resources, particularly desalination, wastewater treatment, and infrastructure modernization.

In this context, cooperation between the GCC and the European Union (EU) can play a role in driving global sustainability, as it bridges European green technology and climate policies with the Gulf's capital, solar potential, and economic diversification efforts. This partnership can accelerate vital transitions in renewable energy, water security, and carbon reduction.

Challenges Driving Investment

One of the major challenges is the unsustainable groundwater abstraction from underground water aquifers, some of which drain faster than they can be replenished. This imbalance leads to rapidly falling water tables and severe seawater intrusion contaminating coastal freshwater reserves.

In addition, the average per capita water consumption is extremely high, at around 550 liters/day as of 2026, heavily exceeding the global average of 185 liters per person per day. This is driven mostly by water subsidies, a hot desert climate, and agriculture needs. The highly subsidized water tariffs, for example, often prevent cost recovery, requiring a shift toward economic instruments that improve consumption efficiency.

Key Water Investment Needs in GCC

The GCC hosts over 60% of the world's total desalination capacity. The six Gulf states operate hundreds of large-scale facilities along their coastlines. Continued investment is needed to expand capacity and adopt low-carbon, sustainable desalination technologies to meet municipal demand, which is growing due to rapid urbanization.

Furthermore, while 73% of collected wastewater is treated (approx. 2924 million\(m^{3}\)/year), it is often underutilized. Only about 35% to 39% of that treated wastewater is actually reused, meaning that over 1.7 billion cubic meters of highly treated, high-quality water is lost annually - often discharged directly into the sea or dumped in terrestrial landfills. Substantial investment is needed to upgrade treatment facilities to tertiary levels for safe reuse in industrial, agricultural, and urban landscaping sectors, lessening reliance on fossil groundwater.

Upgrading aging infrastructure is essential; investment in modernizing distribution networks will reduce high leakage rates. In addition, investment in Managed Aquifer Recharge (MAR) is needed to store surplus desalinated water during low-demand periods, creating a strategic reserve.

As GCC nations push toward net-zero targets, water investments are no longer just about building bigger plants. The focus must be completely shifted to optimize existing assets and introduce sustainable technologies. Future investments are moving toward AI-powered water management systems, nature-positive solutions, and energy efficiency upgrades (the water-energy nexus).

EU-GCC Water Investment

The EU and the GCC are deepening their strategic partnership on the green transition, prioritizing water resilience. Joint investments in sustainable desalination and wastewater reuse are vital for the Gulf's climate adaptation, aligning European green technologies with regional sustainability goals.

Strategic investments and technology transfers between the EU and the GCC are transforming the region's climate resilience by bridging European innovation with Gulf capital and testing grounds. Under frameworks like the EU-GCC Dialogue on Economic Diversification and the EU Water Resilience Strategy, collaborative projects are focusing heavily on decarbonizing the water-energy nexus.

European engineering firms and research networks are deploying advanced, low-carbon technologies—such as Horizon Europe-funded systems that integrate concentrated solar power (CSP) with high-efficiency reverse osmosis desalination—to dramatically cut carbon emissions in the Gulf's water sector.

Beyond supply generation, EU investments are channeling European expertise in circular economy models to the GCC, introducing smart utility grids, digital leak-detection systems, and advanced wastewater recycling for sustainable agricultural irrigation. This symbiotic pipeline ensures that while GCC nations scale up low-carbon, climate-resilient water infrastructure aligned with their net-zero targets, European clean-tech providers secure critical investment pipelines and large-scale validation markets for their next-generation technologies.

A good example of this is the EU-GCC Horizon Water-Energy Project, the EU's current water sector project in GCC countries. Funded by Horizon Europe, this €15+ million co-investment brings together 21 European partners (including industrial SMEs and universities) to deploy pilot systems in Saudi Arabia and Bahrain.

The Oman-EU Energy and Water Forum, launched in Muscat as a joint investment initiative, operates under the EU-GCC Cooperation Project on Green Transition. Conducted in partnership with Oman's Nama Group, it focuses on deploying European utility infrastructure models, smart water grids, and digital transformation technologies across Oman's water networks.

The already existing projects provide a base on which to expand EU-GCC cooperation on water issues, for example in water investment and technology transfer between EU-GCC. There are many opportunities in the following areas:

1. **Renewable-Powered Desalination**: Scaling investments in solar and wind-integrated Seawater Reverse Osmosis (SWRO) to phase out energy-intensive thermal desalination methods.
2. **Industrial Brine Mineral Recovery**: Transitioning waste brine from a coastal pollutant into a commercial asset by extracting valuable minerals like lithium and magnesium using European chemical technologies.
3. **Digital Water and Smart Grids**: Deploying European AI-driven leak detection, smart metering, and automated pressure controls to minimize municipal water distribution losses.
4. **Circular Water Models**: Upgrading municipal and industrial wastewater facilities using European advanced membrane bioreactors to produce high-grade water for agricultural irrigation.
5. **Joint Venture R&D Pipelines**: Utilizing the Horizon Europe framework to co-develop capital-intensive clean-tech innovations, leveraging the Gulf as a large-scale industrial testing ground.

6. **Blended Finance and Sovereign Funds**: Matching EU public finance instruments like the Global Gateway Strategy with GCC sovereign wealth funds to co-finance mega-scale regional water resilience infrastructure.

One can summarize the strengths, weaknesses, opportunities, and threats of such cooperation in the following SWOT matrix:

EU-GCC Water Investment and Technology Transfer SWOT Analysis

Strengths	**Weaknesses**
EU leads global clean-tech patenting GCC holds massive sovereign capital Mutually aligned net-zero targets Established diplomatic frameworks	High capital expenditure for initial advanced infrastructure deployment Fragmented GCC regulatory frameworks
Opportunities	**Threats**
Renewable-powered solar desalination AI-driven smart grid leak detection Wastewater recycling for agriculture	Geopolitical and supply chain risks Global clean-tech market competition

Thus, in a water-thirsty region like the Gulf, water cooperation is a must to help achieve water security for the people and for development processes, and to meet environmental requirements. There is plenty of room for cooperation between the EU and the GCC in many aspects related to the water sector such as monitoring and utilization of ground water tables, recycling, water desalination, joint water research and projects, the use of renewable energies in water desalination, etc. There is also no doubt that water cooperation is a step in the right direction, opening the gates to peace and sustainable development in the region as a whole.

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