حكومة رأس الخيمة
Government of Ras Al Khaimah

بلديـــــة رأس الخيمـــــــة
Ras Al Khaimah Municipality

RAS AL KHAIMAH INTEGRATED SUSTAINABILITY STRATEGY 2050

ANNUAL REPORT
2026 EDITION

His Highness Sheikh Saud bin Saqr Al Qasimi

UAE Supreme Council Member and Ruler of Ras Al Khaimah

"

Our nation is on a critical journey towards a sustainable future. It is a path that commenced with our Founding Fathers and is rooted in the way our people have always lived — in harmony with their surroundings. Building a prosperous and resilient Ras Al Khaimah, while protecting our natural environment, is a shared responsibility, and one that we all must embrace.

His Highness Sheikh Mohammed bin Saud bin Saqr Al Qasimi

Crown Prince of Ras Al Khaimah and Chairman of the Executive Council

"

Ensuring cost-competitive energy and water supply, along with environmental sustainability, is vital to the long-term growth of our emirate. Therefore, these are key priorities to which the Government of Ras Al Khaimah is firmly committed.

His Excellency Munther Mohammed bin Shekar Al Zaabi

Director General, Ras Al Khaimah Municipality and Chairman, RAK Sustainability Committee

"Building on the success of the Energy Efficiency and Renewables Strategy 2040, Ras Al Khaimah Integrated Sustainability Strategy 2050 takes a more holistic approach to maximise impact across sectors and deliver long-term value to residents and businesses in the emirate, while supporting the UAE's broader sustainability agenda.

Foreword

This publication marks the eighth year of environmental and energy progress reporting in Ras Al Khaimah, reflecting our continued commitment to advancing energy efficiency, renewable energy, and sustainable development across the emirate.

Established under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, UAE Supreme Council Member and Ruler of Ras Al Khaimah, the RAK Integrated Sustainability (RIS) Strategy 2050 guides the emirate's sustainability agenda, supporting long-term competitiveness, resilience, and economic growth.

The RIS Strategy was developed with the overarching objectives to:

- Maintain a secure and cost-competitive supply of energy and water to support Ras Al Khaimah's sustainable development;
- Protect and enhance the environment to preserve Ras Al Khaimah's unique natural heritage and ensure a high quality of life for residents; and
- Reduce greenhouse gas emissions and strengthen the competitiveness of Ras Al Khaimah's economy within a decarbonising global market.

In 2025, the implementation of the RIS Strategy delivered measurable progress across the emirate. Key achievements included:

- Completion of more than 6,400 Barjeel-compliant buildings across the emirate, with a future pipeline of approximately 7,500 additional buildings under development;
- Broadening of the Industrial Energy Audit Initiative, with participating companies representing over 70% of the industrial electricity consumption within the emirate;
- Identification of significant industrial energy-saving opportunities to support long-term decarbonisation efforts;
- Continued growth of the Retrofit Programme, with more than 400 buildings retrofitted by the end of 2025 to improve energy performance and operational efficiency;
- Installation of over 150 electric vehicle charging stations across Ras Al Khaimah, and expansion of public transport to reach 56% coverage over the emirate;
- Strengthening of the Energy Management Programme, both in depth, with more challenging targets, and in breadth, with extension from government entities to government-owned companies;
- Extension of the Green Public Procurement (GPP) Programme across more than 35 government entities and government-owned companies; and
- Completion of over 250 home energy audits through the Manzily Energy Advice service.

Andrea Di Gregorio
Executive Director, Reem,
Ras Al Khaimah Municipality

Alongside these implementation achievements, we advanced programme enablers and regulatory frameworks to support more structured and long-term approaches to decarbonisation and energy efficiency across key sectors. This included:

- Completion of a cement decarbonisation framework to support industrial sustainability planning;
- Simplification of Barjeel regulatory requirements, to address identified bottlenecks;
- Continued progress in wind resource assessment studies across Ras Al Khaimah;
- Progress in the development of a building energy performance rating system, with completion of more than 300 benchmarking surveys; and
- Study of an incentive programme for high-efficiency appliances and systems.

As part of our commitment to fostering innovation and entrepreneurship, the second cycle of the RAK Energy Innovation Competition (SME Edition) was announced in 2025, building on the success of its inaugural edition and recognising the important role of SMEs in advancing responsible growth, innovation, and energy efficiency.

We look forward to supporting the continued development and establishment of these businesses within Ras Al Khaimah, further strengthening the local green economy and encouraging sustainable business practices.

Ras Al Khaimah's ongoing efforts under the RIS Strategy continue to align closely with the UAE's broader Net Zero 2050 ambitions, reinforcing the emirate's role as a key contributor to national sustainability priorities. In 2025, the UAE further accelerated progress through increased investments in renewable energy, industrial decarbonisation, hydrogen development, and energy efficiency initiatives. This national momentum provides a positive enabling framework for local action, supporting Ras Al Khaimah's continued advancement of its own decarbonisation and sustainability agenda.

Through these collective achievements, Ras Al Khaimah's transition towards a resource efficient and low-carbon economy continues to accelerate, driven by coordinated efforts across government, private sector, and the wider community. Looking ahead, we remain committed to strengthening the emirate's sustainability agenda, fostering innovation, and working closely with our stakeholders to shape a greener, more resilient future for generations to come.

We hope you find this report insightful and look forward to sharing further progress in the next edition.

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1

Executive Summary

Executive Summary

This eighth annual sustainability report marks the first year of reporting on the RAK Integrated Sustainability Strategy 2050, a comprehensive framework designed to transform the emirate's energy sector and environment. Aligned with the UAE's Net Zero commitments and Ras Al Khaimah Vision 2030, the RIS Strategy sets the foundation for a more sustainable future.

Following its announcement in 2024, the RIS Strategy is now being implemented across the emirate, addressing key priorities including energy security, environmental protection, and decarbonisation.

In particular, the strategy focuses on enhancing the reliability and cost competitiveness of energy and water through gas supply enhancements, utility-scale and distributed renewable energy projects, and regulatory improvements. It prioritises environmental sustainability by strengthening air quality measures, protecting natural resources, and preserving biodiversity and marine ecosystems. Additionally, it takes a proactive approach to climate change mitigation by promoting energy-efficient buildings, sustainable transport solutions, industrial decarbonisation, and low-carbon agricultural practices.

Implementation of the strategy continues to be overseen by the RAK Sustainability Committee, comprising the government entities responsible for delivering its programmes. The Committee provides strategic guidance, addresses implementation challenges and mobilises stakeholders to support the achievement of the RIS Strategy targets.

The strategy projects significant economic, social, and environmental benefits, including an estimated Đ 6.5 billion in net gains, reduced greenhouse gas emissions, lower energy costs, and job creation across green industries.

Implementation of the strategy will position Ras Al Khaimah as a leader in sustainability, ensuring long-term resilience, economic growth, and environmental stewardship.

2

Overview

RAK Integrated Sustainability Strategy 2050

RAK Integrated Sustainability Strategy 2050 was established in 2024 under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, UAE Supreme Council Member and Ruler of Ras Al Khaimah. Building on the EE&R Strategy, it expands its scope across additional sectors in response to the growing need for a more comprehensive and integrated approach to sustainable development. The strategy is designed around the following overarching objectives:

- Maintain a secure and cost-competitive supply of energy and water to drive Ras Al Khaimah's sustainable development.
- Protect and enhance the environment to preserve Ras Al Khaimah's unique natural heritage and support a high quality of life for residents.
- Reduce greenhouse gas emissions to support competitiveness of Ras Al Khaimah's economy in a low-carbon global market.

The RIS Strategy 2050 is closely aligned with the UAE's national priorities and long-term sustainability ambitions, including the UAE Net Zero 2050 initiative, the UAE Energy Strategy 2050, and the National Hydrogen Strategy.

At the emirate level, the strategy supports Ras Al Khaimah's Vision 2030 by embedding sustainability principles into economic growth, industrial development, tourism and urban expansion, thereby reinforcing the emirate's competitiveness and attractiveness as a destination for investment, residents and environmentally conscious tourism. It also aligns with key environmental priorities, including air quality, water and soil management, and biodiversity conservation, contributing to the long-term well-being of communities.

The strategy supports modernisation of the built environment through sustainable design and materials, energy efficiency, renewable energy and smart technology integration, meant to reduce operating costs, increase environmental resilience and improve quality of life. Key drivers of change in this field are the Green Building Regulations, including Barjeel, and the guidelines for sustainable communities, including Rafah and the Outdoor Thermal Comfort guidelines.

In line with federal net-zero commitments, including those associated with the UAE Consensus (tripling renewable energy capacity and doubling the rate of energy efficiency improvements by 2030), the strategy supports the transition to cleaner energy systems. This will be achieved through the deployment of utility-scale and distributed renewables, complemented by energy storage, contributing to the UAE's target of achieving 50% clean energy by 2050. The strategy also aligns with the UAE's ambition to reduce industrial emissions and advance hydrogen development, further supporting the energy transition at the national and emirate level.

Maintain a cost-competitive energy & water supply

Protect Ras Al Khaimah's natural heritage

Reduce greenhouse gas emissions

INTERNATIONAL AGREEMENTS

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Paris Agreement (2016)
Including UAE's commitments and revised UAE NDC 3.0, 2024

COP28 UAE

COP28 (2023)
Including commitments to triple renewables capacity and double energy efficiency by 2030

UAE FEDERAL STRATEGIES

وزارة الصناعة والتكنولوجيا المتقدمة
MINISTRY OF INDUSTRY & ADVANCED TECHNOLOGY

Operation 300bn

وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE

UAE Energy Strategy 2050

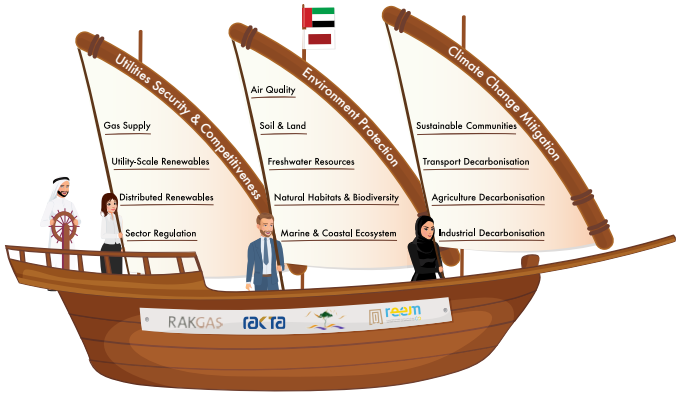
وزارة التغير المناخي والبيئة
MINISTRY OF CLIMATE CHANGE & ENVIRONMENT

UAE Net Zero 2050 Strategy

RAS AL KHAIMAH STRATEGIC PLANS

Ras Al Khaimah Vision 2030
Long-term priorities and goals for Ras Al Khaimah in various focus areas

Energy and Environment



Ras Al Khaimah Integrated Sustainability Strategy 2050

Figure 1: Summary of RIS Strategy alignment

Benefits of RIS Strategy

The benefits of the RIS Strategy span multiple dimensions and extend over several decades, well beyond the 2050 planning horizon.

Social Benefits

Implementation of the RIS Strategy will further strengthen Ras Al Khaimah's reputation at both national and international levels as a leader in climate action and sustainable development, supporting the UAE's broader climate commitments. By improving air, soil, and water quality and fostering a sustainable built environment, Ras Al Khaimah will become an increasingly attractive place to live and work. The strategy will support local capacity-building, technological advancements, increased awareness and employment opportunities across various sectors.

Economic and Market Benefits

The RIS Strategy will drive economic resilience, market growth, and private sector development by lowering energy and water costs across all consumer segments, and reducing dependence on coal, petroleum, and natural gas.

