

DEWA Research & Development Center



RESEARCH & DEVELOPMENT CENTRE مركز البحوث والتطوير

جزء من مجمع محمد بن راشد آل مكتوم للطاقة الشمسية

PART OF MOHAMMED BIN RASHID AL MAKTOUM SOLAR PARK



“Without a vision to guide our path, and without ambition that knows no limits, we can never build a bright future for generations to come”

His Highness Sheikh Mohammed bin Rashid Al Maktoum
Vice President and Prime Minister of the UAE and Ruler of Dubai

Our Strategic Direction



Mohammed bin Rashid Al Maktoum Solar Park

Largest single-site solar park in the world upon completion

مجمع محمد بن راشد آل مكتوم
للطاقة الشمسية
MOHAMMED BIN RASHID AL MAKTOUM
SOLAR PARK



Reduce Over
6.5 Million
Tonnes Of Carbon
Emissions Per Year

Total
Investments
50
Billion AED

Total Capacity
5,000
MW
By 2030

Mission and Vision for DEWA R&D Center

Our Vision

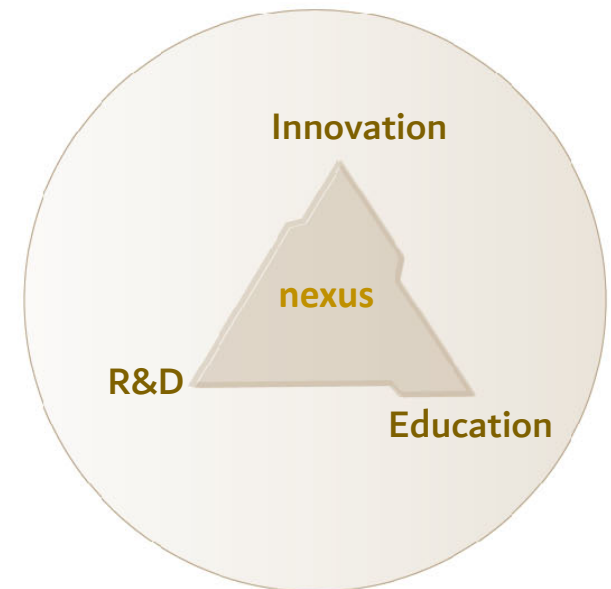
We develop sustainable solutions for energy and water through applied research and emerging technologies, to ensure that DEWA remains at the forefront of providing quality services to all its stakeholders, while contributing to Dubai, UAE and the Global community by disseminating knowledge and developing local talent.

Our Mission

We generate value for our stakeholders through cutting edge R&D and adoption of a customer centric approach for DEWA business units and external clients.

We continuously innovate across the R&D verticals of Solar, Water, Smart Grid & Integration and Energy Efficiency areas, as well as the R&D enablers (AI, IoT, Robotics & Drones, 3D Printing, Advance Materials and Energy Systems Analysis).

We aim to become an international hub for R&D.



Timeline

2014

- Launch of the National Innovation Strategy
- Launch of 5-year R&D strategy



2015

- Detailing of R&D roadmap and plans
- OTF development and opening
- Start of hiring



2016

- Design of R&D center
- Kick-off solar/water R&D areas (incl. PV RO)
- Launch of Solar Decathlon Middle East



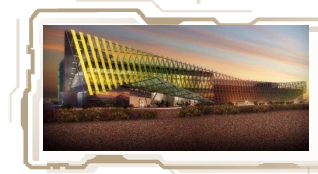
2017

- R&D center construction
- Start of SGI and 3DP R&D areas
- Completion of 3D lab
- Started several partnerships
- 5 R&D publications



2018

- Completion of R&D center
- Solar lab commissioning
- Development of 4IR R&D area
- Major expansion of projects portfolio
- Launch of Green H2 Project
- 10 R&D publications



2019

- Development of DEWA R&D 2.0 strategy
- Stanford Energy 3.0 membership
- First patent awarded
- Started expansion of facilities and labs

