



UNITED ARAB EMIRATES
MINISTRY OF ENERGY & INFRASTRUCTURE

De carbonization Pathway in UAE Water Security Strategy 2036

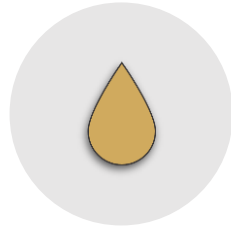
Eng. Hind Al Ali
Water Resources Department

April 2024



UNITED ARAB EMIRATES
MINISTRY OF ENERGY & INFRASTRUCTURE

Water Challenges



NATURAL WATER
SCARCITY



INCREASE IN
DEMAND



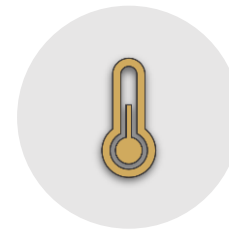
GROUNDWATER
EXPLOITATION



RESILIENCE TO
EMERGENCIES



ENVIRONMENTAL
IMPACT



CLIMATE CHANGE



The strategy was developed in 2018 by MOEI through a participatory process involving a wide array of stakeholders, and updated in 2023 through participation of the main stakeholders

Ministries and Federal Authorities

UNITED ARAB EMIRATES
MINISTRY OF ENERGY & INFRASTRUCTURE

UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

UNITED ARAB EMIRATES
THE SUPREME COUNCIL FOR NATIONAL SECURITY
National Emergency Crisis and Disasters
Management Authority

NCM
المركز الوطني للأرصاد
National Center of Meteorology

Water Authorities and Companies

EWEC
شركة مياه وكهرباء الإمارات
Emirates Water & Electricity Co.

هيئة كهرباء ومياه دبي
Dubai Electricity & Water Authority

هيئة كهرباء ومياه وغاز الشارقة
Sharjah Electricity, Water and Gas Authority

الاتحاد للماء والكهرباء
Etihad Water & Electricity

TRANSCO
شركة أبوظبي للنقل والتحكم
Abu Dhabi Transmission & Dispatch Company

Regulators

دائرة الطاقة
DEPARTMENT OF ENERGY

مكتب التنظيم والرقابة لقطاع الكهرباء والمياه
RSB FOR ELECTRICITY & WATER

هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

مركز الأمان الغذائي - أبوظبي
FOOD SECURITY CENTER - ABU DHABI

Government Of Fujairah
Fujairah Natural Resources Corporation

Municipalities and Wastewater Companies

SWS تنقية TANQIA
شركة أبوظبي لحلول المياه المستدامة
ABU DHABI SUSTAINABLE WATER SOLUTIONS COMPANY

بلدية أم القيوين
UMM ALQAYWAYN MUNICIPALITY

بلدية دبي
DUBAI MUNICIPALITY

بلدية مدينة الشارقة
United Arab Emirates - Sharjah Government
SHARJAH CITY MUNICIPALITY

بلدية عجمان
Government Of Ajman
Municipality & Planning Department



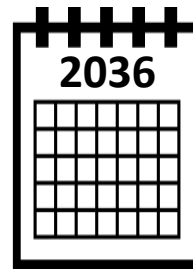


Objective of Water Security Strategy (WSS 2036)

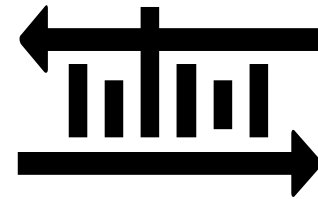
Ensure sustainable and continuous access to safe and adequate quantities of potable water, under normal operations and during large-scale emergency situations impacting the entire nation.



National Perspective



20-Year Timeframe



Entire Water Supply Chain



UAE Water Security Strategy Framework

A Overarching Objective and Policies

Ensure sustainable and continuous access to safe and adequate quantities of potable water, under normal operations and during large-scale emergency situations

B Strategic Programs and Focus Areas

Demand Side Management (DSM)

Potable water demand reduction

Agriculture water demand reduction

Reduction of non-revenue water

Price signaling and cost recovery

Supply Side Management (SSM)