This will help strengthen Ras Al Khaimah's competitiveness while reducing exposure to volatility in global energy markets.

The strategy will also stimulate local markets for energy efficiency and renewable energy products and services, contributing to GDP growth and creating new business opportunities. Energy-efficient buildings are expected to gain value, gradually reflecting in higher property prices and rental premiums while sustainability measures across industrial, commercial, and tourism sectors are expected to improve operational efficiency and aid cost optimisation. Ras Al Khaimah also has the potential to leverage its strong industrial base to lead in green cement production, and position itself as a frontrunner in sustainable construction materials and technologies.

Environmental, Health & Safety Benefits

The RIS Strategy will enhance living and working conditions in Ras Al Khaimah by fostering a healthier indoor and outdoor environment while improving safety. Key environmental benefits include improved air quality, freshwater conservation, enhanced waste management practices, and the protection of terrestrial and marine ecosystems. The strategy also supports biodiversity conservation through the use of native plant species and proactive measures to develop and manage protected areas, providing a safe habitat for endangered species.

Technological Benefits

The RIS Strategy supports the adoption of economically viable green technologies, most notably energy efficiency technologies for buildings and industrial facilities, renewable energy technologies, and efficient transportation technologies. It also encourages academic research, commercial studies, and pilot projects focused on emerging technologies in related fields.

RIS Strategy Governance

A dedicated organisational set-up has been established to ensure effective strategy implementation. This includes Reem, RAK Sustainability Committee, and the entities responsible for the implementation of each of the programmes and initiatives of the RIS Strategy.

Reem

Reem, the Sustainable Energy Sector of Ras Al Khaimah Municipality, is the government office dedicated to driving and reporting on implementation and continuous update of the RIS Strategy. Its main organisational functions are shown in Figure 2.

Figure 2: Main functions of Reem

RAK Sustainability Committee

Successful implementation of the RIS Strategy requires a dedicated organisational framework to ensure efficient and timely execution. This includes establishing the RAK Sustainability Committee and designating government entities responsible for delivering each programme and initiative within the strategy as mandated by Amiri Decree No. 8 of 2025.

The committee meets periodically to discuss the status of strategy implementation and the development of new initiatives. The Chairperson of the committee is HE Munther Mohammed bin Shekar Al Zaabi, Director General of Ras Al Khaimah Municipality.

Members of RAK Sustainability Committee

HE Munther Mohammed bin Shekar al Zaabi
Director General,
Ras Al Khaimah Municipality,
Chairman

HE Dr. Mohamed Yousef Almadfaei
Director General,
Environment Protection & Development Authority,
Member

HE Eng. Khaled Fadel Al Ali
Director General,
Public Services Department,
Member

HE Eng. Esmaeel Hassan Al Blooshi
Director General,
Ras Al Khaimah Transport Authority,
Member

Manu Verma
Chief Executive Officer,
RAKGAS,
Member

Nitin Johar
Chief Financial Officer,
RAK Investment and Development Office,
Member

Dr. Ali Alani
Director of Engineering Department,
Ras Al Khaimah Economic Zone,
Member

Andrea Di Gregorio
Executive Director,
Reem, Ras Al Khaimah Municipality,
Member/Secretary

Implementation Responsibilities

Each programme of the RIS Strategy is assigned to a Programme Owner, selected based on its mandate and expertise. The Programme Owner is responsible for the overall execution of the initiatives of that programme and is accountable for achieving programme targets and operational objectives.

In most cases, Supporting Entities are also identified to assist the Programme Owners through the activation of programme enablers or the execution of some initiatives within the programme. The Programme Owners and Supporting Entities are shown in Figure 3.

Pillar	Programme	Programme Owner	Supporting Entities
Utilities Security & Competitiveness	**Gas Supply Enhancement**	RAKGAS	RAK Municipality, Reem, RAKPA
	Utility Scale Renewables	RAK Municipality	Reem, EtihadWE, MOEI
	Distributed Renewables	Reem	EtihadWE, MOEI
	Sector Regulation	Reem	IDO
Environment Protection	**Air Quality**	EPDA	PSD, MOHAP
	Soil & Land	EPDA	PSD
	Freshwater Resources	EPDA	PSD, RAK Municipality
	Natural Habitats & Biodiversity	EPDA	PSD, RAK Municipality
	Marine & Coastal Ecosystem	EPDA	PSD, RAK Ports
Climate Change Mitigation	**Sustainable Communities**	RAK Municipality	RAKEZ, RAK Ports, PSD, MOIAT, EtihadWE
	Transport Decarbonisation	RAKTA	RAK Police, RAK Gas, RAK Municipality
	Agricultural Decarbonisation	EPDA	Reem, MOCCAE
	Industrial Decarbonisation	Reem	RAKEZ, RAKGAS, MOEI, MOCCAE, MOIAT

Figure 3: Programme Owners and Supporting Entities

Progress and Achievement Roadmap

Main Achievements

Significant progress has been achieved over the past decade, beginning with the first institutional setup in 2017 and the launch of the EE&R Strategy in 2018. This laid the foundation for the activation of core sustainable energy programmes between 2018 and 2020, including, for example, the Barjeel regulations for new buildings and retrofit programmes for existing buildings.

2017

Creation of Reem

2018

- Pilot waste to energy initiatives launched
- Amiri Resolution #15 of 2018 on energy management issued
- Launch of the **first government retrofit project** (Municipality buildings)
- Launch of **incentives** for ESCOs and Energy Auditors

2019

- Launch of **Barjeel**, the Green Building Regulations of Ras Al Khaimah (voluntary phase)
- Kick-off of group energy management roadmap for all government entities
- Start of **EV charging stations** installation in Ras Al Khaimah
- Kick-off of Phase 1 of the Supply Market Development Strategy
- Contracting of Solar Carport project at Ras Al Khaimah Municipality
- Completion of ISO 50001 implementation at Ras Al Khaimah Municipality

2020

- Consumer campaign **#EnergyInYourHands**
- RAK Energy Innovation Competition **(School Edition) #rakinnovates**
- Energy Management Quick-Wins Initiative
- Award of retrofit project for 37 buildings of Ras Al Khaimah government
- **First aggregated solar tender** in Ras Al Khaimah
- Launch of **Green Public Procurement** in Ras Al Khaimah

2021

- **Award of retrofit project for 101 villas** of Ritz-Carlton, Al Wadi Desert Resort
- **Pilot industrial energy audits** of cement plants
- Launch of green financing offers by **RAKBANK**
- Retrofit of **all streetlights to LED in PSD managed roads**
- Launch of **Upskill** - Ras Al Khaimah Sustainable Energy Training Programme
- Launch of **Rafah**, the guidelines for sustainable communities in Ras Al Khaimah

This was followed by a gradual expansion of the programme portfolio, leading to the launch of the RIS Strategy in 2024 and subsequent developments, including government mandates and increased efforts to address harder-to-decarbonise sectors, particularly industry and residential buildings.

2022

- Launch of green procurement initiatives (Go paperless, Single-use plastic no more)
- Outdoor thermal comfort trial installations
- Launch of **RAK Energy Innovation Competition (SME Edition) (#rakinnovates)**
- Launch of industrial audit initiative
- **1st RAK Energy Summit**
- Launch of **Manzily Energy Advice Service** and **youth educational game**
- Start of **wind resource assessment study**
- Establishment of **RAK Center for Outdoor Comfort** (RAKCOC)

2023

- **Implementation of industrial audit initiative** (50% of industrial consumption audited)
- Activation of EE&R Strategy review
- **Implementation of a home audit service (Manzily Energy Advice)** with incentives from EtihadWE (about 60 homes audited)
- Launch of the first sustainable community in Ras Al Khaimah **(Awafi Sustainable District)**
- **Activation of a wind measurement campaign**
- Close of application deadline for SME competition (over 75 participants, 25 countries)
- Wide-scale participation by Ras Al Khaimah in COP28

2024

- Launch of **RAK Integrated Sustainability Strategy 2050 (RIS Strategy)**
- 2nd RAK Energy Summit
- **Amiri Resolution #18 of 2024** on energy management
- **Amiri Resolution #19 of 2024** on green public procurement
- **Amiri Resolution #20 of 2024** on industrial audits
- Launch of **Energy Management Guidebook**
- Development of **Outdoor Comfort Guidelines**
- Award of the 1st RAK Energy Innovation Competition (SME Edition)

2025

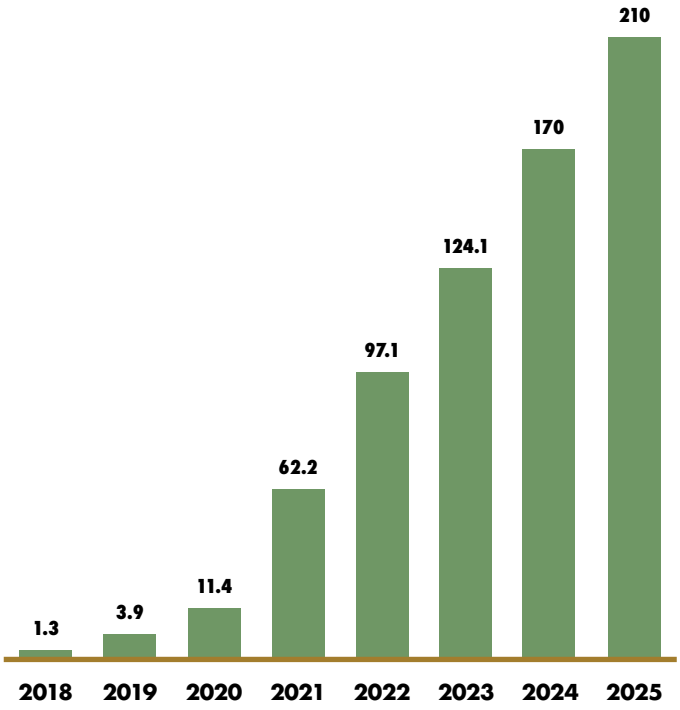
- Launch of 2nd cycle of RAK Energy Innovation Competition (SME Edition)
- Implementation of Resolution # 18 of 2024 (100% participation)
- Implementation of Resolution # 19 of 2024 (~ 95% participation)
- Implementation of Resolution # 20 of 2024 (~ 70% consumption audited, 75% + participation)
- Completion of **Cement Decarbonisation Framework** for Ras Al Khaimah
- Extension of wind measurement to a second site
- Completion of Phase 1 of the **Building Energy Performance Rating System** with 300 surveys
- Completion of design of **incentive program for appliances (AC units, smart thermostats, O&M)**

Implementation of the strategy has resulted in a series of achievements up until 2025, the most notable of which are:

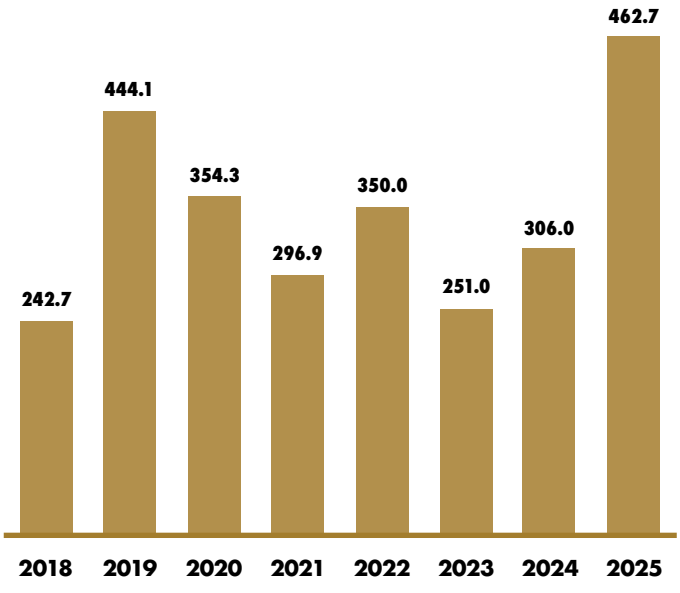
- Completion of more than 6,400 Barjeel-compliant buildings and contracting of more than 500 buildings for retrofit in Ras Al Khaimah;
- Capacity development to locally treat 100% of Ras Al Khaimah's hazardous and medical waste;
- Conversion of 100% of street lighting to LED;
- Significant improvements in wastewater treatment and landscaping, leading to 70% treated sewage effluent (TSE) reuse and replacement of 0.4 million cubic meters per year of potable water with TSE;
- Master planning of wastewater, landscaping and stormwater systems, supporting visibility of current and future urban infrastructure needs;
- Development of best-in-class government capabilities in energy management, with the government of Ras Al Khaimah being recognised as the first in the world to achieve ISO50001 certification across all of its entities;
- Completion of more than 250 home audits under Manzily Energy Advice Service;
- Installation of more than 150 EV charging stations across Ras Al Khaimah.

