حكومة دبي
GOVERNMENT OF DUBAI

هيئة كهرباء ومياه دبي
Dubai Electricity & Water Authority

MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK

THE FUTURE STARTS HERE

MOHAMMED BIN RASHID AL MAKTOUM
SOLAR PARK

"The UAE is striving to develop and boost its rich resources and expertise in the international energy markets and enhance its leading role as a world centre for renewable energy research and development."

His Highness Sheikh Khalifa bin Zayed Al Nahyan

President of the UAE

"Every investment in the development of clean energy sources is at the same time an investment to protect the environment for future generations"

His Highness Sheikh Mohammed bin Rashid Al Maktoum

Vice President and Prime Minister of the UAE and Ruler of Dubai

MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK

The United Arab Emirates and Dubai in particular, has made unprecedented achievements which have put the UAE on the list of countries that are more competitive globally. This was the result of the efforts of our wise leadership to create a healthy business environment characterised by the availability of high levels of modern standards, quality and efficiency of services.

On the renewable energy side, the UAE has taken a global leading role by being selected to host the Headquarters of the International Renewable Energy Agency (IRENA).

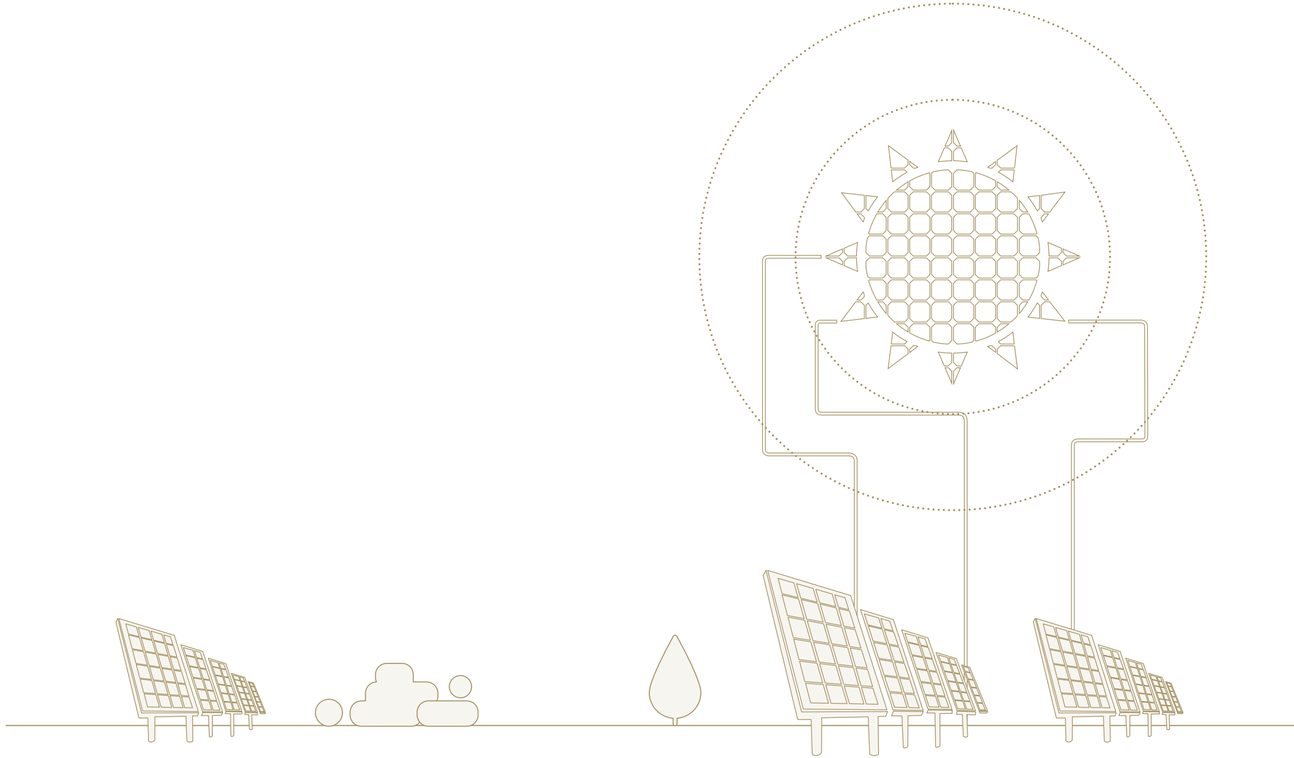
Electricity is an important part of the infrastructure that helps the sustainable development of any country. Therefore we had to develop policies and mechanisms to ensure the availability and reliability of power supply, for the current and future generations through the adoption of best practices and effective programs to ensure efficient management while preserving the environment and ensuring resources sustainability.