Research Areas

Solar

Water

**Smart Grid
Integration**

**Energy
Efficiency**

**R&D
Verticals**

Industry 4.0 (4IR)¹

Advanced Materials

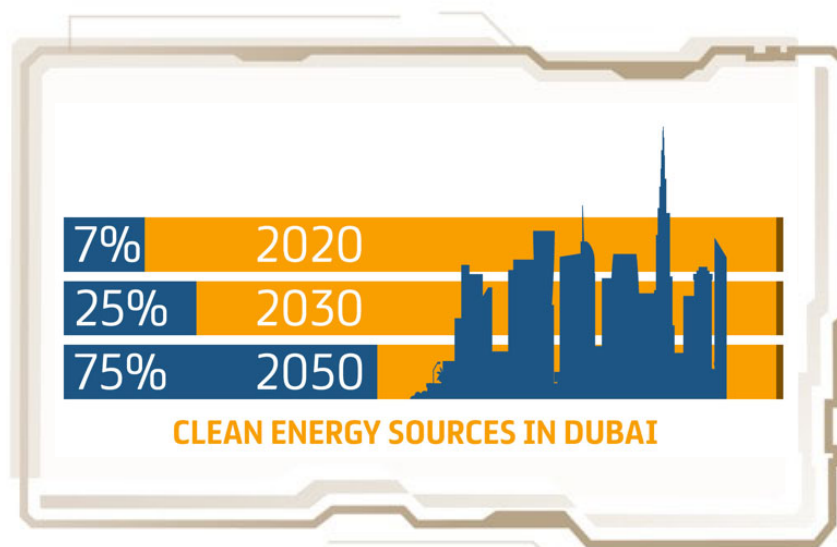
Energy Systems Analysis

**R&D
Enablers**

1. Industry 4.0 includes: (a) 3D Printing (b) Robotics, Drones & IoT (c) Artificial Intelligence & Data Analytics

Solar Area Research Goal

Meeting 75% of Dubai electricity needs using cost-effective, efficient, innovative, reliable and dispatchable solar technologies developed or validated in the UAE by 2050



Solar Area Research Programs

Program 1

Solar Cells
Technologies



Program 2

PV Development
and Recycling



Program 3

PV Performance
and Reliability



Program 4

Concentrated
Solar Power



Program 5

Solar Resource
Assessment
and Forecasting



Water Area Research Goal

Support DEWA in achieving sustainable, reliable and cost effective water production, storage and distribution.



Water Area Research Programs

Program 1

Water Production
& Storage



Program 2

Water Transmission
& Distribution



Program 3

Water Usage



Smart Grid Integration (SGI) Area Research Goal

Support DEWA in operating an efficient, agile, reliable, and secure grid and generation system that fulfills customer expectations and can integrate variable renewables at scale





Smart Grid Integration (SGI) Area Research Programs

Program 1

Power Systems



Program 2

Energy Storage



Program 3

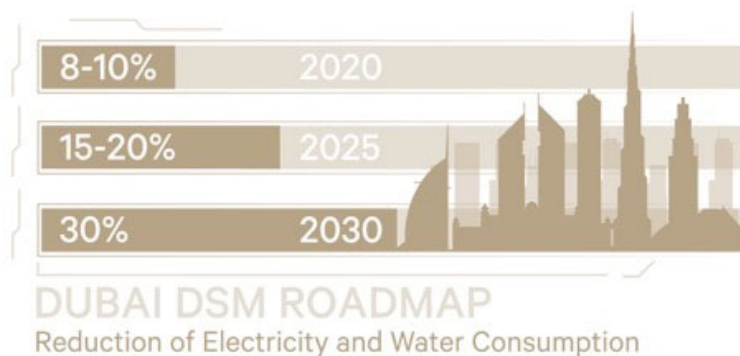
Utility
Intelligent-Grids



Energy Efficiency Area Research Goal

Support DEWA in fostering sustainable energy use, reducing energy waste, and accelerating the clean energy transition

Identifying, developing, and validating innovative solutions that enable the smart and efficient use of energy, boost renewables, and ensure the people's health and wellbeing.