Energy and water savings

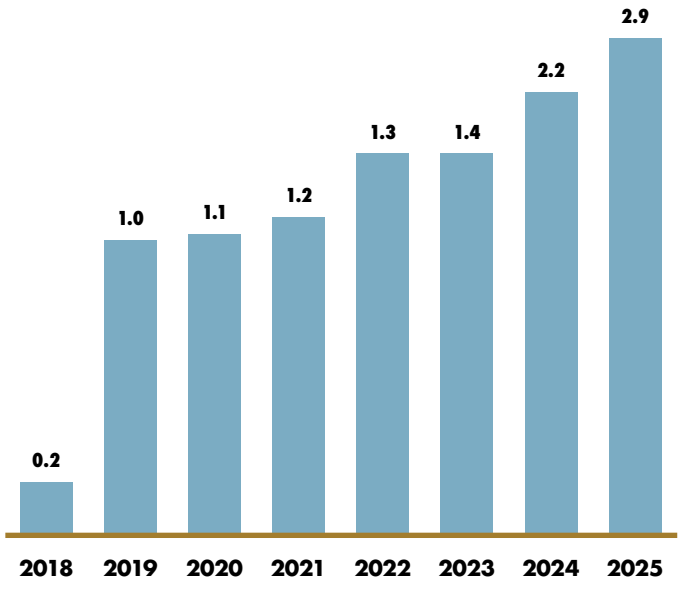
Annual Electricity Savings (GWh)



Annual Direct Fuel Savings (GWh thermal)



Annual Water Savings (million m³)



Pillar 1 Utilities Security & Competitiveness

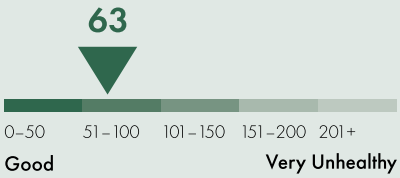
RENEWABLE ENERGY INDICATORS

RENEWABLE ENERGY IN SUPPLY MIX	ENERGY FROM WASTE	DISTRBUITED RENEWABLE ENERGY CAPACITY
6.2%	4.4%	3.2 MWp

Pillar 2 Environmental Protection

KEY ENVIRONMENTAL INDICATORS

EMIRATI AIR QUALITY INDEX (EAQI)



MARINE & COASTAL ECOSYSTEM

5 Floating water quality meters & 17 sampling sites

Extending across the entire coastline of the emirate

NATURAL HABITATS & BIODIVERSITY

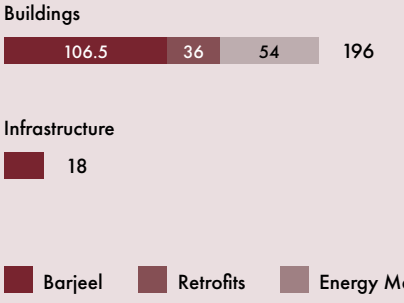
1 Announced protected area (3.2km²)

6 Areas under survey

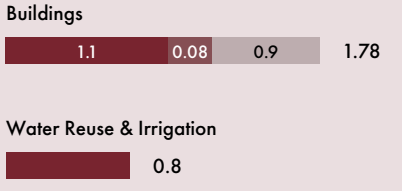
Pillar 3 Climate Change Mitigation

ANNUAL SAVINGS BY SECTOR

ENERGY SAVINGS (GWh)



WATER SAVINGS (Million m³)



TRANSPORT DECARBONISATION

7%

Share of total government fleet converted to efficient vehicles

GHG Inventory

Reem completed a GHG inventory of Ras Al Khaimah for the year 2025 in accordance with the GHG Protocol for Cities. The BASIC level of reporting was adopted for 2025, covering three main target sectors; stationary energy use (i.e. buildings), internal transportation and waste generated in Ras Al Khaimah. In addition to the requirements of the BASIC level, emissions from industrial processes (referred to as IPPU) were also estimated and included. Notable exclusions include emissions from international transportation, land use, agricultural activities and GHG capture by vegetation.

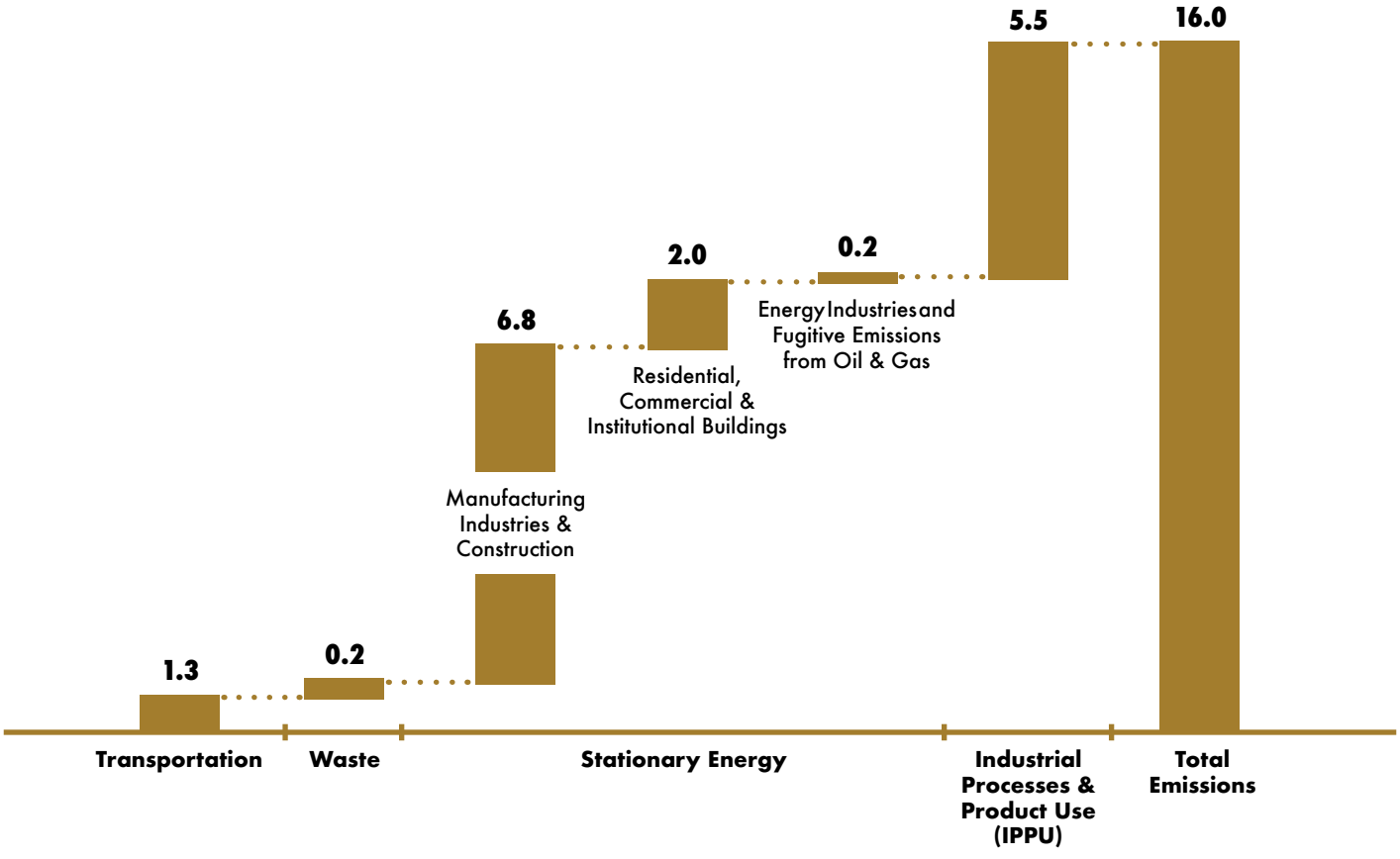
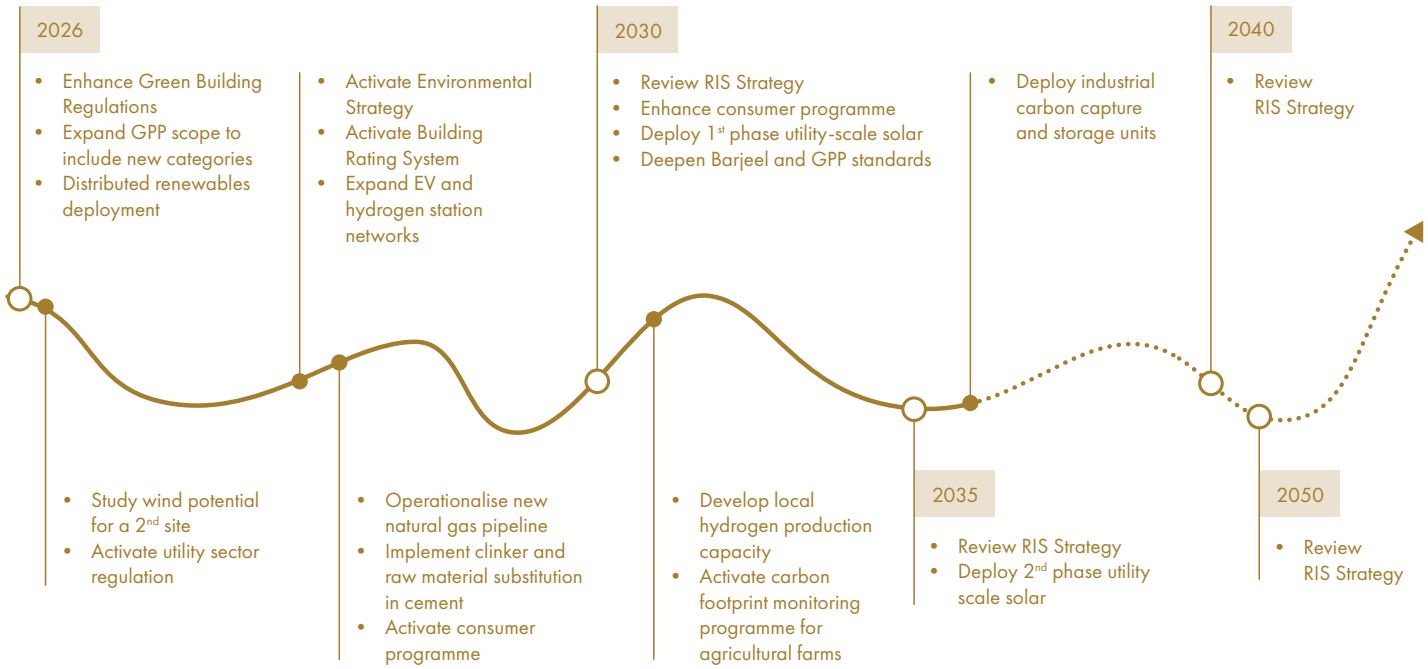


Figure 4: Carbon footprint of Ras Al Khaimah by sector in 2025 (million tonnes of CO_2 equivalent)

Roadmap for Implementation

The RIS Strategy provides a long-term roadmap to guide the emirate's transition towards a more sustainable and resilient future. Building on progress achieved to date, the roadmap outlines the key implementation phases, strategic reviews, and priority initiatives across sectors, including the gradual scale-up of regulations, infrastructure, renewable energy deployment, industrial decarbonisation, and consumer-focused programmes through 2050.