The Dubai Supreme Council of Energy aims to ensure availability and reliability of energy supply while preserving natural resources through effective steps to address the challenges of climate change and the application and development of renewable energy technologies.

The Mohammed bin Rashid Al Maktoum Solar Park is leading the inclusion of renewable resources to Dubai's energy mix and we count on the contribution of the park to Dubai's sustainability.

We ask Allah to bless and guide us to the future we aspire to reach and that Dubai's efforts to increase the use of renewable energies will match the efforts of nations around the world; as we all strive to preserve our resources and protect our environment.

His Highness Sheikh Ahmed bin Saeed Al Maktoum
Chairman of the Dubai Supreme Council of Energy



His Excellency Saeed Mohammed Al Tayer
Vice Chairman of the Dubai Supreme Council of Energy, MD & CEO of DEWA

The remarkable vision and steady guidance of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, has provided a roadmap for our ambitious initiatives and development projects to realise the 'UAE Vision 2021'. The vision aims to make the UAE one of the leading countries in the world by 2021 and strengthen Dubai's position as a global hub for trade, finance and tourism, and a model for the world in achieving the highest standards of energy efficiency and renewable-energy use.

The Mohammed bin Rashid Al Maktoum Solar Park is a key factor in achieving the Green Economy for Sustainable Development initiative launched by His Highness with the aim of building a green economy in the UAE and achieving sustainable development. The Solar Park offers plenty of promising investment opportunities that strengthen energy partnerships and investments between the public and private sectors, as the future phases of the Solar Park will produce renewable energy based on the Independent Power Producer model.

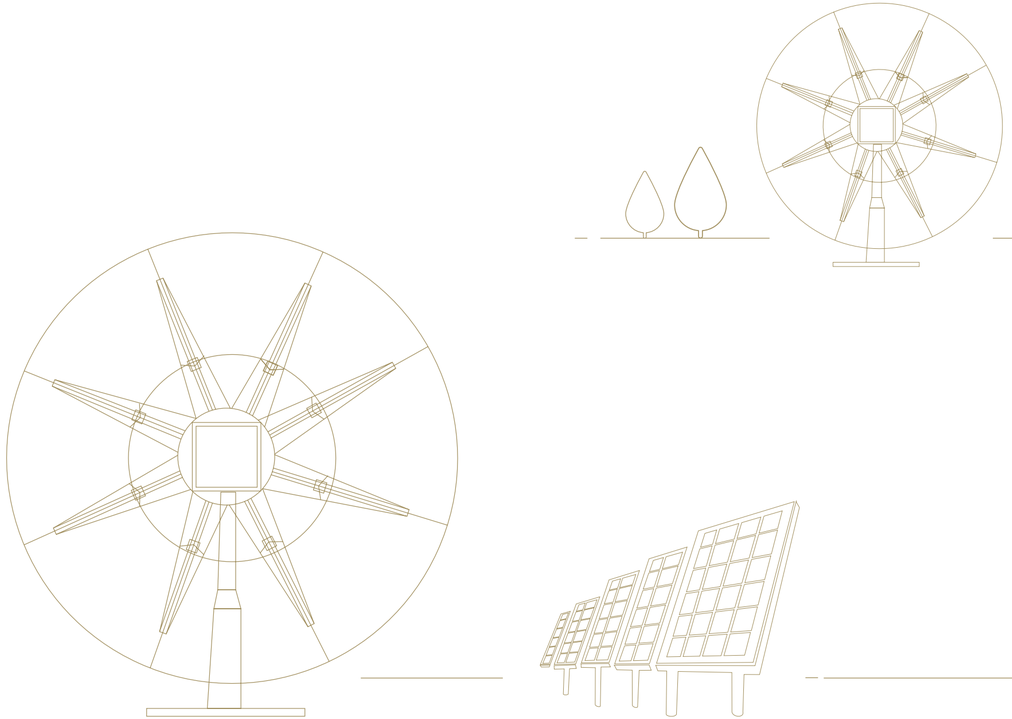
Today, we celebrate the harvest of our efforts to implement our strategy in diversifying the energy mix in Dubai by increasing the production of solar energy to provide 1% of Dubai's total power output by 2020 and 5% by 2030.

