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ENERGY TRANSITION AND EMERGING OPPORTUNITIES IN THE GCC

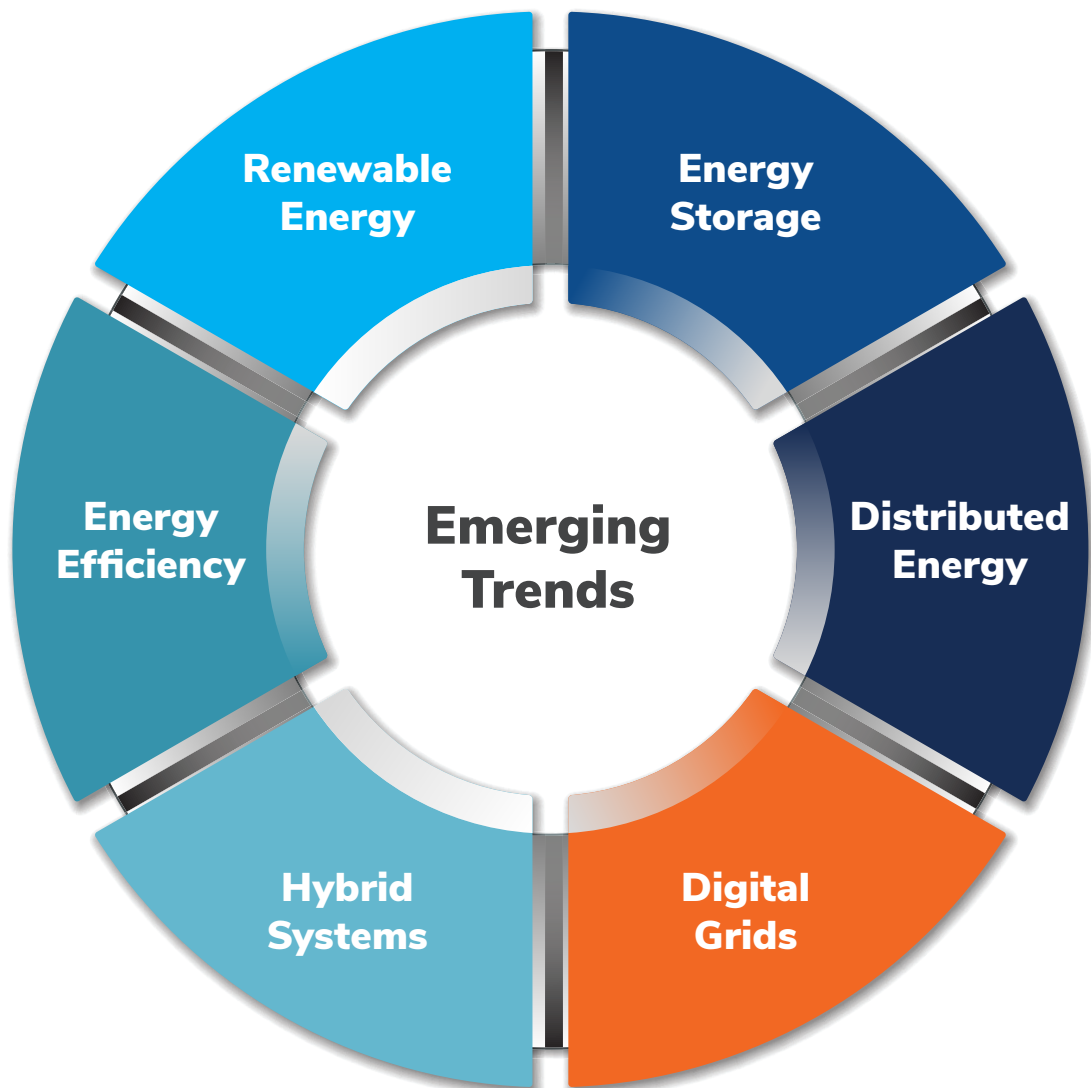
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A Frost & Sullivan Insight Prepared Exclusively
for the **World Future Energy Summit 2023**

Decentralisation, decarbonisation and digitisation are mega trends impacting the global energy sector. The acceleration of these trends across global and regional economies have given rise to new technologies and solutions that are altering the energy landscape, creating new business opportunities for existing players and new entrants.