3

The Programmes

3

Pillar 1: Utilities Security & Competitiveness

Programme 1: Gas Supply Enhancement

Programme Owner: RAKGAS

Supporting Entities: Ras Al Khaimah Municipality, reem, RAK Petroleum Authority

Natural gas continues to play an important role in Ras Al Khaimah's energy landscape, serving as a reliable and lower-emission transition fuel to support the emirate's industrial growth throughout the energy transition. The Gas Supply Enhancement Programme is designed to ensure the availability of cost competitive and sources of natural gas, further strengthening Ras Al Khaimah's position as an attractive destination for industrial investment.

To meet growing demand, significant infrastructure projects are underway to expand supply capacity and diversify access.

This includes:

- **Capacity expansion of a new ADNOC pipeline from Abu Dhabi to Northern Emirates (ESTIDAMA Project)**, which will increase capacity by 30%, supporting Ras Al Khaimah's key industrial zones.
- **Potential future development of a new RAKGAS-owned pipeline (ZIYADA Project)** to enhance long-term supply resilience and debottleneck pipeline capacity constraints.

These enhancements will significantly improve gas availability for industrial consumers and support broader adoption of cleaner fuel sources across the emirate's industrial sector.

To strengthen long-term energy resilience, the programme also supports ongoing local exploration and production to supply and source locally, as well as evaluation of alternative gas sources as part of the company's gas sourcing strategy.

In parallel, efforts are being made to enhance efficiency in natural gas consumption. RAKGAS, in collaboration with Reem, is preparing a series of initiatives targeting equipment and process upgrades, ensuring that natural gas is used as effectively and sustainably as possible.

Deep Dive:
RAKPA: Exploring Natural Hydrogen and Carbon Mineralisation in South Ras Al Khaimah

This groundbreaking initiative positions Ras Al Khaimah at the forefront of natural hydrogen and carbon mineralisation research. It's a bold step toward unlocking sustainable energy solutions and supporting the UAE's journey to net zero.

Manu Verma
Chief Executive Officer
RAKGAS

About RAK Petroleum Authority

RAK Petroleum Authority (RAKPA) has a mandate which includes the protection, recovery, and commercial utilisation of petroleum resources for the economic benefit of Ras Al Khaimah. Committed to creating an investment-friendly environment, RAKPA regulates all petroleum operations and provides a framework for safe and rational exploration, development, and utilisation of resources. The Authority plays a pivotal role in the sustainable development of Ras Al Khaimah's energy sector, aligning its operations with the UAE's broader commitment to sustainable energy.

Unique Geological Setting of Hajar Mountains

In 2024, RAKPA, in association with RAKGAS, initiated a pioneering project to explore the potential of natural hydrogen occurrence and carbon mineralisation in the southern region of the emirate, situated within the Hajar Mountains. This project leverages the unique geology of the area to support the emirate's journey toward sustainability and net-zero emissions. The southern region is characterised by rocks formed over 80 million years ago. These iron-rich rocks interact with trapped water to generate natural hydrogen, with the process becoming more active at higher depths and temperatures. These rocks can also capture carbon dioxide both at the surface and below though mineralisation that permanently stores these greenhouse gases as newly formed magnesium and calcium rich carbonate rock.

Natural Hydrogen: A Clean Energy Opportunity

Natural hydrogen is produced through the chemical reactions in these rocks in a process known as serpentinisation. This process is often enhanced along rock fractures along which a vibrant green, scaly and waxy rock can be seen. The surface representation of natural hydrogen generation at depth is often seen as azure blue hyper alkaline springs.

Clean, low carbon hydrogen has the potential to become a low-cost energy source, offering a new pathway to decarbonise industrial sectors. This initiative represents some of the UAE's earliest formal explorations of natural hydrogen resources and is closely aligned with national clean energy strategies.

Carbon Capture by Mineralisation (CCM): Secure and Permanent Carbon Storage

Carbon mineralisation is the process that captures and transforms carbon dioxide into stable minerals and carbonate rocks that ensure long-term and safe storage. For high volumes, this can be injected underground through wells, although the natural process can also be observed in surface water pools on mantle rock outcrops. With major industrial CO_2 sources located nearby, this process could directly support emission reduction efforts in heavy industries such as cement and steel manufacturing.

2025 Project Highlights

- Acquired 4 deep resistivity profiles across southern RAK using Magneto Telluric (MT) surveys to identify major faults as well as serpentinised as well as unaltered mantle rocks.
- Integrated and interpreted MT lines with adjacent seismic further assess to profile the ultramafic rocks.
- Conducted structural restorations and correlations across the mountain thrust front.

Figure 5: Hyperalkaline blue pools

Figure 6: Calcium Carbonate crust trapping hydrogen bubbles

Looking Ahead

In 2026, the natural hydrogen and CCM projects are expected to advance toward pilot well planning and testing and potential partnerships with natural hydrogen exploration and stimulation companies, laying the groundwork for large-scale deployment subject to favourable results. RAKPA is also seeking potential investors and international experts for collaboration. By harnessing the emirate's unique geology, Ras Al Khaimah is positioning itself as a regional leader in innovative, and sustainable energy solutions.

Figure 7: Ultramafic rocks in Wadi Shawka

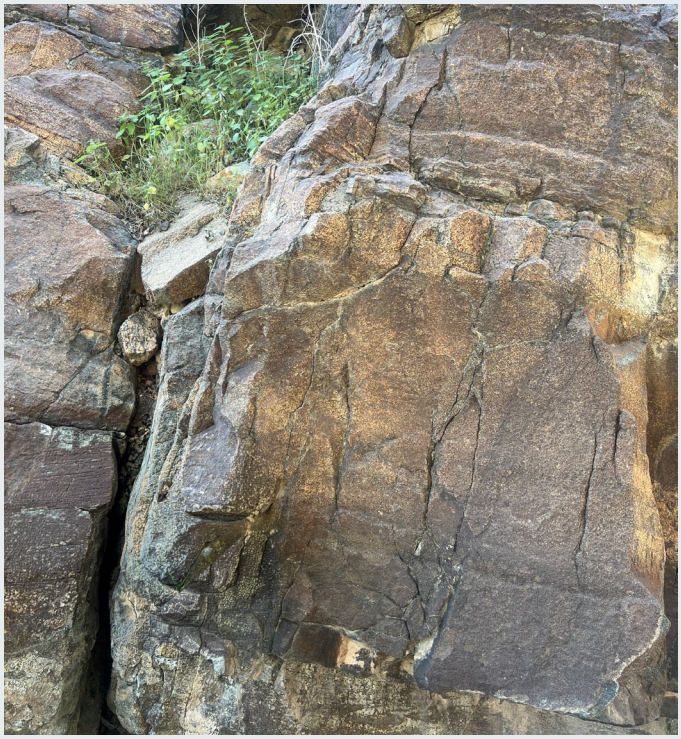


Figure 8: Iron rich mantle rocks

Programme 2: Utility-Scale Renewables

Programme Owner: بلديـــــة رأس الخيمـــــة Ras Al Khaimah Municipality

Supporting Entities: بلديـــــة رأس الخيمـــــة Ras Al Khaimah Municipality; reem; وزارة الطاقة والبنية التحتية MINISTRY OF ENERGY & INFRASTRUCTURE; EtihadWE الاتحاد للماء والكهرباء

The Utility-Scale Renewables Programme facilitates the large-scale development of Ras Al Khaimah's renewable energy resources to supply and store low-cost, clean electricity for the emirate and the UAE. Led by Ras Al Khaimah Municipality, the programme supports studies and collaborations with federal entities to expand renewable energy and storage capacity.

Pre-feasibility studies have been conducted in the mountainous areas of Ras Al Khaimah to assess the potential for pumped-hydro energy storage projects. These studies identified multiple possible reservoir pairings, with estimated power capacities ranging from several hundred megawatts to multiple gigawatts.

Figure 9: Wind measurement mast in Wadi Shawka, Ras Al Khaimah

Such solutions, particularly at larger scales, are of significant interest because they could enable the integration of a substantially higher share of renewable energy into the UAE power grid. Further studies are planned to assess these opportunities in greater depth and provide a more comprehensive evaluation of their technical, economic, and strategic feasibility.

In 2022, Reem initiated a wind resource assessment study to identify areas with high wind energy potential. The first stage, a desktop assessment, was completed, leading to the installation of a wind mast at Wadi Shawka in 2023 for on-site measurements. By 2024, the study at this site was completed, yielding promising results. Building on this momentum, in 2025, the wind mast was relocated to a 2nd site in Mamduah to further explore wind energy opportunities. At the second site, the system was integrated with LiDAR technology to measure wind speed and atmospheric conditions, using laser-based remote sensing to capture accurate wind data at different heights. Initial assessments yielded positive results, with encouraging average wind speed readings comparable to some of the highest observed in the UAE.

The potential for tidal energy along the emirate's coastline is also being evaluated. Ongoing assessments focus on the technological feasibility and long-term viability of harnessing tidal resources. As technologies continue to evolve, the emirate remains open to considering implementable solutions that align with its renewable energy and sustainability objectives.

To ensure a stable and reliable energy supply, the programme will explore additional storage solutions and more weather-independent sources, such as geothermal energy, to complement solar and wind resources.

Programme 3: Distributed Renewables

Programme Owner: بلدية رأس الخيمة Ras Al Khaimah Municipality; reem

Supporting Entities: وزارة الطاقة والبنية التحتية MINISTRY OF ENERGY & INFRASTRUCTURE; EtihadWE الاتحاد للماء والكهرباء

The Distributed Renewables Programme focuses on accelerating the deployment of distributed renewable energy technologies across buildings and industrial facilities in Ras Al Khaimah. These technologies include rooftop and carport solar photovoltaic (PV) systems, as well as other suitable distributed renewable energy solutions.

The widespread adoption of distributed renewable energy systems depends on the establishment of regulations by the Ministry of Energy and Infrastructure that enable the connection of distributed generation assets to the electricity grid. Pursuant to Federal Decree-Law No. 17 of 2022, an initial regulatory framework was implemented by EtihadWE in 2024 through the Distributed Solar System Initiative. The initiative allows eligible consumers to connect renewable energy systems to the utility grid with a capacity of up to 10% of their connected load, subject to specified technical and commercial requirements. Off-grid renewable energy systems are not subject to these regulatory limitations.

Ras Al Khaimah Municipality supports market development through awareness-raising, capacity-building, and procurement facilitation initiatives.

Workshops with market participants are often organised to clarify regulations and connect demand with supply. **Reem Solar Calculator** is an IT tool that enables property owners to assess the solar potential of their buildings, including potential energy cost savings, environmental benefits, and system feasibility.

Barjeel, Ras Al Khaimah's Green Building Regulations, incorporates solar-readiness requirements for several building categories, ensuring that new developments are designed to accommodate future solar energy installations.

In addition, Reem periodically maintains an empanelment scheme for solar contractors. The scheme is intended to achieve scale in procurement through aggregation, and ensure minimum quality standards for organisations seeking to implement solar projects with Reem's support.