On 22 October 2013 His Highness inaugurated the first project, which will produce 13MW of electricity using photovoltaic technology. The project was completed with the participation and financing of the Dubai Supreme Council of Energy and under the supervision and management of DEWA.

His Highness also initiated the second project of the Solar Park using the Independent Power Producer model based on a partnership between the public and the private sectors, and with a capacity of 200MW. This will support our efforts to achieve a sustainable future for generations to come.

The launch of the Solar Park coincided with World Energy Day endorsed by His Highness Sheikh Mohammed bin Rashid Al Maktoum, along with 54 countries in the world, in addition to the United Nations, the Arab League and the African Union, in the Dubai Declaration of Energy for All on 22 October 2012.

The UAE and especially Dubai have impressed the world with their remarkable achievements and will continue to always be at the forefront to achieve prosperity for the country and happiness for its citizens.



DUBAI CLEAN ENERGY STRATEGY 2050

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, launched the Dubai Clean Energy Strategy 2050, to make Dubai a global centre of clean energy and green economy. The strategy consists of five main pillars: Infrastructure, legislation, funding, building capacities and skills, and an environmentally friendly energy mix.

Infrastructure

The infrastructure pillar includes initiatives such as the Mohammed Bin Rashid Al Maktoum Solar Park, which is the largest single location generator of solar energy in the world with a capacity to produce 5,000 MW by 2030, at a total investment of AED 50 billion. The first phase of this project began operations in 2013. The second phase will begin operations in April 2017 with a capacity of 200 MW, the third phase will begin operations in 2020 with a capacity of 800 MW, the fourth phase will begin operations in April 2021 with a capacity of 200MW, while the full solar park will be fully completed and begin operations in 2030 with a capacity of 5000 MW, which is 25% of the total energy production in the Emirate of Dubai as estimated.

The infrastructure includes a comprehensive Innovation Centre and a R&D centre that feature a group of research and development centres specialised in the next generation of clean energy technologies such as solar energy technology test centre, drones research centre, 3D printing technology and a solar energy based desalination test centre AED 500 million will be invested in research and development in areas such as integration of smart grids, energy efficiency and electricity generation from solar energy.

The infrastructure pillar also includes the establishment of a new free zone under the name Dubai Green Zone dedicated to attracting research and development centres and emerging companies in clean energy.

LEGISLATION

The second pillar focuses on the establishment of a legislative structure supporting clean energy policies in two phases. The first phase will be implemented through Shams Dubai initiative which aims to encourage building owners to place solar panels on the roofs and link them to the main network of Dubai Electricity and Water Authority. The second phase includes coordination with Dubai Municipality to issue a set of decisions on the integration of consumption rationalisation technology and energy production and the requirement to install solar panels on the roofs of all building in Dubai by 2030.

