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Resümee

In an era marked by escalating environmental concerns and the pressing need for global action, the pursuit of sustainability and harnessing renewable energy has emerged as a paramount imperative for nations around the world moving closer to reaching the goal of the Paris Agreement. Among these, the United Arab Emirates (UAE) stands as a beacon of progress, exemplifying a nation committed to shaping a greener, cleaner, and more sustainable future for generations to come.

As the host of the 28th Conference of the Parties (COP28), the UAE assumes a pivotal role in the global effort to address climate change and promote sustainable practices. COP28, a milestone gathering of world leaders, climate activists, and experts, presents an opportunity for the UAE to showcase its significant strides towards renewable energy adoption and demonstrate its commitment to combatting the challenges of climate change.

In this article, we unveil the UAE's visionary strides in solar energy development, as part of its announced energy mix in the **UAE's Energy Strategy 2050**, with a specific emphasis on the widespread implementation of photovoltaic panels in commercial and residential projects across Abu Dhabi and Dubai. We explore how the nation's ambitious initiatives, combined with innovative policies and technological prowess, have catalysed a solar revolution, harnessing the year-long sun towards a cleaner tomorrow.

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1. Introduction

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2. Commercial & Residential PV Panel Installation in Dubai: DEWA's Vision

2.1 Dubai Electricity and Water Authority (DEWA)

Dubai, a city known for its opulence and ambition, has set its sights on a more sustainable future by embracing renewable energy. At the forefront of this green transformation is the visionary ***Dubai Clean Energy Strategy 2050***, launched by HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, in November 2015. This landmark strategy aims to diversify Dubai's energy sources and make a significant shift towards clean energy adoption.

With an ambitious roadmap laid out, the Dubai Clean Energy Strategy 2050 set the stage for the city to provide 7 % of its total power output from clean energy sources by 2020, a milestone that was successfully achieved. Building upon this initial success, the strategy seeks to elevate its renewable energy capacity to 25 % by 2030 and an astounding 75 % by 2050.

Central to the realization of this ambitious vision is the awe-inspiring ***Mohammed bin Rashid Al Maktoum Solar Park***, a symbol of Dubai's commitment to sustainable energy. The solar park, managed by Dubai Electricity and Water Authority (DEWA), has become a shining example of innovation and progress in the region. Its Phase I was successfully brought online by October 2013, marking the first step towards a renewable energy-driven future.

Recently, in a momentous event, HH Sheikh Mohammed bin Rashid Al Maktoum inaugurated the 5th Phase of the Solar Park, propelling Dubai's clean energy journey to new heights. This monumental phase is set to provide clean energy to approximately 270,000 residences in Dubai, making significant strides towards reducing 1.18 million tonnes of carbon emissions annually.

Looking ahead, Phase 6 of the Solar Park is scheduled to become operational by Q4 2024, adding even more momentum to Dubai's renewable energy drive. With each phase, the solar park's capacity grows, further enhancing its contribution to a cleaner and more sustainable tomorrow for the city and its inhabitants.

In the heart of Dubai's quest for a smarter and more sustainable future lies ***Shams Dubai***, a pioneering initiative by DEWA. As DEWA's first smart initiative, Shams Dubai plays a vital role in connecting solar energy directly to buildings and homeowners.

Aligned with the visionary aspirations of HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to make Dubai the smartest city in the world, Shams Dubai is a crucial component of the city's transformative journey. By encouraging the adoption of solar energy and its integration with modern infrastructure, the initiative supports Dubai's ambitious goal of diversifying its energy mix and promoting clean and renewable sources.

The genesis of Shams Dubai can be traced back to council resolution number 46 of 2014, issued by HH Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai, and Chairman of the Dubai Executive Council. This resolution set the framework for regulating the seamless connection of solar energy to Dubai's power grid, laying the groundwork for a vibrant and interconnected solar ecosystem.

One of the primary objectives of Shams Dubai is to empower both household and building owners to embrace solar power by installing Photovoltaic (PV) panels. These panels are designed to generate electricity, and with the connection to DEWA's grid, surplus electricity can be exported back to the network, contributing to the overall energy supply.