Figure 10: Solar carport at Ras Al Khaimah Municipality

Deep Dive:

Bassata Desert Village: Advancing Solar-Powered Off-Grid Energy for Sustainable Desert Tourism

Our goal was to protect the unique desert environment while ensuring sustainable and efficient operations. Solar energy has allowed us to achieve energy independence, significantly reduce costs, and offer our guests an authentic, eco-friendly experience. Today, sustainability is not only part of our philosophy, but also a key driver of our business success.

Ahmed Kamal Mohamed Hafez
Owner, Bassata Desert Village

90%
Energy cost reduction

145 kWp
Installed PV capacity

450 kWh
Battery storage system

Set within the desert of Ras Al Khaimah, Bassata Desert Village offers a traditional Bedouin-inspired hospitality experience that blends cultural heritage with light adventure tourism. The site attracts families and visitors seeking an authentic desert experience, where camel rides, dune buggy excursions, and evening cultural performances contribute to a relaxed and immersive atmosphere.

Behind this experience, however, the camp originally relied entirely on diesel generators to meet its energy needs. This created a range of operational and environmental challenges, including high fuel-related operating costs, CO_2 emissions, noise pollution, and complex logistics due to its remote desert location. While the destination reflected the essence of desert tourism, its energy model was not aligned with the growing focus on sustainable concept or the evolving expectations of eco-conscious travellers.

From diesel dependency to clean energy independence

The transition towards a cleaner energy model was driven by a broader vision to align tourism development with Ras Al Khaimah's sustainability strategy. The objective was not only to reduce environmental impact, but also to enable a more resilient and future-ready tourism operation.

A key part of this shift was the adoption of distributed solar energy as the foundation of the site's power system. This approach enabled energy to be generated and consumed locally, reducing reliance on fuel-based generation and supporting a more sustainable tourism model. The decision aligned with broader sustainability objectives in the emirate, while enhancing operational efficiency.

Engineering the Solution for a Remote Desert Environment

To ensure the success of the transition, a detailed technical assessment was conducted to fully understand the site's operational requirements. This analysis formed the basis of a tailored system design that aligned with real consumption patterns.

The engineering approach focused on optimising system sizing, particularly in relation to photovoltaic capacity and battery storage, ensuring a balanced relationship between energy generation and demand. Special emphasis was placed on avoiding system oversizing, improving efficiency, and maximising long-term performance and cost-effectiveness.

Given the harsh desert environment, system resilience was also a critical design consideration. High temperatures, dust exposure, and intense solar radiation were all taken into account in the selection of appropriate technologies and materials to ensure reliable long-term operation.

Delivering a Reliable Off-Grid Solar System

The result is a system with an installed PV capacity of approximately 145 kWp, supported by a battery storage system of around 450 kWh. Configured as an off-grid system with integrated storage, it also includes a diesel generator as a backup source, used only in exceptional cases.

Figure 11: Solar installation at Bassata Desert Village camp

The system now supplies all key operational loads across the camp, including accommodation units, kitchen and common areas, water pumps, cooling systems, and outdoor lighting. Battery storage ensures continuous energy availability during night time, while intelligent energy management systems optimise overall system performance.

Significant cost reduction and economic impact

One of the most important outcomes of the project is the substantial reduction in the cost of electricity generation. Energy costs prior to installation were approximately 2.0–2.2 AED/kWh, compared to approximately 0.2 AED/kWh following solar implementation, representing a reduction of up to 90%.

In addition to direct savings, the system provides fixed and predictable energy costs, protection against fuel price volatility, and the complete elimination of fuel transportation logistics. This creates a highly stable and scalable operational model for the investor.

Operational advantages and guest experience

The solar system significantly improved overall operations by ensuring energy independence, eliminating fuel logistics and associated risks, enabling silent and clean operation that enhances guest comfort, and reduces maintenance requirements. The system is nearly maintenance-free, requiring only periodic panel cleaning due to desert dust conditions, and is fully monitored through an online system, enabling continuous performance tracking and optimisation.

Overall, the transition to a "green resort" has delivered clear business benefits, including market differentiation confirmed by positive guest feedback, and higher occupancy potential driven by sustainability-focused tourism demand.

Programme 4: Sector Regulation

Programme Owner: بلديـــــة رأس الخيمـــــة Ras Al Khaimah Municipality

reem فريق رأس الخيمة لكفاءة الطاقة والطاقة المتجددة RAK ENERGY EFFICIENCY AND RENEWABLES TEAM

Supporting Entity: IDO Investment & Development Office of Ras Al Khaimah

Reliable electricity and water services are essential for the well-being of residents and businesses. The Sector Regulation Programme was developed to ensure these services remain efficient, fair and transparent.

Under this programme, Ras Al Khaimah is working to establish clear rules and standards for private electricity, water, and district cooling providers operating in the emirate to protect consumers, promote investment, and ensure high-quality service across the sector.

The programme is built on three key actions:

- **Developing a Local Regulatory Framework** Establishing clear guidelines for how private utility providers are licensed, prices are set, and service quality is maintained.
- **Direct Regulation of Private Utilities** Implementing oversight to ensure that the provision of electricity, water, and district cooling is secure and meets the necessary standards.
- **Collaborating with MOEI on Federal Regulations** Engaging with the UAE Ministry of Energy & Infrastructure (MOEI) to ensure alignment with federal regulations such as those regarding EtihadWE, and to access regulatory support where necessary.

3

Pillar 2: Environment Protection

Programme 5: Air Quality

Programme Owner: هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Supporting Entity: وزارة الصحة ووقاية المجتمع
MINISTRY OF HEALTH & PREVENTION

The Air Quality Programme focuses on monitoring and improving air quality across Ras Al Khaimah, with a particular emphasis on industrial areas such as Al Ghail, Khor Khwair, and the Al Hamra Industrial Zone.

The Environment Protection & Development Authority (EPDA) has deployed eight air quality monitoring stations strategically located across the emirate including key industrial zones, commercial sites, and residential areas. Additionally, industrial entities have integrated 17 monitoring stations within their facilities, directly linked to EPDA's monitoring system. These stations provide real-time data, allowing for continuous air quality monitoring across the emirate. Emirati Air Quality Index (EAQI) is a key tool used in assessing air quality. The EAQI is designed to provide clear and accessible information about air pollution levels, making it easier for businesses and policymakers to understand and respond to air quality conditions.

Looking ahead, EPDA has outlined a series of key initiatives to further enhance air quality within the emirate, which includes plans to develop an air quality modelling tool to predict air quality patterns throughout the emirate and identify pollution hotspots. Based on the insights from the tool, EPDA will develop and implement region-specific regulations along with efficient enforcement methods to mitigate pollution levels as part of a comprehensive environmental strategy.

Plans are also underway to expand the air quality monitoring network across Ras Al Khaimah, enabling broader coverage and a more comprehensive understanding of air quality trends throughout the emirate. Through these initiatives, Ras Al Khaimah aims to enhance its air quality management capabilities, supporting public well-being and long-term environmental sustainability.

Figure 12: Air quality monitoring systems across Ras Al Khaimah

Programme 6: Soil & Land

Programme Owner: هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Supporting Entity: دائرة الخدمات العامة
Public Services Department

Soil quality is fundamental to ecosystem health, agriculture, and sustainable land use. Pollution and degradation not only threaten biodiversity and food production but also contribute to land instability and contamination of water sources. Addressing these challenges is critical to ensuring long-term environmental sustainability in Ras Al Khaimah.

The Soil & Land Programme aims to enhance the emirate's ability to monitor and reduce soil pollution while improving soil quality. By strengthening data collection, analysis, and regulatory measures, the programme will help safeguard natural resources and mitigate the impacts of urbanisation and industrial activity.

In 2025, EPDA will begin a comprehensive study to gather and maintain soil quality data, which will unfold in three phases.

Phase 1 will involve conducting research and gathering existing data. In Phase 2, the focus will shift to identifying potential sampling locations, creating detailed sampling plans and analysing data to detect trends. In Phase 3, the insights from monitoring and modelling will guide targeted actions to curb littering and waste dumping in key areas.

EPDA is set to develop a comprehensive environmental strategy in collaboration with Public Services Department (PSD). The strategy will explore the development and implementation of targeted regulations alongside efficient enforcement mechanisms to reduce pollution levels.

Programme 7: Freshwater Resources

Programme Owner: هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Supporting Entities: بلدية رأس الخيمة
Ras Al Khaimah Municipality

دائرة الخدمات العامة
Public Services Department

The Freshwater Resources Programme aims to strengthen the monitoring and management of groundwater and surface water resources across Ras Al Khaimah, enhancing the emirate's capacity to safeguard their long-term sustainability and quality. The programme also supports improved urban water management through initiatives to enhance rainwater drainage and promote the more efficient use of water resources within urban areas.

To date, the programme has primarily focused on establishing and expanding its water monitoring network. EPDA utilises farmers' wells to collect groundwater data and track changes in resource conditions over time.

A key element of the programme's future development is the implementation of an environmental strategy that will incorporate a comprehensive framework for freshwater and groundwater management.

This framework will address water quality, resource availability, and long-term sustainability, while establishing the regulatory mechanisms and management tools required to support effective governance and informed decision-making.

Through these efforts, the programme seeks to ensure that Ras Al Khaimah's water resources are managed sustainably and effectively, securing their availability and ecological integrity for future generations.

Programme 8: Natural Habitats & Biodiversity

Programme Owner: هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Supporting Entities: بلدية رأس الخيمة
Ras Al Khaimah Municipality

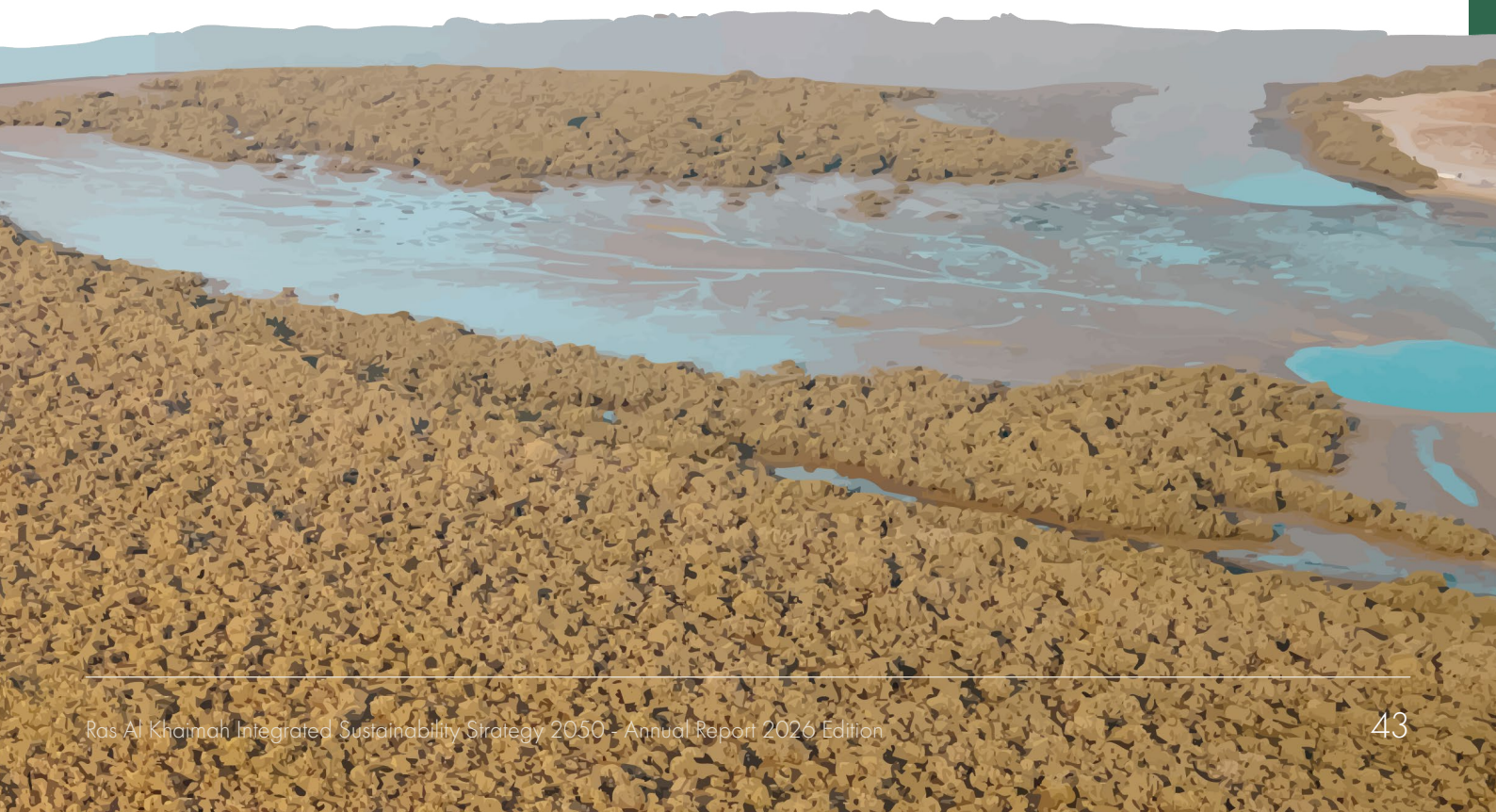
دائرة الخدمات العامة
Public Services Department