FUNDING THROUGH THE DUBAI GREEN FUND

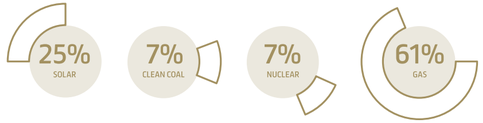
The third pillar is related to financing solutions for investment in research and development on clean energy and its application. This pillar includes the establishment of Dubai Green Fund worth of AED 100 billion which will contribute through its financial resources easy loans for investors in the clean energy sector in the Emirate at reduced interest rates. DEWA will ensure the demand management and economic value of the project.

BUILDING CAPACITIES AND SKILLS

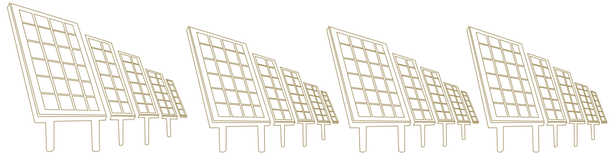
The fourth pillar aims to build human resources capabilities through global training programmes in clean energy in cooperation with international organisations and institutes such as International Renewable Energy Agency (IRENA) as well as international companies and R&D centres. The pillar will contribute to the creation of a sustainable model for research and development in the area of clean energy based on specialised human capabilities.

ENVIRONMENTALLY-FRIENDLY ENERGY MIX

The fifth pillar is focused on creating an environmentally friendly energy mix with solar energy providing 25%, nuclear power 7%, clean coal 7% and gas 61% by 2030. The mix will gradually increase the employment of clean energy sources to 75% by 2050, making Dubai the lowest carbon footprint city in the world. This pillar also activates energy generation mechanisms through waste by employing state-of-the-art technologies in this area that will help turn 80% of the Emirate's waste into energy by 2030.



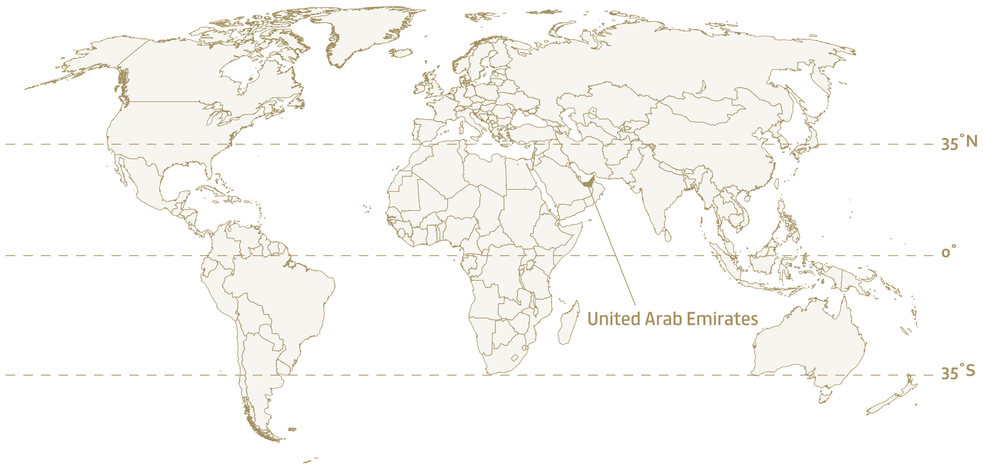
Environmentally-Friendly Energy Mix By 2030



THE UAE, IDEALLY LOCATED FOR SOLAR ENERGY

The location of the United Arab Emirates and Dubai within the Sunbelt highlights solar energy's major role as a renewable source of energy. In Dubai, available global irradiation usable by photovoltaic technology averages 2,150 kWh/m2/y (kilowatt hours per square metres per year) and the direct part of the irradiation (DNI) which is used by Concentrated Solar Power (CSP) is about 1,850 kWh/m2/y. These figures mean the solar energy is an optimal energy source in Dubai.

The Mohammed bin Rashid Al Maktoum Solar Park is one of Dubai's energy diversification initiatives to increase the share of renewable resources. In January 2012, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai launched the Dubai Program for Renewable Energy and announced the Mohammed bin Rashid Al Maktoum Solar Park.