Through this distributed approach to solar energy generation, Shams Dubai fosters a sense of collective responsibility among Dubai's residents to actively contribute to the city's sustainable growth. By empowering citizens to harness the power of the sun, the initiative cultivates a greener and cleaner environment, while reducing the overall carbon footprint of the Emirate.

Beyond the environmental benefits, Shams Dubai also brings economic advantages to participants, allowing them to benefit from the generated electricity on-site and earn credits for the excess energy exported to DEWA's network. This incentivizes a wider adoption of solar energy and encourages a growing community of clean energy advocates in the Emirate.

For efficient implementation of Shams Dubai, DEWA shares a comprehensive breakdown of the process for all stakeholders, including Customers & Residents, Consultants & Contractors, and Suppliers & Manufacturers. In our report, we will delve deeper into the Supplier and Manufacturer stakeholder.

2.2 Supplier and Manufacturer

As DEWA embarks on its journey towards a greener and more sustainable future, the role of Suppliers and Manufacturers in providing high-quality solar PV equipment becomes paramount. DEWA's commitment to maintaining stringent technical standards for solar installations necessitates a rigorous process of verification to ensure compliance with the eligibility criteria set by the authority.

To meet the ambitious goals of Dubai's clean energy transformation, DEWA places great emphasis on the reliability, safety, and performance of solar PV equipment. Suppliers and Manufacturers are instrumental in providing the solar technology that will be integrated into the city's power infrastructure. However, these providers must adhere to DEWA's guidelines and international standards on quality and safety.

To ensure the highest level of performance and reliability, solar PV equipment goes through a thorough verification process. **DEWA's Standards for Distributed Renewable Resource Generator** document (Appendix) outlines the specific eligibility criteria that Suppliers and Manufacturers must meet. This document serves as a comprehensive guide, aligning the solar technology offerings with DEWA's vision for a sustainable and efficient energy landscape. In this document, please refer to:

- **Appendix C:** List of Standards for Equipment
 - C.2 PV modules
 - C.3 Inverters

➤ **Appendix D: Compliance Tests**

- D.1 Interface Protection Systems for Low Voltage Connected RRGPs
- D.2 Interface Protection Systems for Medium Voltage Connected RRGPs
- D.3 Inverters for Low Voltage Connected RRGPs
- D.4 Inverters for Medium Voltage Connected RRGPs

By adhering to these standards, suppliers and manufacturers play a crucial role in bolstering the credibility and longevity of Dubai's renewable energy initiative. The evaluation process guarantees that only the most efficient and reliable solar PV equipment is incorporated into the Emirate's energy infrastructure, contributing to a seamless transition towards clean energy.

As DEWA continues its commitment to sustainability and high technical standards, the collaboration with Suppliers and Manufacturers becomes a cornerstone of Dubai's renewable energy journey. Together, they lay the foundation for a brighter and cleaner future, where solar power plays a pivotal role in shaping a sustainable Emirate.

2.3 Eligible Equipment for Shams Dubai

Participation in the initiative and access to contractors and customers are exclusively available to solar PV equipment suppliers and manufacturers who have registered through the DEWA [DRRG Equipment Portal](#). Being registered through this official platform is key to unlock opportunities in Dubai's renewable energy landscape.

3. The Potential for PV Panel Installation in Abu Dhabi

In the realm of renewable energy in Abu Dhabi, two prominent leader stands out – [Masdar](#) & Emirates Water and Electricity Company ([EWEC](#)).

3.1 Masdar

The Abu Dhabi Future Energy Company is a global leader in renewable energy and sustainable development. Its mission is to help maintain the UAE's energy sector leadership while diversifying the economy and energy sources for future generations. With utility-scale projects worldwide and a focus on clean technologies and green hydrogen, Masdar drives growth in renewable energy and supports the UAE's transition to a knowledge-based economy. Backed by three UAE energy champions, Masdar serves as a catalyst for renewable energy development in the Arab world, contributing significantly to the global sustainability agenda.