The Natural Habitats & Biodiversity Programme is focused on conserving the emirate's unique ecosystems. Currently, Ras Al Khaimah has one officially designated protected area, with six additional sites proposed for protection. As urban development accelerates, there is an increasing need to protect key species such as the hawksbill turtle, green turtle, and Emirati leaf-toed gecko *(Asaccus caudivolvulus)*, as well as ecologically significant areas like Khor Al Hulaiyla and Wadi Mazraa.

Khor Al-Muzahmi Reserve represents a milestone in the emirate's conservation efforts and serves as a leading example of integrated conservation and sustainable development. Established in 2018 under Amiri Decree No. (16) of 2018, it became Ras Al Khaimah's first officially designated protected area. Its declaration coincided with the UAE's hosting of COP13 to the Ramsar Convention on Wetlands, reinforcing the nation's commitment to environmental conservation.

Located 15 km south of Ras Al Khaimah city, the 3.2 km² reserve comprises intertidal mudflats and thriving grey mangrove *(Avicennia marina)* forests that support rich biodiversity. The ecosystem provides critical breeding grounds for marine life, including mudskippers and several crab species, and has also recorded 475 tagged green turtles, underscoring its ecological significance.

To strengthen restoration efforts, the EPDA established a dedicated mangrove nursery within the reserve with a capacity of up to 100,000 seedlings. The programme aims to plant 100,000 mangroves by 2030, expanding coverage by 66 hectares and sequestering approximately 667 tonnes of CO_2 annually. Beyond carbon capture, mangroves enhance coastal resilience, reduce erosion, improve water quality, and provide essential habitats for marine species.



In parallel, Khor Al-Muzahmi is emerging as a model for sustainable tourism and community engagement. In 2025, a strategic eco-tourism partnership was initiated with RAK Properties to support the phased development of sustainable visitor experiences at the reserve.

While the reserve is not yet open to the general public, controlled access has been granted to select entities, including schools, universities, and corporate groups, for activities such as kayaking and birdwatching. Engagements during the year included partnerships with organisations such as Dubai National Air Travel Agency (dnata) and RAK Ceramics.

Planned infrastructure includes a reception area, a marine museum, a turtle conservation pool, and a walkway extending more than one kilometre towards the sea. The walkway will feature a range of activity stations, including an open-air cinema, birdwatching areas, a scenic observation platform, and designated relaxation spaces. A dedicated kayaking station, complete with marina facilities, is also under development.

Once infrastructure works are completed, the reserve is expected to gradually open to individual visitors, with full public access anticipated by 2027.

Looking ahead, surveys and assessments are ongoing across several proposed protected sites, including Al Rams Hulaila, Jebel Jais, and Wadi Beeh. One new protected area is expected to be designated by 2026, further expanding Ras Al Khaimah's conservation network and reinforcing its long-term environmental strategy.

The programme scope also includes ongoing surveys to assess existing flora and fauna, initiatives to reintroduce locally extinct species, and development of protected areas to ensure the survival of endangered resident species. Ras Al Khaimah Municipality is also working on implementing night-sky protection regulations, which will further support sensitive habitats over the long term.

The development of an environmental strategy will further refine the programme by identifying additional conservation priorities and outlining a comprehensive roadmap for implementation. These efforts reflect Ras Al Khaimah's commitment to preserving its unique biodiversity for future generations.

Deep Dive:

Al Rams Coastal Lagoon: A Model for Sustainable Development and Nature-Based Solutions

هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Al Rams Coastal Lagoon represents a remarkable convergence of environmental stewardship and sustainable development. With over 241 species thriving within its ecosystems, from juvenile fish and sea turtles to diverse bird populations, this lagoon is a living testament to nature's resilience. Its value extends far beyond biodiversity. Through innovative ecotourism initiatives and community-led conservation efforts, we are demonstrating that protecting our natural heritage and creating economic opportunities for local communities are not competing priorities but complementary goals. The Al Rams model proves that when we invest in nature-based solutions, we invest in climate resilience, blue carbon storage, and the long-term prosperity of our people.

HE Dr. Mohamed Yousef Almadfaei
Director General,
Environment Protection & Development Authority

241
Species recorded across lagoon and wetlands

6,600+ MTC
Carbon stored in mudflats

0.55 km²
Sabkha with microbial mats

Under the leadership of the Environment Protection & Development Authority (EPDA) and in collaboration with its partners, the Al Rams coastal lagoon is evolving into a model for integrated environmental development, where conservation, cultural heritage, community, and innovation work together to strengthen environmental stewardship while supporting local livelihoods.

These initiatives reflect a broader vision centred on nature-based solutions, where protecting and restoring ecosystems contribute to climate resilience, biodiversity conservation, and sustainable economic opportunities.

Preserving the Rich Biodiversity of Al Rams

Located along Ras Al Khaimah's northern coastline, the Rams coastal lagoon is part of a diverse landscape that includes seagrass meadows, mangroves, tidal flats and shallow marine habitats. These ecosystems support marine life and contribute to water quality, sediment stability, and blue carbon storage.

Scientific studies and fieldwork conducted in partnership with Emirates Nature-WWF, including underwater footage and environmental DNA (eDNA) analysis, have strengthened the understanding of the lagoon's ecological value. Surveys confirm a diversity of marine habitats and ecologically important species, including juvenile fish, rays, seabirds, crustaceans and sea turtles, such as the hawksbill turtle, that use the lagoon as feeding and nursery grounds.

Ongoing research and pilot restoration activities are testing practical methods to drive seagrass recovery and improve habitat conditions. These efforts have generated the baseline ecological data and habitat maps needed to support evidence-based conservation planning and sustainable coastal management in Al Rams.

Working Hand-in-Hand with the Community

Community engagement lies at the heart of the development vision for Al Rams. Majlises, interviews, surveys, and local events were organised to co-ideate solutions with communities. More than 400 residents, including farmers, women, entrepreneurs, and youth, shared their vision for the future of Al Rams.

In addition, EPDA organised coastal litter surveys, biodiversity assessments, mangrove planting, and volunteer initiatives in partnership with Emirates Nature-WWF's Leaders of Change programme. These involved residents, youth groups and environmental volunteers, helping to raise awareness of the lagoon's value and foster a strong culture of environmental stewardship.

Unlocking Socioeconomic Growth through Ecotourism

The lagoon's natural landscapes provide a unique setting for ecotourism initiatives that celebrate Ras Al Khaimah's natural heritage while contributing to the emirate's long-term vision for sustainable growth.

Figure 13: Field sampling and environmental monitoring activities

As part of this ambition, Emirates Nature-WWF and the Emirates Council for Balanced Development are developing an Eco trail that connects Al Rams' mountainous landscapes, farmlands, and coastal lagoon.

The Eco trail will offer visitors an immersive experience of the area's rich environment and traditions, while promoting responsible tourism, strengthening environmental awareness, and creating economic opportunities for local businesses.

By combining scientific research with action on the ground, Al Rams demonstrates how natural ecosystems can support long-term environmental and social benefits.

Facts and Figures

The lagoon supports a rich and diverse ecosystem, with at least 241 species recorded within and around its lagoon and brackish wetlands. This includes 171 bird species, as well as a variety of plants, molluscs, fish, insects, crabs, other marine invertebrates, and marine reptiles.

Its mudflats also play a significant role in climate regulation, storing over 6,600 metric tons (MT) of carbon within the top 50 cm of soil. In addition, the lagoon contains approximately 0.55 km² of sabkha with microbial mats, contributing to its ecological complexity.

The lagoon also provides habitat for seagrass species such as *Halophila ovalis* and *Halodule uninervis*, as well as several macroalgae species, which play an important role in supporting marine biodiversity and enhancing coastal ecosystem stability and carbon storage.

Figure 14: Al Rams coastal lagoon, Ras Al Khaimah

Figure 16: Marine biodiversity in Al Rams lagoon

Figure 15: Halophila ovalis seagrass

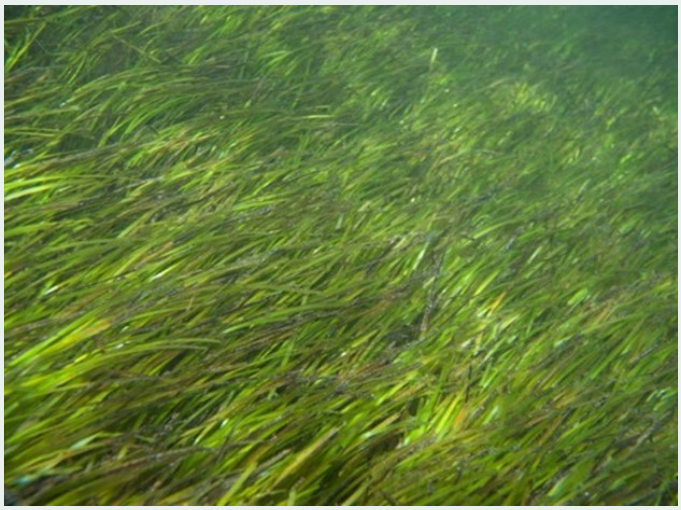


Figure 17: Halodule uninervis seagrass

Programme 9: Marine & Coastal Ecosystem

Programme Owner: هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Supporting Entities: دائرة الخدمات العامة
Public Services Department

RAK PORTS

The Marine & Coastal Ecosystem Programme is dedicated to protecting and sustaining the emirate's marine ecosystems. This initiative focuses on monitoring and studying water quality, biological indicators, and hydrological patterns to ensure the long-term health of coastal and marine environments.

As part of this programme, several key monitoring activities have already been undertaken. Existing seawater monitoring efforts by EPDA, RAK Ports, and Marjan are being integrated into a centralised seawater monitoring framework. Marjan also contributes marine water quality data through its environmental impact assessment activities and operates its own monitoring station. In parallel, a detailed study on coastal water characteristics is underway, involving data collection from 5 dedicated marine meters and over 17 sampling sites covering inland and coastal waters. These efforts are supported by marine water quality meters, that continuously monitor key parameters such as pH, dissolved oxygen, salinity, and nutrient levels, providing real-time data to strengthen water quality assessments.

The monitoring framework has now been expanded to include the analysis of microbial content in addition to physical and chemical seawater parameters. Seawater samples collected from designated sites are analysed in laboratories. This approach generates more comprehensive datasets that support the development of a Water Quality Index. The WQI provides an important reference for assessing whether marine water quality remains within established threshold limits, while also supporting the long-term biodiversity strategy of Ras Al Khaimah.