KEY SOLAR PROJECTS AND PROGRAMMES IN DUBAI

SHAMS DUBAI INITIATIVE

This leading initiative supports the vision 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. It also supports diversifying the energy mix by promoting the use of clean and renewable energy sources to build a sustainable future for the Emirate. Launching the initiative implements 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, to regulate the connection of solar energy to Dubai's power grid.

The initiative encourages household and building owners to install Photovoltaic panels to generate electricity, and connect them to DEWA's grid. The electricity is used on site and the surplus is exported to DEWA's network.

شمس دبي
Shams Dubai

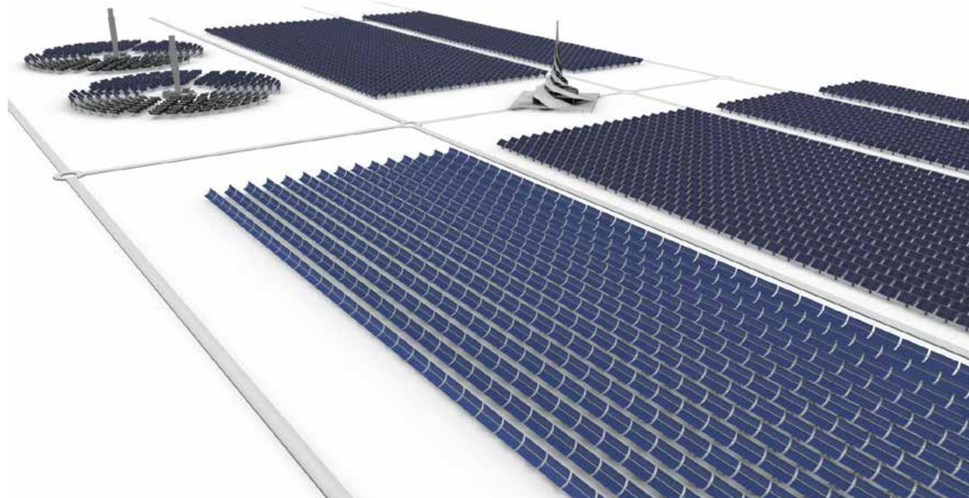
MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK

The Mohammed bin Rashid Al Maktoum Solar Park was announced in January 2012 in line with the vision and directives of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, and Ruler of Dubai, to enhance the sustainable development of Dubai. It also supports the Dubai Clean Energy Strategy 2050 to make Dubai a global centre of clean energy and green economy. The strategy also aims to provide 7% of Dubai's energy from clean energy sources by 2020, 25% by 2030 and 75% by 2050. DEWA is managing the Solar Park, which is the largest renewable-energy project on a single plot in the world with a planned production capacity of 5,000 MW upon completion in 2030.

5,000MW
BY 2030

MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK PROJECTS

- The Solar Power Projects will generate up to 5,000 MW by 2030
  - **First Phase:** 13MW photovoltaic launched on 22 October 2013
  - **Second Phase:** 200MW photovoltaic will be launched in April 2017
  - **Third Phase:** 800MW photovoltaic will be launched in stages, ending by 2020
  - **Fourth Phase:** 200MW CSP will be launched in April 2021
  - **Future Phases:** up to 5,000MW by 2030
- Research & Development (R&D) Centre with a solar testing facility
- Innovation Centre
- Educational & Training Centres
- Photovoltaic Reverse Osmosis Project (PVRO)