Expansion of sustainable / membrane-based seawater desalination

Increase in treated sewage effluent usage

Conservation and optimization of groundwater usage

Production and Distribution in Emergencies

Interconnections between Emirates

Strategic storage

Water tankers & filling stations

Enhanced transmission networks

Oil spill prevention

C General Enablers

Institutional Setting & Capacity Building

National Policies, Plans and Regulations

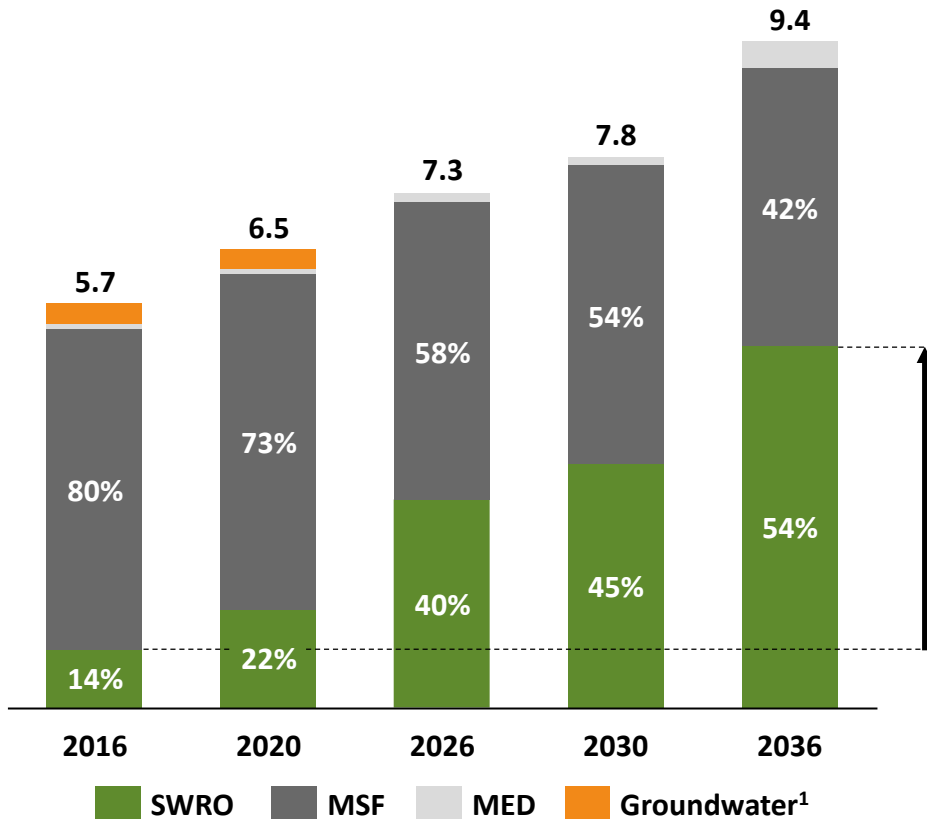
Technologies and Research

Public Awareness

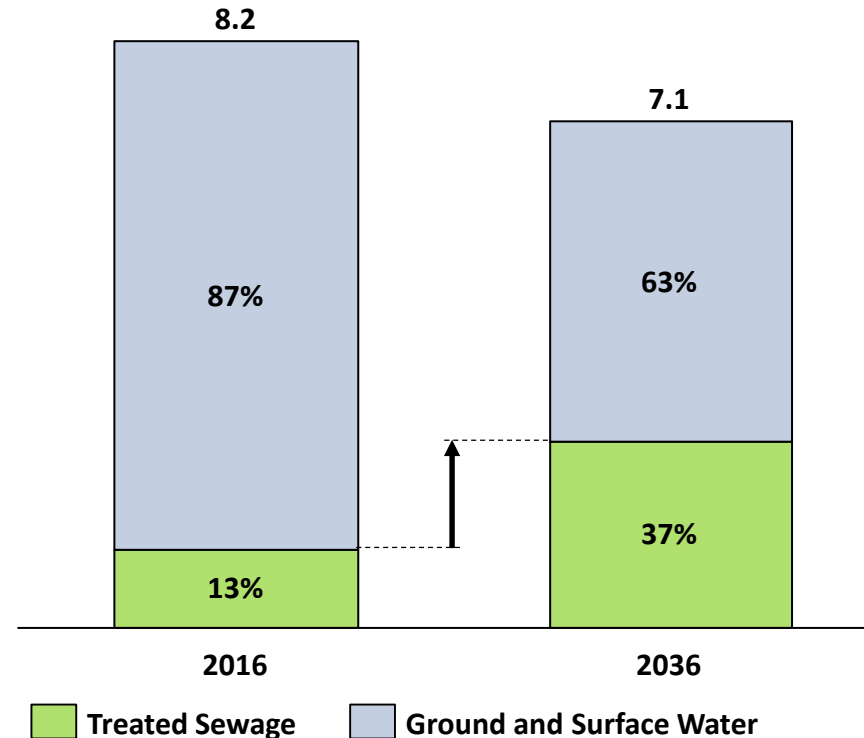


Water Resources System (Potable & Agriculture) according to WSS2036 (2018)