These changes have witnessed adoption across the Gulf Cooperation Council (GCC), where projects and developments in the UAE and KSA are at the forefront of the ongoing transition. In this report, we explore the potential opportunities these new evolving technologies offer, with a look at energy efficiency and district cooling. Energy efficiency and district cooling technologies have a strong role to play in GCC achieving its nationally determined contributions (NDCs) toward climate mitigation.



There are several factors and technology advances that are driving the adoption and development of the above focus areas, some of which have been highlighted below :

Renewable Energy

Focus technologies – Solar PV, CSP and wind

Estimated cumulative market opportunity – 100 to 105 GW by 2030

Key Drivers & Technologies: Technology cost reduction, competitive energy storage solutions and remote monitoring

Energy Efficiency

Focus technologies – Lighting controls, HVAC and district cooling

Estimated cumulative market opportunity – for energy savings across commercial establishments – 14,000 to 16,000 GWh

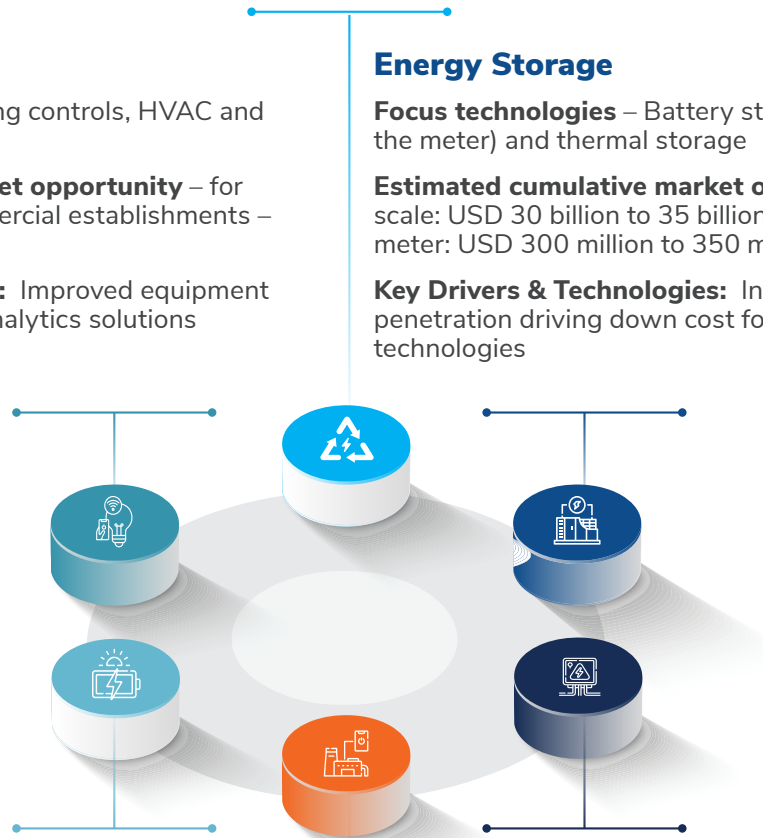
Key Drivers & Technologies: Improved equipment performance monitoring & analytics solutions

Energy Storage

Focus technologies – Battery storage (grid and behind the meter) and thermal storage

Estimated cumulative market opportunity – Grid scale: USD 30 billion to 35 billion by 2030; behind the meter: USD 300 million to 350 million by 2030

Key Drivers & Technologies: Increasing EV penetration driving down cost for stationary storage technologies



Hybrid Systems

Focus technologies – Solar diesel battery hybrid (SDBH) system

Estimated cumulative market opportunity – USD 500 million to 600 million by 2030

Key Drivers & Technologies: Reducing costs of renewable and storage technologies

Distributed Energy

Focus technologies – Rooftop Solar and distributed PV and microgrids

Estimated cumulative market opportunity – USD 1.5 billion to 1.8 billion by 2030

Key Drivers & Technologies: Technology cost reduction, smart metering, advanced analytics