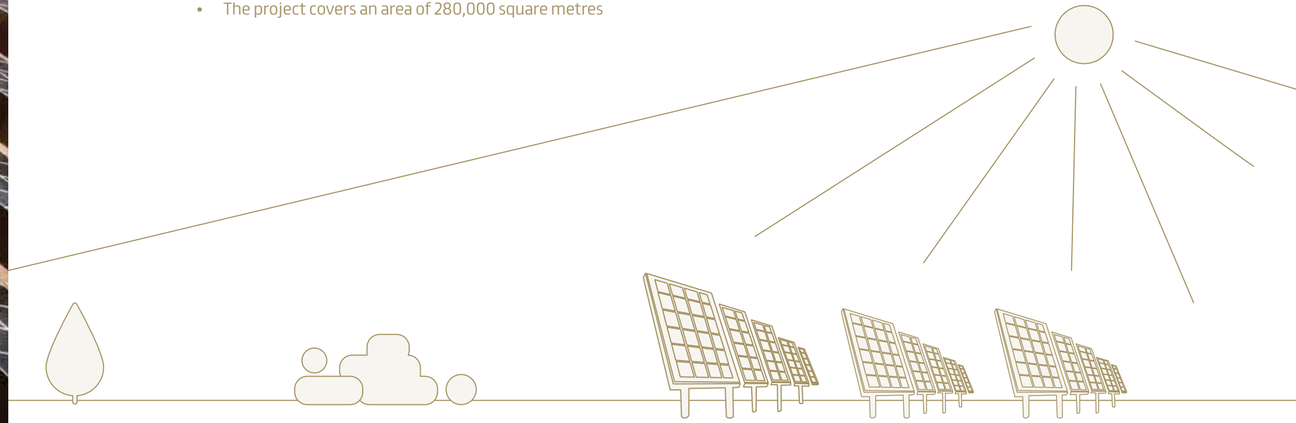
1 MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK

First Phase

HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai inaugurated the first project of the Mohammed bin Rashid Al Maktoum Solar Park on 22 October 2013, with a capacity of 13 MW. The inauguration coincided with World Energy Day, which takes place on 22 October every year.

FACTS AND FIGURES

- The generating capacity is 13MW of clean energy
- The project generates 24 million kilowatt hours (kWh) of electricity per year
- The project required more than 1.4 million man-hours to complete, all of which were accident-free
- The project reduces greenhouse gas emissions by 15,000 metric tons of CO_2 per year
- Performance Ratio is more than 83%
- The project is powered by 152,880 photovoltaic modules
- The project covers an area of 280,000 square metres



2

Second Phase

HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, initiated the second phase of the Mohammed bin Rashid Al Maktoum Solar Park, with a capacity of 100 MW. The second phase will be completed in partnership with the public and private sectors based on the Independent Power Producer model.

In January 2015, Dubai Electricity and Water Authority (DEWA), announced that the production capacity of the second phase of the Mohammed bin Rashid Al Maktoum Solar Park would be increased from 100 MW to 200 MW and will be operational by April 2017. DEWA also selected the consortium led by Saudi Arabia's ACWA and Spain's TSK as a preferred bidder based on its proposed LCOE (Levelised Cost of Energy).