Potable Water Supply Mix (2016-2036, Mn m³/day)



Agriculture Water Supply Mix² (2016-2036, Mn m³/day)

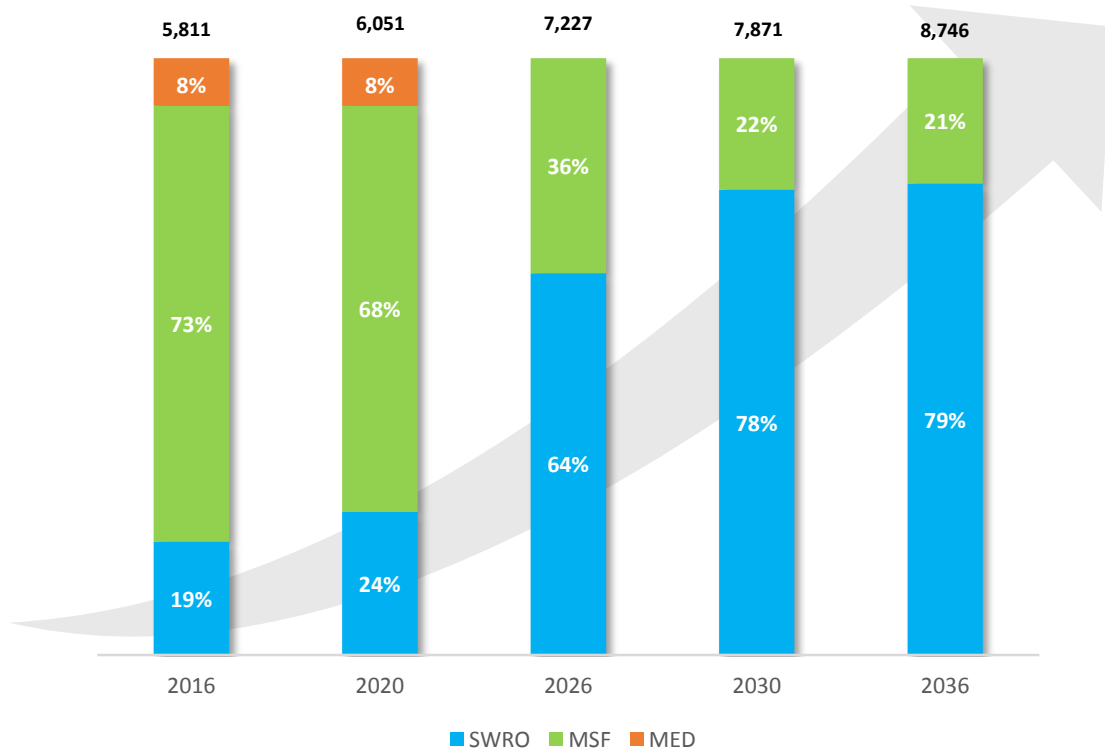


Reduced reliance on groundwater and increase supply from membrane desalination and treated sewage effluent

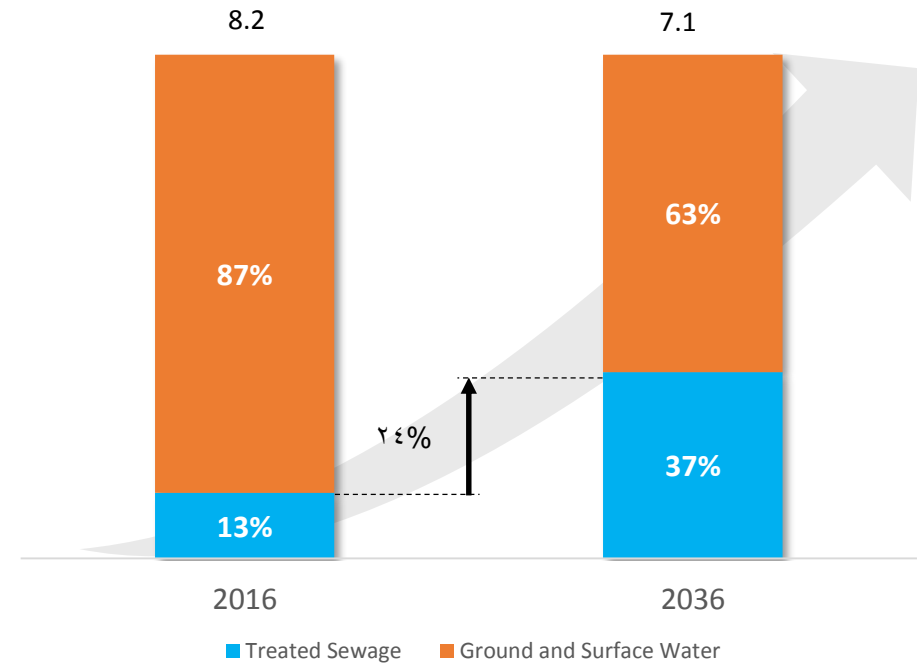


Updated Water supply System 2016 – 2036 (Potable & Agriculture)

