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United Arab Emirates Photovoltaics Market Assessment, By Type [Monocrystalline Silicon, Polycrystalline Silicon, Thin Film Cells and Organic PV], By Grid Type [On grid, Off grid, and Hybrid], By Installation [Ground Mounted, Roof Mounted, Building Integrated Photovoltaics, & Floating Photovoltaics], By Application [Solar Farms, Electronic Devices, Healthcare Facilities, Public Infrastructure, Aerospace, Construction, Military, and Defence, Transportation, and Others], By End-user [Residential, Commercial & Industrial, and Utility], and By Region, Opportunities, and Forecast, 2016-2030F

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Abstracts

The United Arab Emirates (UAE) has been making remarkable strides in the photovoltaic (PV) solar energy market, with projections indicating that it will reach a value of USD 5.02 billion by 2030, up from USD 1.45 billion in 2022. This flourishing market can be attributed to the proactive efforts of the UAE government in promoting renewable energy, particularly solar power, as a means to diversify its energy sources and reduce dependence on fossil fuels. Several factors such as the establishment of numerous solar parks, increasing electricity demand, and the declining costs of PV modules, are also adding to the impressive growth of the photovoltaics market in the UAE.

The UAE has been actively pursuing the development of solar parks as part of its

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renewable energy strategy. Furthermore, the country has a high solar irradiance and aims to diversify its energy sources, reduce carbon emissions, and increase its energy security. For example, the Mohammed bin Rashid Al Maktoum Solar Park of Dubai holds the distinction of being the world's largest solar park. The park aims to reach a capacity of 5,000 megawatts (MW) by 2030 with investments worth AED 50 billion. The solar park utilizes a mix of photovoltaic (PV) solar panels and concentrated solar power (CSP) technology. Hence, from the above-mentioned factors it can be stated that the UAE market for PV is expected to witness burgeoning progressing in the coming years.

Increasing Solar Canopy Installations at the Parking Lots

Solar canopies in the UAE are playing a significant role in driving the demand for PV modules. These canopies, also known as solar shade structures or solar carports, are covered parking spaces equipped with solar panels on the roof. They are designed to harness solar energy while providing shade and protection for vehicles underneath. These structures often have photovoltaic (PV) installations on their roofs, collectively generating 1.65 MW of energy. Further, the installation of solar canopies in the UAE serves multiple purposes. Firstly, they contribute to the UAE government's efforts to promote renewable energy and reduce reliance on fossil fuels. By utilizing solar canopies, the country can generate clean and sustainable electricity, thereby decreasing its carbon footprint. Additionally, solar canopies offer practical benefits to users. They provide shade for parked vehicles, protecting them from the scorching sun and reducing interior heat buildup. This feature is particularly valuable in the UAE's hot climate, enhancing the comfort and convenience of car owners. This drives the market for PV modules, encouraging manufacturers and suppliers to cater to the rising demand. For example, these canopies are installed in temporary Masdar offices, with a capacity of 204 kW. Enviromena is the company responsible for designing and constructing this project, which includes 105 parking spaces that offer protection against solar heat and provide shade for outdoor pathways.

Usage of solar PV for Water Desalination

The demand for solar PV modules is experiencing significant growth, primarily driven by the increasing demand for solar panels for multipurpose applications, such as water desalination, in the UAE. The UAE, located in a region with abundant sunlight, is recognizing the potential of solar energy for addressing its water scarcity challenges. Water desalination, the process of converting saltwater into freshwater, is a critical need in the arid UAE. Solar panels are being increasingly utilized in desalination plants to

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power the energy-intensive desalination process, reducing reliance on traditional fossil fuel-based power sources. For example – Dubai Electricity and Water Authority (DEWA) has entered into a collaboration with a Dutch startup called Desolenator to construct a water purification and desalination system in Dubai. This innovative system will operate entirely on solar energy, aiming to achieve carbon neutrality. Currently, around 42% of the United Arab Emirates' (UAE) drinking water is produced by approximately 70 large-scale desalination plants. These plants account for roughly 14% of the global desalinated water production. Thus, it can be delineated that usage of solar PV for water desalination is expediting the market growth.

Government Initiatives

The UAE government is strongly prioritizing the advancement of solar photovoltaic (PV) technology and allocating substantial investments toward its development. Furthermore, the government has implemented several policies to foster and stimulate the expansion of the solar PV market in the future. For instance, The Dubai Clean Energy Strategy is a comprehensive initiative launched by the government of Dubai with the aim of promoting sustainable development, reducing carbon emissions, and increasing the share of clean energy in Dubai's energy mix including solar energy. The strategy was announced in 2015 and sets ambitious targets to be achieved by 2030. As part of the UAE government's Dubai Clean Energy Strategy, which aims to generate 75 percent of Dubai's electricity from renewable sources by 2050, Dubai is currently engaged in the construction of the world's largest Concentrated Solar Power (CSP) project on a single site. By leveraging the existing Mohammad Bin Rashid Al Maktoum Solar Park, the CSP project is expected to deliver cost-effective electricity, priced at less than 8 US cents per kilowatt-hour.

In 2022, the state-owned Abu Dhabi National Oil Company, Taqa, and holding company Mubadala formed a partnership and became shareholders of the renewable energy company Masdar. This collaboration aims to establish a leading global portfolio in clean energy. With an initial commitment of over 23GW of renewable energy capacity, this strategic partnership positions Masdar as one of the largest clean energy companies worldwide. Moreover, it has set ambitious plans to surpass 50GW by 2030. Presently, oil and gas exports contribute only about 30 percent to the UAE's economic activities.

Impact of COVID-19

The COVID-19 pandemic had notable effects on the photovoltaic (PV) market in the UAE, disrupting supply chains and causing a slowdown in installations. Delays and

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cancellations of PV projects occurred due to uncertainties, financial constraints, and shifting priorities. Reduced energy consumption during the economic slowdown led to decreased demand for PV installations. In response, the UAE government implemented support measures like financial stimulus packages, reduced electricity tariffs, and initiatives to expedite renewable energy projects, aiming to revive the PV market and encourage investment. Moreover, the pandemic also highlighted the importance of sustainability and resilience, leading the UAE to focus on a green recovery. Despite the temporary impact, the long-term prospects for the PV market in the UAE are positive. The government's commitment to renewable energy, the declining costs of PV technology, and the growing awareness of clean energy benefits are expected to contribute to the recovery and growth of the PV market in the UAE.

Key Players Landscape and Outlook

The UAE has traditionally been heavily reliant on fossil fuels, particularly oil and natural gas, for its energy needs. By issuing Independent Power Projects (IPP), the government aims to diversify its energy mix and reduce its dependence on fossil fuels. Hence, companies currently operating in the UAE Photovoltaics market are eyeing large scale government IPP contracts with the motive to expand their topline and maximize bottom-line. Apart from this, tying up with government projects, enables PV manufacturers to enhance their market share in the highly competitive market of UAE Photovoltaics. For instance, JinkoPower is supplying solar PV modules to complete record-breaking The Al Dhafra IPP project which was commissioned in late 2020. This project is expected to be one of the largest in the world. Upon completion, it will power over 160,000 households in UAE and help the country in energy transition.

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