3

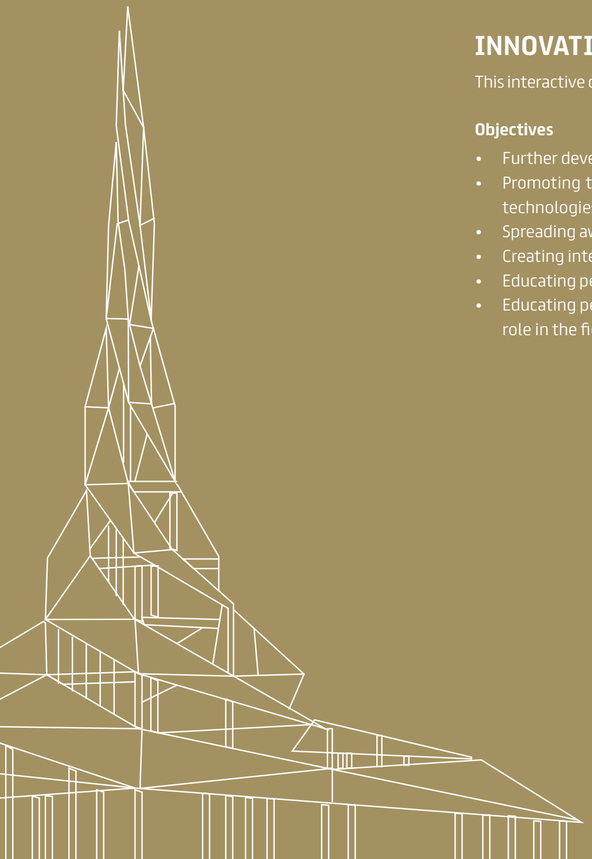
Third Phase

The 800 MW Solar Photovoltaic Power Plant is the third phase of the Mohammed bin Rashid Al Maktoum Solar Park. The project was awarded to a consortium led by Masdar, which submitted the world's lowest recorded LCOE for a utility scale Solar Photovoltaic Independent Power Project (IPP). The project capacity will be added in a phased manner - 200 MW by April 2018 followed by 300 MW in April 2019 and another 300 MW by April 2020.

4

Fourth Phase

The Mohammed bin Rashid Al Maktoum Solar Park will also house 1,000 MW of CSP by 2030. The first 200 MW plant will use the Solar Tower Technology and it will be operational by April, 2021. It is expected to be the largest CSP power plant located within the same area worldwide, when fully developed by 2030.

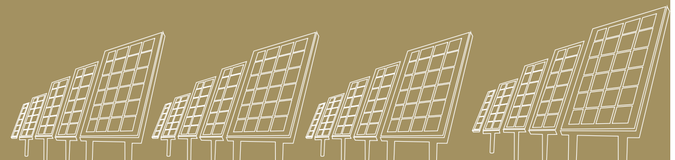


INNOVATION CENTRE

This interactive centre is equipped with the latest technologies in renewable and clean energy.

Objectives

- Further developing national skills in clean energy
- Promoting the competitive edge of businesses in Dubai, developing renewable energy technologies and supporting the region's energy industry
- Spreading awareness on climate change and sustainable energy
- Creating interactive presentations and organising educational tours for visitors
- Educating people about solar energy and organising educational tours for visitors
- Educating people about solar energy and the Solar Park and highlighting Dubai's leading role in the field of sustainability

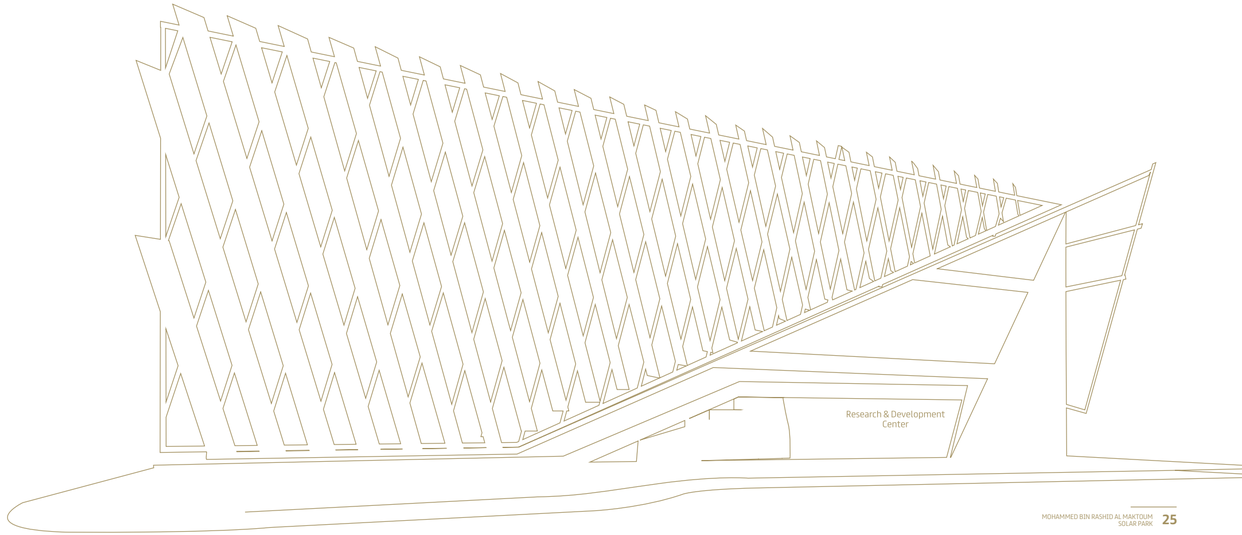


RESEARCH & DEVELOPMENT CENTRE (R&D)