Masdar has a total of [12 projects in the UAE](#), 7 of which are solar energy related. In this report we will mention three of them.

Masdar City Solar Photovoltaic Plant

In 2009, the Masdar City 10MW Solar Photovoltaic Plant emerged as a ground-breaking achievement, representing the UAE's first grid-connected renewable energy endeavour and the largest of its kind in the Middle East at that time. With an impressive capacity to produce approximately 17,500 megawatt-hours of clean electricity each year, the facility plays a pivotal role in offsetting 15,000 tonnes of carbon emissions annually.

Abu Dhabi Solar Rooftop Programme

As part of the Abu Dhabi Solar Rooftop Programme, solar photovoltaic systems have been installed on 11 government buildings. Launched in 2017, the program aimed to encourage the adoption of PV installations by private individuals, companies, and other entities. However, data on private installations is currently unavailable, suggesting that Abu Dhabi is shifting towards a more centralized approach, which will be elaborated further in this report.

Al Dhafra Solar Photovoltaic

Abu Dhabi National Energy Company (TAQA) and Masdar, in collaboration with partners EDF and JinkoPower, are currently spearheading the development of the remarkable Al Dhafra Solar Photovoltaic (PV) Independent Power Producer (IPP) project. Situated approximately 35 kilometres from Abu Dhabi city, the project will boast an impressive two gigawatts capacity and will supply power to Emirates Water and Electricity Company (EWEC), the off taker. Once operational, the Al Dhafra Solar PV IPP will secure its place as the world's largest single-site solar power plant, utilizing around 3.5 million solar panels to generate electricity for approximately 160,000 homes across the UAE.

3.2 Emirates Water and Electricity Company (EWEC)

Emirates Water and Electricity Company (EWEC) stands as the exclusive procurer of water and power in the Emirate of Abu Dhabi and beyond, entrusted with the vital responsibility of guaranteeing a seamless supply to consumers. As a pivotal component of ADQ, a prominent holding company with a diverse portfolio across key sectors of Abu Dhabi's non-oil economy, EWEC's formation in November 2018 marked the succession of the esteemed Abu Dhabi Water and Electricity Company (ADWEC). With a mandate to ensure the availability of water and power, EWEC plays an integral role in sustaining the energy needs of the region and contributing to its thriving non-oil industries.

EWEC fulfils the UAE's growing demand for water and electricity by procuring supply from 16 plants located across the nation. Among these plants are 14 current facilities, and two additional plants are set to contribute to the near future. The portfolio of supply sources includes both conventional power plants and two notable solar power plants. Of particular significance is the world's largest single-site solar power plant.

In this report, our focus will be on four prominent solar plants, two of which have been previously discussed in relation to Masdar - namely, the Masdar City Solar Photovoltaic Plant and the Al Dhafra Solar Photovoltaic Plant, which is currently under development and expected to become operational soon. Now, let us turn our attention to the remaining two solar plants:

Noor Abu Dhabi

One of the largest single-site solar power plants globally, achieved a significant milestone as it commenced commercial operations in April 2019. For Emirates Water and Electricity Company (EWEC), this project represents a transformative leap towards sustainable technology adoption, accompanied by an enhanced share of the country's energy mix.

Situated in Sweihan, Abu Dhabi, Noor Abu Dhabi occupies an expansive area of 8 square kilometres, featuring a remarkable 3.2 million solar panels. With a commendable power generation capacity of approximately 1 gigawatt (AC), the plant plays a crucial role in reducing Abu Dhabi's reliance on natural gas for electricity production, culminating in an annual carbon footprint reduction of 1 million metric tonnes. This reduction is akin to taking 200,000 cars off the road, showcasing the project's significant contribution to the region's sustainability efforts.

