UAE Distributed Energy Generation Market Assessment, By Technology (Wind Turbine, Solar Photovoltaic, Reciprocating Engines, Fuel Cells, Gas & Steam Turbine), By End-user (Residential, Commercial and Industrial), By Region, Opportunities, and Forecast, 2016-2030F

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Report description:

UAE had been witnessing a significant level of development in its distributed energy generation market which is projected to reach USD 572.18 million by 2030 from USD 2139.11 million in 2022 with a CAGR of 17.92% for the forecast period between 2023 and 2030. The UAE is looking to diversify its energy sources in order to reduce its reliance on fossil fuels. Distributed energy generation, such as solar and wind power, provides a decentralized and more secure energy supply. Moreover, significant advancements in energy storage, smart grids, and digital technologies have made distributed energy generation more efficient and reliable in UAE. These advancements allow for better integration of renewable/clean energy sources into the existing smart grid infrastructure, thereby enabling a more resilient and flexible energy distribution system.
For example, Dubai Electricity and Water Authority (DEWA) is actively contributing to the advancement of Dubai as a highly advanced city. To achieve this vision, DEWA has formulated a comprehensive strategy to establish a smart grid infrastructure for water and electricity. This infrastructure is designed with advanced features, automated decision-making capabilities, and seamless integration throughout the entire electricity and water network. DEWA's Smart Grid Programme is a significant initiative with a total investment of USD 1.91 billion, aiming to position Dubai as a global leader in smart city development. This program plays a pivotal role in DEWA's plan to enhance the development of sophisticated smart grid infrastructure, aligning with the objectives of the Dubai Net Zero Emissions Strategy 2050 and Dubai Clean Energy Strategy 2050. The goal of DEWA is to ensure that by the year 2050, 100% of the energy production and distribution capacity in Dubai comes from clean energy sources.
Promoting Sustainable Development and Reducing Carbon Footprint
The UAE has witnessed a notable rise in the number of Solar Photovoltaic (PV) projects aimed at distributed energy generation. This increase signifies the growing emphasis on harnessing solar power at various locations throughout the country to meet

energy demands and promote sustainable development thereby reducing the carbon footprint extensively.
For example, The Al Dhafra Solar Photovoltaic (PV) Independent Power Producer (IPP) project is a significant advancement in the UAE's pursuit of generating electricity from renewable sources. Currently under development by Abu Dhabi National Energy Company (TAQA) and Masdar in partnership with EDF and Jinko Power, this project is located approximately 35 kilometers from Abu Dhabi city and is set to generate 2 GWs (Gigawatts) of power. The Emirates Water and Electricity Company (EWEC) will be the off-taker for the plant. Once operational, the Al Dhafra Solar PV project will hold the distinction of being the world's largest single-site solar power plant, boasting around 3.5 million solar panels. Its production capacity will provide ample electricity to meet the needs of approximately 160,000 homes across the UAE. One of the project's most noteworthy aspects is its contribution to environmental sustainability, as it is expected to offset 2.4 million tonnes of carbon dioxide emissions annually, significantly contributing to market growth in the renewable energy sector.
Advancing Wind Energy in the UAE
UAE has a favorable geographical location with areas that experience consistent wind patterns, especially along its coastal regions. This makes it conducive for harnessing wind power and utilizing it for distributed energy generation. Moreover, advancements in wind turbine technology and cost reductions have made wind power more economically viable in UAE. This has encouraged developers and investors to focus more on wind power projects and consider it as a valuable addition to the distributed energy landscape in the UAE. Over the last couple of years, the UAE government has shown tremendous initiative to promote the generation and distribution of wind energy in the country.
For example, Dubai has allocated a dedicated area in Hatta for the establishment of the UAE's inaugural wind farm. This forthcoming wind farm is anticipated to possess a capacity of 28MW. The site selection process involved in-depth wind studies and thorough on-site evaluations, including field visits. Currently, the wind speed at the location is being measured continuously for an entire year using a 150-meter tower. Furthermore, the CEO and MD of DEWA emphasized that the introduction of wind power as an electricity generation source will be pivotal in broadening the spectrum of clean and renewable energy options available in Dubai. Hence, it can be elucidated that the increase in focus by UAE government on the setup of wind power projects is likely to fuel the market growth extensively.
Government Regulations
The UAE government has introduced various schemes and initiatives to promote the adoption and development of distributed energy generation that aims to promote the deployment of clean and renewable energy technologies, ensure grid stability, and foster sustainable development by eradicating the presence of carbon in the atmosphere. This enables EV stations to contribute to grid stability and support the integration of renewable energy sources. Moreover, the UAE government has been investing heavily in EV charging stations. EV stations equipped with V2G technology allow electric vehicles to not only charge their batteries but also discharge electricity back to the grid. During times of high demand, these EVs can provide power to the grid, thereby acting as distributed energy resources.
For example, DEWA's EV Green Charging network in Dubai has experienced substantial growth, reaching a total of 350 charging stations by the end of 2022. This signifies a significant increase, more than three times the number of 100 EV Green Chargers that were initially available in 2015. Presently, Dubai boasts an impressive total of 620 charging points catering to electric vehicles throughout the city. Hence, it can be delineated that the schemes introduced by the UAE government will yield exceptional growth in the market in years to come.
Impact of COVID-19
The pandemic led to disruptions in the supply chain, workforce availability, and construction activities, resulting in delays in the installation of distributed energy generation systems. Restrictions on movement and social distancing measures affected project timelines and hindered the deployment of renewable energy projects. On the other hand, the pandemic highlighted the importance of resilient and sustainable energy systems. Governments and businesses in UAE recognized the need for reliable and clean energy sources to ensure uninterrupted operations during crises. This increased emphasis on sustainability could drive further interest and investments in distributed energy generation as part of resilience-building strategies. Moreover, despite the challenges posed by the pandemic, the UAE government continued to demonstrate its commitment to renewable energy and sustainability. Supportive policies, incentives, and regulatory frameworks remained in place, providing stability, and promoting the development of distributed energy generation projects.

Key Players Landscape and Outlook

The distributed energy generation market in UAE is experiencing significant growth, prompting the companies to highlight the significance of maintaining market share and expanding their global presence through collaborations, brand positioning, and adherence to safety regulations. These companies are dedicating more resources to research and development, solar rooftop ventures, marketing efforts, and the expansion of distribution networks. Manufacturers are actively studying consumer behavior to gain a better understanding of their needs and preferences, constantly introducing new products to meet those demands.

In May 2023, SirajPower, a leading distributed solar energy company in the UAE, finished the development of a solar rooftop venture at the manufacturing site of Al Tajir Glass Industries in the Jebel Ali Industrial Area. The state-of-the-art solar facility is now in full operation and is expected to generate an impressive annual output of 4.6 Gigawatt- hour (GWh) of renewable energy.

In April 2021, Enerwhere and Al Barrak Crushers formed a long-term agreement in which Enerwhere would offer funding, operations, and maintenance services for a solar hybrid microgrid, capable of generating 4.1 MVA of power, to supply energy to Al Barrak's quarry located in Fujairah.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

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