Digital Grids

Focus technologies – Smart meters and grid automation/digitization

Estimated cumulative market opportunity – USD 45 billion to 50 billion by 2030

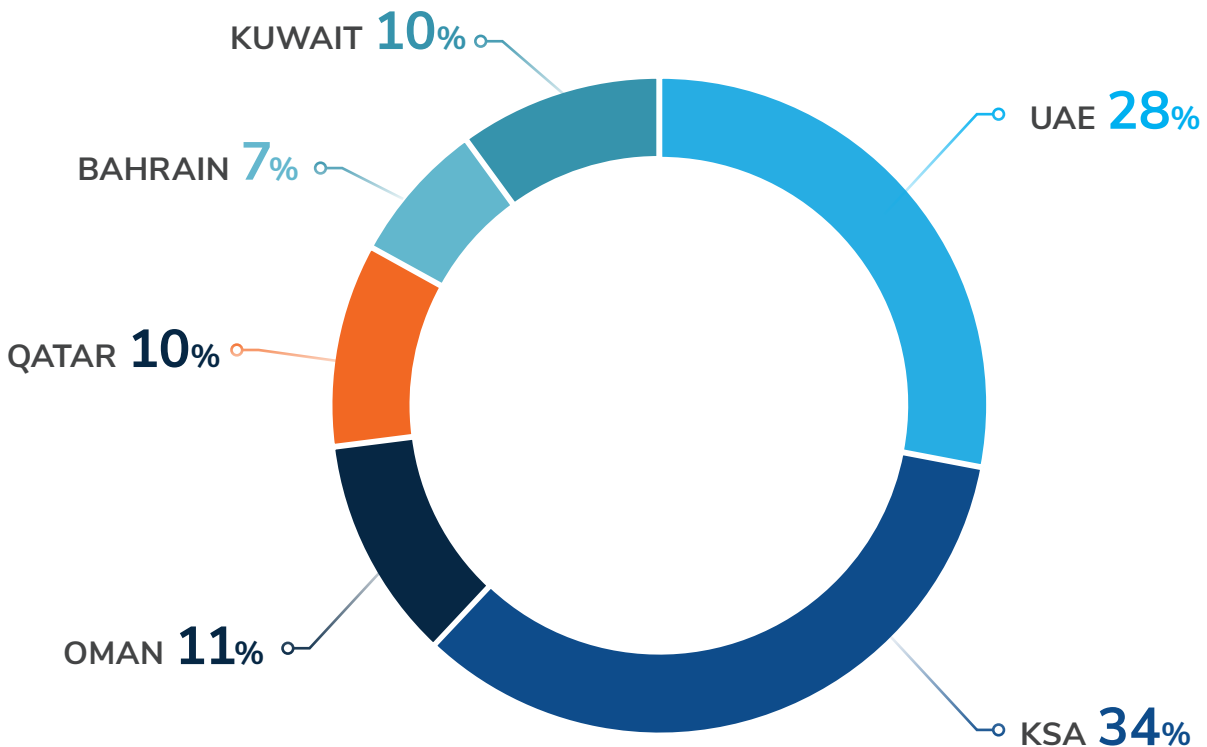
Key Drivers & Technologies: Advances in IoT, increasing contribution of distributed energy & energy storage, predictive analytics and remote monitoring

Across all trends and emerging opportunities, energy efficiency and management in commercial establishments in the GCC present strong value propositions due to the following factors:

1. Mature technology options and low-hanging opportunities like monitoring and process modifications that offer payback periods from a few days to months; certain CAPEX-intensive opportunities like technology replacement that offer payback periods from one to four years.
2. Presence of global and local technology providers, experienced energy service companies (ESCOs) and local skillsets.
3. Built environment and aging assets that present retrofit opportunities.
4. Growing energy demand, especially around air conditioning.
5. Developing mandates around energy consumption and conservation across GCC countries.

The cumulative potential for energy savings across existing commercial establishments in the GCC (including office buildings, hospitality, government buildings, malls, education, and healthcare) ranges between **14,000 to 16,000 GWh**.