Linked to:

- Dubai Plan 2021
- Dubai Clean Energy Strategy 2050
- Dubai Carbon Abatement Strategy
- Dubai 50-Year Charter
- Dubai Demand Side Management
- Smart Dubai
- DEWA Strategy Objectives

Energy Efficiency Area Research Programs

Program 1

End-Use
Energy Efficiency



Program 2

Sustainable
Buildings and Cities



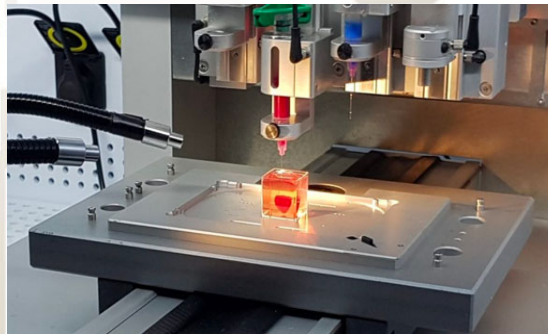
Program 3

High-Efficiency
Cooling Systems



Fourth Industrial Revolution (4IR) Area Research Goal

Support DEWA and the R&D Center in developing and utilizing advanced capabilities in robotics, data analytics and material fabrication for enhancing their research output



Industry 4.0 (4IR) Area Research Programs

Program 1

Artificial
Intelligence & IoT



Program 2

Robotics & Drones



Program 3

3D Printing



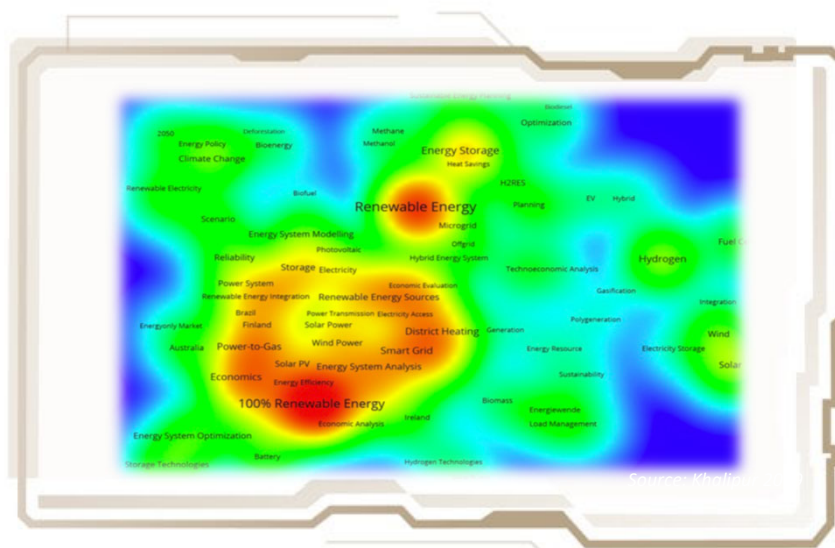
Program 4

Advance Materials



Energy Systems Analysis (ESA) Area Research Goal

Support DEWA and the R&D Center in developing and utilizing advanced capabilities in complex systems modelling, assessment and optimization



Energy Systems Analysis (ESA) Area Research Programs

Program 1

Energy Systems
Techno-economics



Program 2

Energy System
Modeling & Optimization



Existing Partnerships and Memberships



Outreach and Engagement: Al-Baheth Program

What is Al-Baheth Program ?

Established with the aim of engaging local and international universities to send their best technical candidates to work with DEWA researchers in various research areas

Internship

Capstone
projects
funding

CATEGORIES

Visiting
Sr. Researchers

Seminars
and
Workshops



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