Al Ajban Solar Photovoltaic

The Al Ajban Solar PV plant emerges as a ground-breaking greenfield project, boasting an impressive power generation capacity of 1.5 gigawatts (AC). With the capacity to supply electricity to approximately 160,000 homes across the UAE, the plant's scale signifies its vital role in meeting the nation's energy demands. Upon its commercial operation, it is projected to make a significant impact on reducing Abu Dhabi's CO2 emissions by more than 2.4 million metric tonnes annually. This project assumes a fundamental role in Abu Dhabi's energy transition and sustainability strategy, aligning seamlessly with the objectives set forth in the UAE Energy Strategy 2050 and the UAE Net Zero by 2050 strategic initiative. By leveraging renewable and clean energy sources, the Al Ajban Solar PV plant underscores the UAE's commitment to achieving a sustainable and diversified energy landscape.

3.3 Abu Dhabi's Approach

Abu Dhabi's EWEC assumes the crucial role of being the primary off taker for all solar plants within the Emirate. This indicates a notable centralization of efforts towards renewable energy in Abu Dhabi, differing from Dubai, where initiatives involving residential properties are already underway. As of now, the focus in Abu Dhabi remains on larger-scale utility projects, underpinned by EWEC's strategic approach to securing the Emirate's renewable energy supply.

4. The Solar Energy Financing Programme

In early September 2023, as the United Arab Emirates prepared to host COP28, the Emirates Development Bank (EDB), a pivotal player in the UAE's economic growth and industrial progress, unveiled an ambitious Solar Energy Financing Programme. With a dedicated allocation of AED 100 million, this initiative focuses primarily on advancing green energy solutions, particularly in the realm of solar energy.

The core objective of this programme is to bolster micro, small, and medium-sized enterprises (mSMEs) by extending 8-year long tenor loans and offering a 100 % Loan-to-Value (LTV) ratio. This means that EDB will provide financing equivalent to the full appraised value or purchase price of the asset, eliminating the need for borrowers to make any upfront payments.

The program's overarching aim is to facilitate the transition towards cleaner and more sustainable energy sources while addressing financial barriers that may have previously impeded the widespread adoption of eco-friendly practices. Featuring streamlined application procedures, the programme extends medium- and long-term loans, as well as working capital support of up to AED 5 million, with a specific focus on projects related to solar energy.

Aligned closely with government priorities, the bank remains steadfast in its mission to cultivate a robust, sustainable, and self-sufficient economy. By 2026, EDB has set an ambitious goal of approving AED 30 billion in financing support to approximately 13,500 companies, with a strategic emphasis on five priority sectors: renewables, food security, manufacturing, technology, and healthcare. This comprehensive approach reflects the bank's dedication to fostering economic growth that aligns harmoniously with environmental and social sustainability.

5. Opportunities for Austrian Companies

The key opportunities lie in becoming a registered vendor for both Masdar and EWEC, and closely monitoring their bidding processes. Notably, both entities operate across multiple countries, including Egypt, Morocco, and Armenia, presenting potential prospects beyond Abu Dhabi.

In Dubai, the avenue for opportunity involves working towards inclusion in the list of Eligible Equipment providers, particularly in the context of renewable energy projects. Vigilantly aligning with the registration and eligibility requirements of these esteemed organizations will enable businesses to tap into the burgeoning renewable energy market and establish themselves as trusted partners in this dynamic industry.

6. Conclusion

The relentless pursuit of a cleaner and more sustainable future is evident in both Abu Dhabi and Dubai as they forge ahead with remarkable strides. Together, they showcase the unwavering commitment of the UAE towards transforming the energy landscape and making a substantial impact on the global sustainability agenda. By embracing innovation, promoting clean technologies, and harnessing the abundant power of the sun and wind, the UAE stands as a beacon of inspiration for the world, proving that a greener and more sustainable tomorrow is not only possible but within reach. Through their collective efforts, the UAE exemplifies a steadfast dedication to creating a brighter and more sustainable world for future generations.

7. Appendix

7.1 Stakeholders

1	Masdar	T: +971 2 653 3333 W: www.masdar.ae
2	EWEC	E: info@ewec.ae W: https://www.ewec.ae/
3	DEWA	T: +971 4 601 9999 W: https://www.dewa.gov.ae/en/

7.2 Support Material

1	DEWA's Standards for Distributed Renewable Resource Generator
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