Looking ahead, the development of an environmental strategy is underway, which will guide EPDA in creating tailored regulations and implementing a structured roadmap for marine and coastal ecosystem sustainability. The enhanced monitoring framework and development of the Water Quality Index will provide a strong scientific foundation for this strategy. Future initiatives may also include the deployment of advanced monitoring technologies and habitat restoration projects to further strengthen marine conservation efforts in Ras Al Khaimah.

Figure 18: Floating water quality meter deployed to monitor marine conditions in Ras Al Khaimah

Deep Dive:
Marine & Coastal Ecosystem – Saleh Offshore Wells Plug & Abandonment (P&A) Campaign

The successful completion of the Saleh Offshore P&A Campaign reflects a deep commitment to responsible operational stewardship and long-term environmental protection. By systematically addressing legacy offshore wells, we have reduced environmental and residual risk while upholding the highest standards of safety, asset integrity, and regulatory compliance. This approach is central to how we manage our assets and support Ras Al Khaimah's broader sustainability objectives.

Manu Verma
Chief Executive Officer,
RAKGAS

The successful completion of the offshore Saleh Field Plug & Abandonment (P&A) Campaign marked a major environmental stewardship milestone for Ras Al Khaimah. The project addressed risks of exposure from legacy offshore oil and gas wells and associated production infrastructure, significantly reducing long-term environmental and safety risks in marine operating areas.

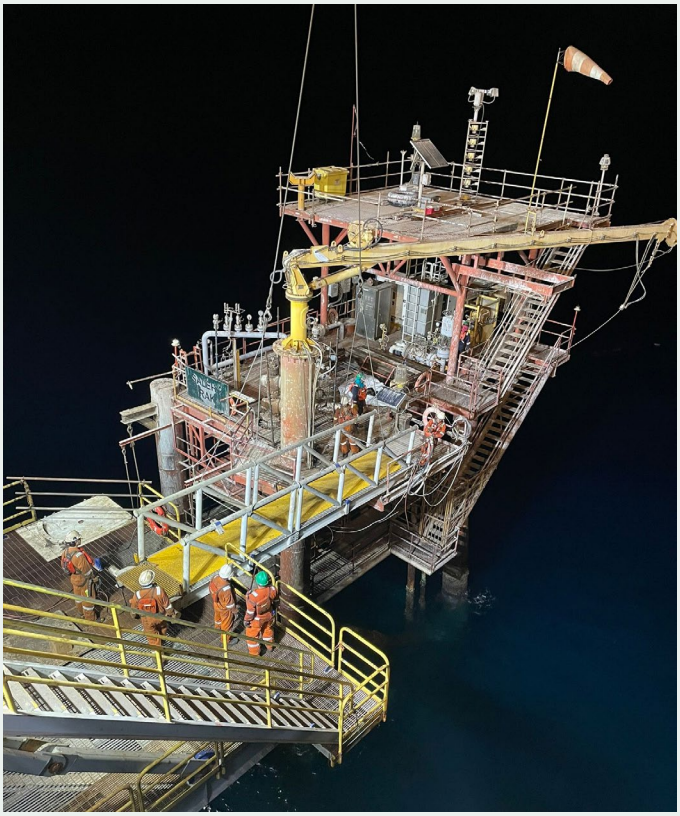
Executed throughout 2025, the campaign focused on the permanent abandonment of all offshore wells in the Saleh field, in full compliance with environmental and safety regulations and international best practices. The project forms a core component of Ras Al Khaimah's wider commitment to protecting marine and coastal ecosystems while responsibly managing legacy energy assets.

Key Environmental and Sustainability Outcomes:

- Elimination of long-term environmental liabilities through permanent abandonment and isolation of all offshore production wells;
- Cleaning and removal of all residual hydrocarbons and chemicals from offshore platforms and associated assets;
- Protection of marine and coastal ecosystems by reducing potential leak and spill risks;
- Application of industry best-practice abandonment standards using qualified long-term barrier systems;
- Minimal environmental footprint through a low-impact offshore execution model that avoided any venting or flaring of hydrocarbons and the use of hybrid electric support vessels to reduce fuel consumption;
- Waste minimisation and responsible disposal using approved waste disposal routes.

Environmental Management and Assurance

Environmental protection considerations were embedded throughout planning and execution. Environmental risk assessments were completed in advance, with mitigation measures implemented to manage the impact of offshore activity. The campaign was executed under established HSE and environmental management systems, a formal environmental impact assessment approved by EPDA, and regular regulatory oversight.



Contribution to Long-Term Sustainability Objectives

The successful completion of the Saleh P&A Campaign supports the Ras Al Khaimah Integrated Sustainability Strategy 2050 by protecting marine environments, responsibly managing legacy energy assets, and strengthening regulatory and technical capability for future offshore decommissioning activities.

3

Pillar 3: Climate Change Mitigation

Programme 10: Sustainable Communities

Programme Owner: بلديـــــة رأس الخيمـــــة
Ras Al Khaimah Municipality

Supporting Entities: وزارة الصناعة والتكنولوجيا المتقدمة MINISTRY OF INDUSTRY & ADVANCED TECHNOLOGY; دائرة الخدمات العامة Public Services Department; rakez RAS AL KHAIMAH ECONOMIC ZONE; EtihadWE الاتحاد للماء والكهرباء; RAK PORTS

Buildings play a central role in Ras Al Khaimah's sustainability goals, with energy and water use in the built environment accounting for a significant share of overall consumption. High building performance is essential not only for reducing emissions and conserving resources, but also for lower operating costs, and improving occupants' comfort and quality of life.

The Sustainable Communities Programme addresses this sector through a series of coordinated initiatives. Ras Al Khaimah's Green Building Regulations, Barjeel, have been in effect since 2020, setting minimum sustainability standards for new buildings. In parallel, an active retrofit programme is improving the energy and water efficiency of existing buildings, with hundreds of them already upgraded and many more identified for future improvement. The programme also promotes energy management practices and the adoption of high-efficiency equipment across the residential, commercial and government sectors.

Building on these efforts, the programme is expanding its scope to take a more holistic approach that goes beyond individual buildings to include communities and supporting infrastructure.

Building codes will be updated periodically, while community-wide sustainability guidelines will support the creation of energy-efficient and resilient developments. A key focus is also the expansion of retrofit efforts to all building types.

To further embed sustainability in public sector operations, the programme also promotes green procurement through the development and implementation of dedicated guidelines for government entities.

Green Building Regulations (Barjeel)

Barjeel, the Green Building Regulations of Ras Al Khaimah, sets minimum sustainability standards for new buildings in the emirate. Buildings permitted under these standards are expected to consume 30% less energy and water compared to a typical building in Ras Al Khaimah, resulting in lower utility bills.

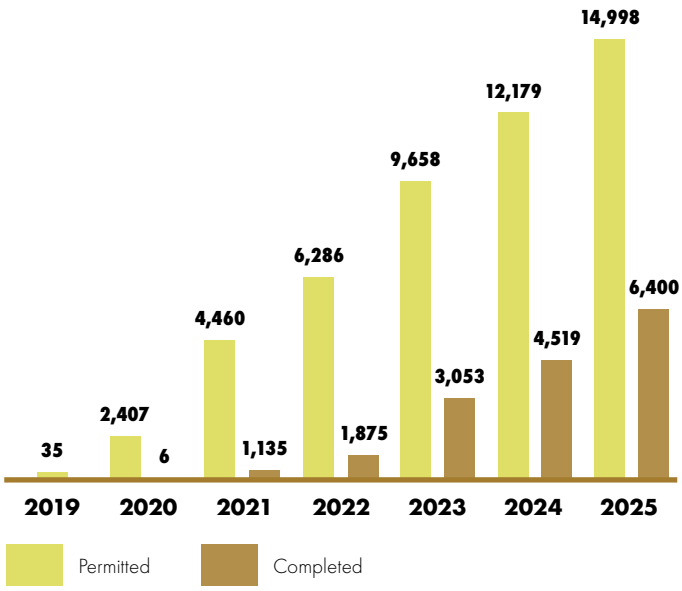
As of 2025, more than 6,400 buildings have been completed in compliance with the Barjeel, while a further 7,500 have been approved for construction in the coming years. Enhancements to the regulation were also introduced to resolve implementation issues and improve process efficiency.

In 2023, the development of a building energy performance rating system was initiated. This system will incentivise adoption of higher standards in both new and existing buildings by providing recognition to highly energy-efficient buildings in the market. The first phase of the project, which included the development of the regulatory approach followed by sample surveys and benchmarking, has been completed. The second phase is underway for the development and calibration of the rating tool.

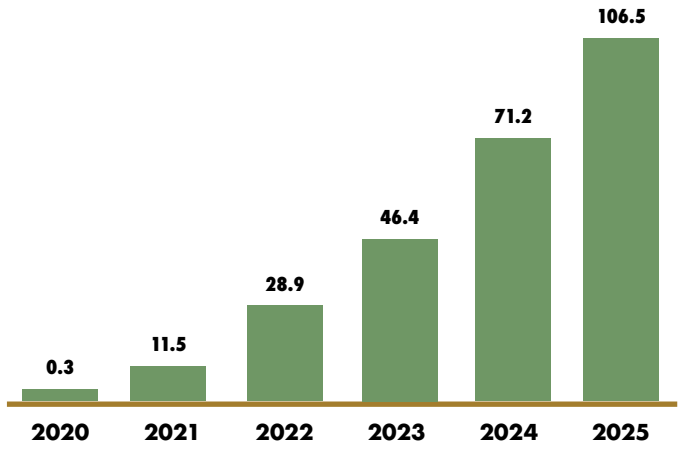
Barjeel reflects Ras Al Khaimah's strategic commitment to sustainable development and responsible urban growth. By setting clear standards for energy efficiency, water conservation, and environmental performance, Barjeel ensures that every new building contributes meaningfully to our long-term vision for a low-carbon, resource efficient future. It stands as a foundational pillar in our journey towards environmental resilience and economic sustainability.

Aaesha Alshehhi
Executive Director,
Urban Development Sector,
Ras Al Khaimah Municipality

Cumulative Number of Barjeel-Compliant Buildings



Annual Electricity Savings (GWh)



Annual Water Savings (000's m³)

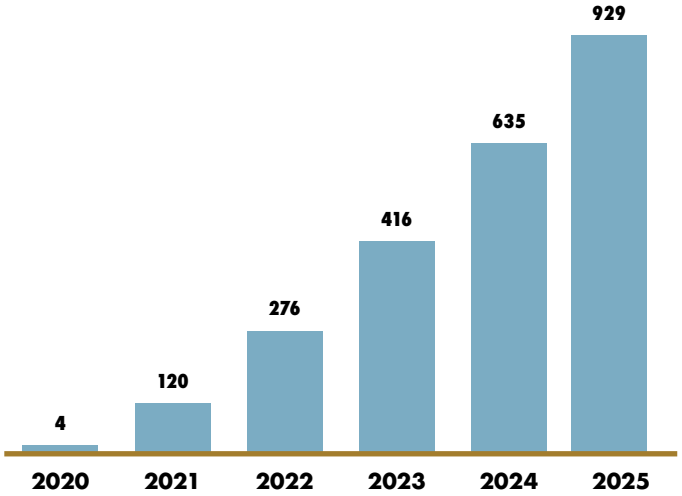


Figure 19: Main results of Barjeel

Building Retrofits

The Building Retrofits initiative was established to deliver energy savings in existing buildings through upgrades focused on major energy consuming systems. The initiative has developed rapidly, following a first project in 2018. Over 400 buildings have been retrofitted by the end of 2025.