Potable Water Supply Mix
1000 m3 /day



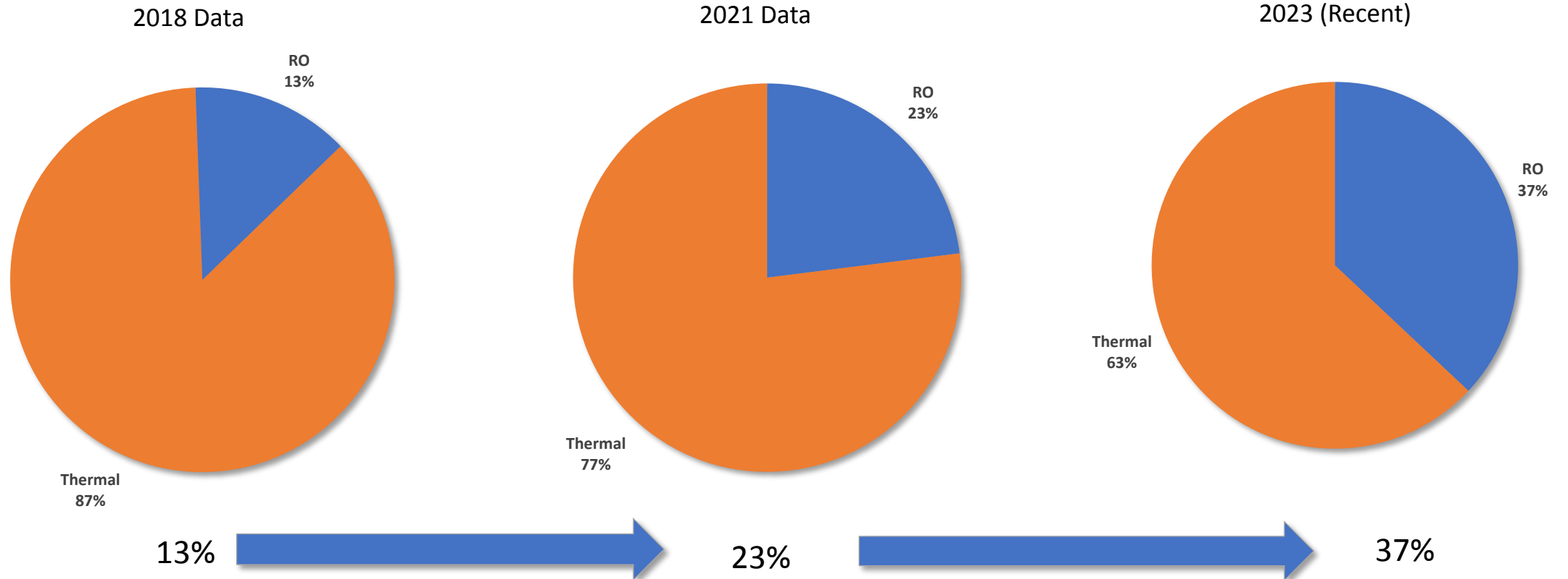
Agriculture Water Supply Mix
(Mn m3/day)