Cumulative Energy Savings Potential (GWh) across Commercial Establishments in GCC, as assessed in 2021

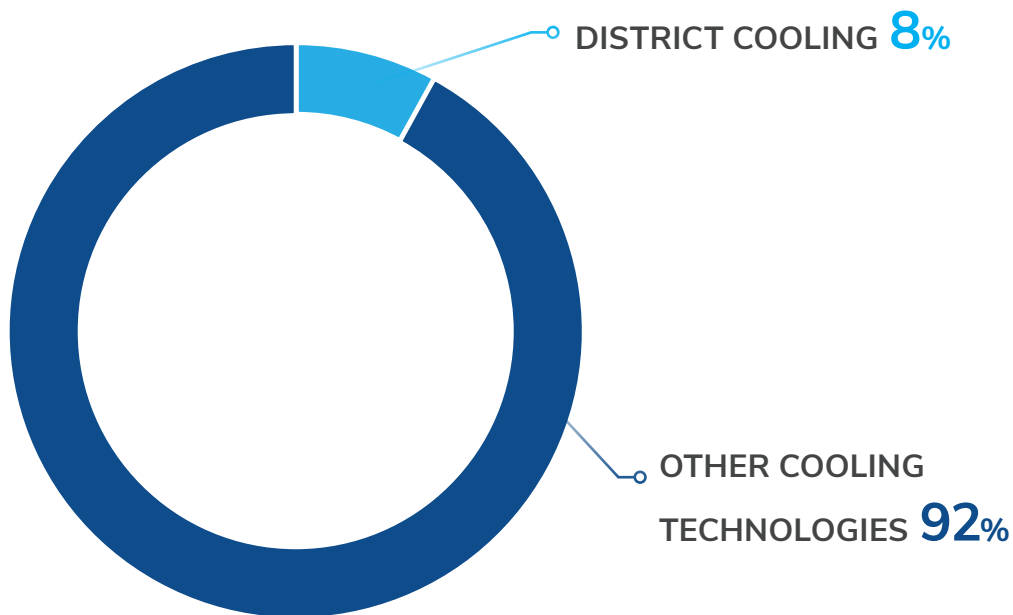


Achieving the above would entail energy savings linked cumulative CAPEX investments between **USD 4.6 billion to USD 5.2 billion**, which provides a key opportunity for ESCOs and technology providers to target.

In addition to the proposed retrofit opportunities across commercial establishments, wider adoption of district cooling for HVAC requirements is also expected to play a crucial role in driving the GCC region's transition toward an energy-efficient economy. Cooling exceeds 50% of the total power consumption in residential, commercial and government sectors in the GCC and offers opportunities for optimization.

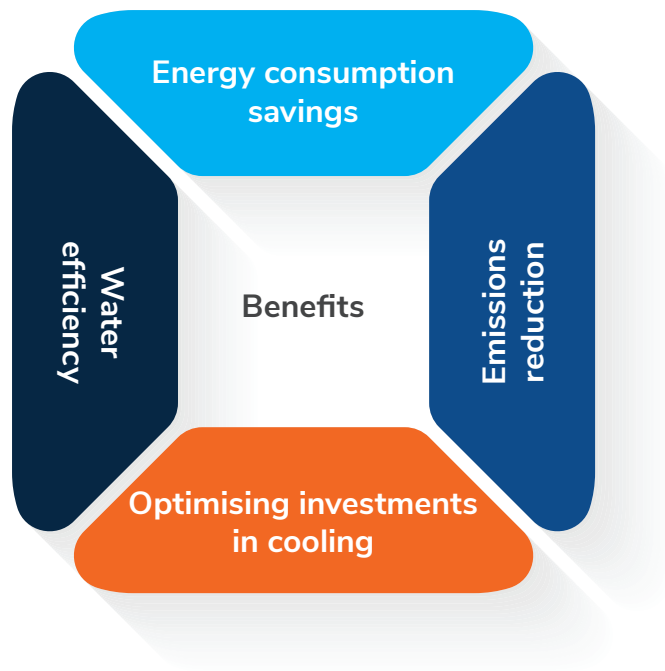
Currently, of the **~90 Mn TR** of cooling demand in the GCC region, **~7.3 Mn TR** is being addressed through district cooling plants.

Current status of district cooling in GCC, as assessed in 2021



District cooling plants are known to yield benefits at city and national levels and should be considered by governments, stakeholders, and infrastructure developers for optimizing energy, emissions, and the water footprint of HVAC across the region.





While many technologies and solutions are now available to create a sustainable and energy-efficient economy, realising the benefits of these technologies will be strongly driven by government policy, regulation, and support toward making these technologies mainstream and improving customer awareness.





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