OBJECTIVES

- Conducting studies to meet industrial and social requirements
- Leading regional efforts for scientific research on renewable energy
- Serving as a link between researchers and developers
- Developing formal channels linking universities to local and global research centres
- Developing output strategies for innovative productive ideas

R&D PROGRAMMES



RESEARCH AND DEVELOPMENT IN SOLAR ENERGY

Research & Development is focusing, among other topics, on the reliability and durability of photovoltaic solar panels for prolonged periods in severe conditions. The data gathered from tests on these solar panels is also being used to improve their efficiency in the region, given its climate. The Centre directs its efforts on utility-scale open spaces and urban settings in Dubai. This research helps minimise risk, improves reliability in the future, and helps promote the uptake of solar power in the region. DEWA's R&D team is working on a series of international initiatives to develop cutting-edge research and is participating in other regional programmes as well.

PHOTOVOLTAIC SOLAR TESTING FACILITY

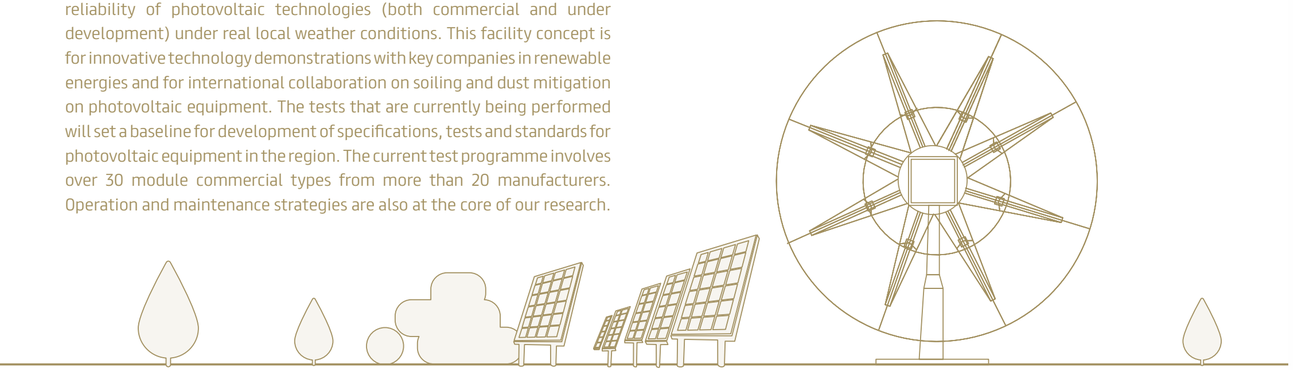
DEWA has developed a world-class Solar-powered Photovoltaic Testing Facility to study and evaluate the performance, long-term stability and reliability of photovoltaic technologies (both commercial and under development) under real local weather conditions. This facility concept is for innovative technology demonstrations with key companies in renewable energies and for international collaboration on soiling and dust mitigation on photovoltaic equipment. The tests that are currently being performed will set a baseline for development of specifications, tests and standards for photovoltaic equipment in the region. The current test programme involves over 30 module commercial types from more than 20 manufacturers. Operation and maintenance strategies are also at the core of our research.

CSP TESTING FACILITY

The CSP Testing Facility will study CSP technologies in a desert climate, using 10 units with a total power capacity of 110kW.

PHOTOVOLTAIC POWERED REVERSE OSMOSIS WATER DESALINATION PLANT (PVRO)

- For research and development purposes in the field of water desalination using solar energy, DEWA built a pilot solar-powered reverse osmosis water desalination plant.
- Production capacity is 50 m^3 per day of drinking water (with bottled water quality) by desalinating brackish water using solar energy with Energy Storage Batteries.



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