Membrane-based Water Desalination technology

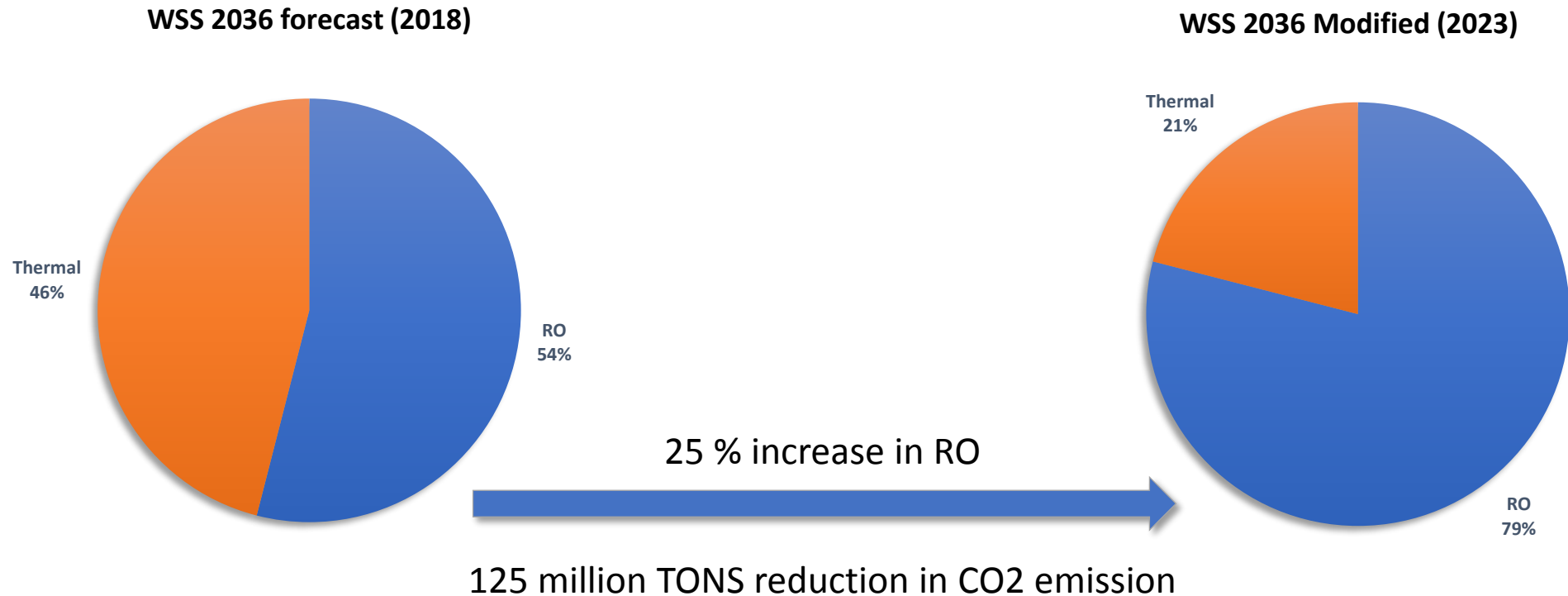
Expansion of sustainable membrane-based seawater RO desalination from 2018 to 2023





Water Desalination technology

The updated utilities water master plans - driven by the UAE Net Zero carbon emission strategy, UAE energy strategy, energy-water production decoupling, and current desalination business models - show an **increase in Reliance on membrane "RO" desalination technology from 54% (2018 forecast) to 79% by 2036.**





UAE New Ro Desalination Plants

- **Naqqa**
- Capacity to produce 150 MG/D
- Advanced reverse osmosis (RO) technology
- Located in the emirate of Umm Al Quwain and operates according to the independent water producer (IWP) model
- With an annual production capacity of nearly 50 billion gallons
- Cater to the needs of approximately 2 million inhabitants in the UAE's northern emirates

Dubai

- Aims to produce 100% of desalinated water capacity using clean energy or waste heat by 2030.

محطة «نقاء»
إنجاز إماراتي ضخم لتحلية مياه البحر

بالتعاون بين شركات
«الاتحاد للماء والكهرباء»
«مبادلة للاستثمار»
«أكوا باور»

الافتتاح الرسمي
مارس 2024

الموقع
إمارة أم القيوين

NAQQA
DESALINATION PLANT L.L.C.
محطة نقاء لتحلية المياه ذ.م.م.

من أضخم
مشاريع التحلية بنظام
التناضح العكسي عالميا

تلبية احتياجات
2 مليون ساكن بشمال الإمارات

المحطة
تضمن موارد مائية مستدامة للأجيال المقبلة
تعزز «مبادرة محمد بن زايد للماء»
تخفض البصمة الكربونية للإمارات

قدرة المحطة
150
مليون غالون يوميا

50
مليار غالون سنويا

TheEarthCall



UAE New Ro Desalination Plants

Abu Dhabi

- 3 desalination Projects are expected to become operational between 2025-2026.
(120 MIGD Mirfa , 70 MIGD Shuweihat, 100 MIGD Abu Dhabi Island)

Mirfa

- Produce up to 120 million MG/D
- Meet the water demand of up to 210,000 households in the Emirate of Abu Dhabi
- Low-carbon intensive RO water desalination plants are up to 96% more efficient than traditional thermal desalination plants
- Enabling a more than 85% reduction in carbon emissions associated with water production
- Third largest low-carbon intensive RO water desalination plant





Conclusion :

- ✓ UAE Net Zero Carbon Strategy aim to reduce 60 % of co2 emissions in water sector by 2030.
- ✓ The updated water strategy will target 78 % RO by 2030 compared to 45 % in the 1st draft.
- ✓ The Strategy will reduce 125 million TONS in CO2 emission.



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Thank You