

## United arab emirates microgrids

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Sajwani, H.A.; Soudan, B.; Olabi, A.G. Comprehensive Review of Socio-Economic Costs and Benefits, Policy Frameworks, Market Dynamics, and Environmental Implications of Microgrid Development in the UAE. *Energies* 2024, 17, 70. <https://doi/10.3390/en17010070>

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Although the Middle East produces about 31 per cent of the world's oil, it is diversifying quickly to advance growth in its industry, infrastructure, energy, transportation and mining sectors.

A growing consumer base dominated by a young population and an expanding middle class has led to a 5 per cent rise in electricity demand each year. The challenge is to ensure reliable and quality power for the people through clean energy, as far as possible.

The United Arab Emirates aims to produce nearly half of its electricity through renewable resources by 2050, with Dubai trying for 75 per cent. Saudi Arabia's target is for 58.7GW by 2030 and the African Renewable Energy Initiative, led by institutions including the African Union and the UN Environment Programme, has a goal of 300GW - sufficient to provide clean power to 200 million households.

The probability of achieving these targets is high, thanks to the lower cost of photovoltaic panels and batteries. Grid edge solutions such as microgrids and battery energy storage help reduce the intermittency of renewable power from distributed energy resources (DER). The automation and control solutions iron out inconsistencies and enable grid stability and resilience.

In sunny or windy places, they can be powered by renewable energy, through small-scale solar farms or local wind turbines, and have close to 100 per cent renewable integration.

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