The market is served by a group of reputable ESCOs. As of 2025, 14 accredited ESCOs participated in retrofit project tenders managed by Reem.

Completed retrofits so far include most building types, such as government offices, malls, supermarkets, hotels, hospitals, private offices, schools, mosques and residential properties. These projects demonstrate strong economic benefits with average savings exceeding 25% and payback periods averaging less than 4 years. The prevalent contract model in government projects is a guaranteed savings scheme, while the private sector utilises a wider range of contracting structures, with conventional engineering, procurement, and construction (EPC) models remaining the most common.

Ongoing projects include, among others, the retrofit of a pipeline of more than 40 government and semi-government buildings in the emirate, all of which are now in the tendering and contracting phase. Engagement has expanded to include the hospitality sector, given its relevance and as part of the Sustainable Destination Certification achieved by Ras Al Khaimah. Energy audits have been conducted across six facilities, and a dedicated plan is being developed to support hotels seeking to improve energy efficiency and operational performance.

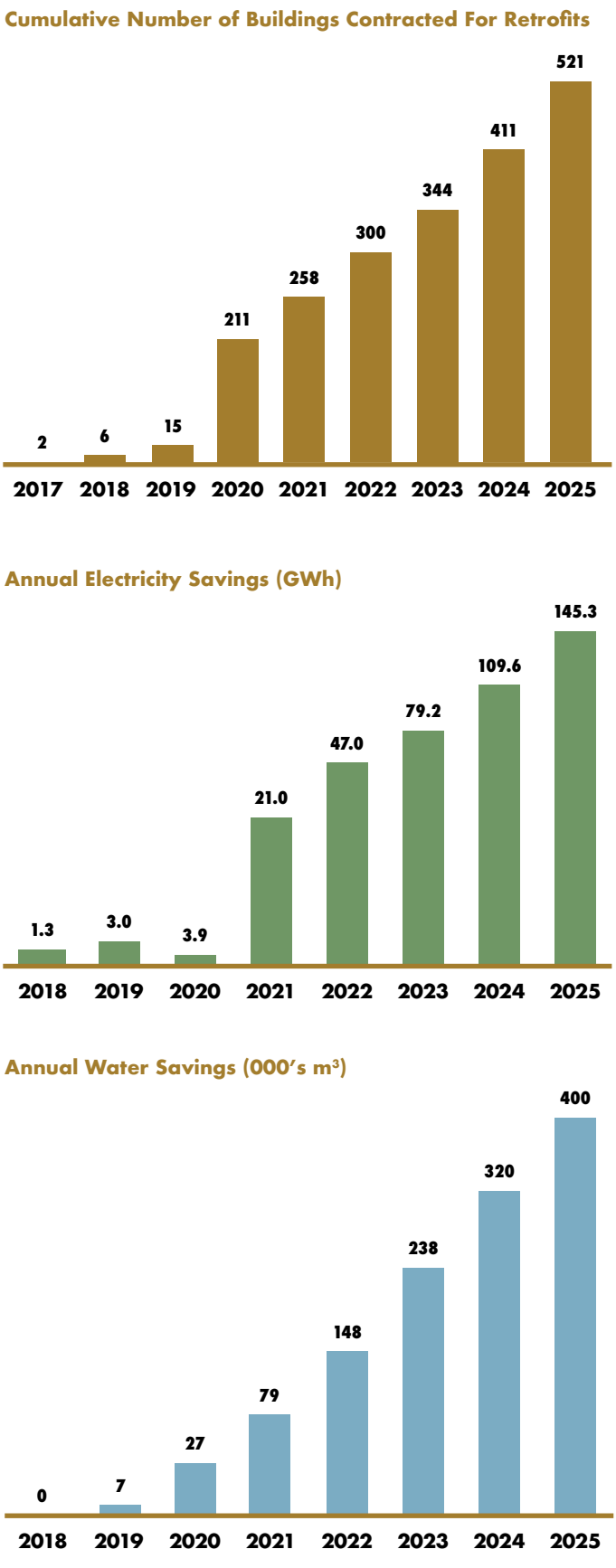


Figure 20: Main results of Building Retrofits

Energy Management in the government

The Energy Management initiative promotes the adoption of systematic energy management practices, such as those defined by ISO 50001, among high-energy users in Ras Al Khaimah's industrial, commercial, and government sectors. The Government of Ras Al Khaimah has taken a leading role in championing these practices.

In 2022, the Ras Al Khaimah government became the first in the world to achieve ISO 50001 energy management certification across all of its entities. These efforts had already delivered substantial results by 2022, when energy savings exceeded 23% compared to a 2017 baseline.

Amiri Resolution No. 18 of 2024 on energy management for government entities and government-owned companies further raises the bar by setting more ambitious targets, including 30% electricity savings, 20% water savings, and 20% transportation fuel savings by 2030, compared to a 2017 baseline.

Reem supports the implementation of the initiative by providing guidance to concerned entities in setting up their energy management systems, as well as by supporting opportunity identification and contracting for energy-saving measures. The Energy Management Guidelines published by Ras Al Khaimah Municipality assist government entities and private organisations in effectively applying and benefiting from energy management practices. The guidelines are organised into two levels. The first, basic level enables organisations to reap the benefits of ISO 50001 through simplified processes and documentation for certification. The second level, which is more advanced, supports organisations in achieving full certification compliance. The guidebook is available **here**.

Energy Principals of Ras Al Khaimah

Ali Alhebsi
Environment Protection & Development Authority

Athari Alneaimi
Ras Al Khaimah Customs Department

Khaled Issa
Ras Al Khaimah Department of Finance (DoF)

Radeyya Alshehhi
RAK Department of Knowledge

Fatima Al Kait
Electronic Government Authority

Ruqayya Ali Alshehhi
Human Resources Department

Nawal Alshimely
Ras Al Khaimah Courts Department

Paul Mckernan
RAK Mining & Exploration Holding LLC (Stevin Rock)

Sultan Alhammadi
Antiquities and Museums Department

Ahmed Fayez
Investment and Development Office

Ammar Adnan
Emirates Club

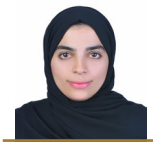
Moamen Madkour
RAKGAS and RAK Petroleum Authority

Rashid Hilal
Ras Al Khaimah Municipality

Alan Higgins
RAK Ports

Yaqoob Al Zaabi
Ras Al Khaimah Department of Economic Development

Sanjeet Dangi
RAK Transport Authority



Faten Awni Aljerjawi
Amiri Diwan

Amjad Jaradat
RAK Broadcasting Authority

Hareesh Chandran
RAK Hospital

Fadi Adwan
Marjan

Fatemah Altenaiji
Ras Al Khaimah Center for Statistics and Studies

Subhash Surendran
Ras Al Khaimah Chamber of Commerce

Muzaffar Razzaq
American University of Ras Al Khaimah (AURAK)

Shaikha Alneaimi
General Resources Authority

Samira Sulaiman
Ras Al Khaimah Public Services Department

Mercy Kiprotich
Ras Al Khaimah Tourism Development Authority

John Emmanuel
RAK Medical & Health Sciences University

Esraa Nabil Al Awadi
Department of Civil Aviation

Jessica Kamau
RAK Media Office

Achraf Hassani
RAK International Airport

Akbar Shahid
Department of Protocol & Hospitality

Heba Shaker Yonus
RAK Modern Private School

Dr. Ali Alani
Ras Al Khaimah Economic Zone (RAKEZ)

Abdulla Alriyami
Public Prosecution Department

Abdul Raheem
RAK Academy

Jessielyn Aduana
Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research

Public Services and Infrastructure

Ras Al Khaimah continues to advance public services and infrastructure initiatives covering energy efficiency, water management, waste management, and urban development supporting the emirate's broader sustainability and resilience objectives.

Efficient Street Lights

Urban communities benefit from street lighting through enhanced road safety and improved outdoor comfort. Under Ras Al Khaimah Vision 2030, the emirate is targeting 65% street lighting coverage across all roads. PSD currently manages around 700 km of lit roads.

All existing streetlights under PSD management have been replaced with LED technology, significantly reducing energy consumption. RAKEZ, RAK Ports, and other master developers manage around 140 km of roads within industrial and private master-planned communities, where 100% LED coverage has also been achieved. RAKEZ has further integrated dimming systems to optimise energy savings.

Regulatory standards for street lighting were developed by PSD and applied to all new projects from 2022 onward. These standards address both energy efficiency and light pollution reduction. Since 2023, smart lighting systems have been introduced during maintenance cycles, enabling remote monitoring and control via the PSD Control Centre.

Wastewater and Irrigation Networks

PSD is developing Phase 1 of the emirate-wide wastewater masterplan. A key step in 2025 was the appointment of a consortium to build and operate sewerage infrastructure within Sector 6 under a PPP model. This includes a central treatment plant and a collection network of over 50 km. The network will connect to existing systems in developments such as Marjan Island and RAKEZ, creating a unified and scalable infrastructure backbone. Construction is expected to take place over the next 3 years. The TSE will be distributed to communities in Sector 6 via new and existing irrigation networks, developed in collaboration with community developers.

Efficient landscaping standards will continue to be adopted in the communities to promote the use of native and adaptive plant species, shading and better integration with urban streets capes and parks. These measures reduce irrigation demand while enhancing public spaces and urban resilience.

Waste Management and Energy from Waste

PSD oversees the collection, recycling, treatment, and disposal of solid waste across Ras Al Khaimah. Increasingly, waste is being diverted from landfills and transformed into energy or alternative fuels, supporting more sustainable waste management practices in the emirate.

Multiple waste streams, including camel waste, wood waste, tyres, used cooking oil, and textile waste, are processed into fuel for local cement plants. Expansion of the existing medical waste incinerator completed in 2023 has enabled nearly all medical waste generated in the emirate to be treated locally.

Ras Al Khaimah continues to advance regulatory, technological, and enforcement measures to improve segregation quality and overall system efficiency. To support consistent waste management practices across the emirate, PSD has issued technical and standard guidelines that reinforce uniform implementation across waste management operations.

Service quality improvements are also underway, including fleet and container upgrades, expanded routes, increased manpower, and enhanced performance standards, with the objective of achieving 100% resident satisfaction.

Further diversion initiatives are underway to strengthen recycling and resource recovery infrastructure. These include the development of a new Construction and Demolition (C&D) Waste Recycling Facility to process construction and demolition waste generated across the emirate. The upgrade of the existing Materials Recovery Facility (MRF), completed in 2020, supports segregation of municipal solid waste and recovery of recyclable and fuel-grade materials. This will be complemented by a new MRF under development dedicated to wood and other recyclable waste streams. Both new facilities are expected to be commissioned by the end of 2027.

Community Guidelines

Going beyond buildings, the Municipality has developed guidelines for sustainable communities that address the public realm in four areas of improvement: livability & mobility, energy, water, and resource efficiency. The guidelines are available as a reference for developers.

Ras Al Khaimah Municipality also introduced a structured approach to enhancing outdoor thermal comfort, ensuring effective climate adaptation through research and practical applications. Pilot studies and simulations were conducted to develop solutions tailored to the local climate. The American University of Ras Al Khaimah (AURAK) has established the RAK Center for Outdoor Comfort (RAKCOC), the region's first dedicated research centre in this field. The centre provides design guidance, education, testing, and certification, with solutions already implemented in key locations such as Al Qawasim Corniche, Jebel Jais Viewing Deck, Wadi Shawka Dam Park, Bear Grylls Adventure Camp, Al Jazeera Al Hamra Heritage Village, several hotels and other sites.

Findings from these studies have informed outdoor thermal comfort guidelines, which provide flexible recommendations and evidence-based strategies for improving outdoor environments. These guidelines help extend the usability of public spaces over the summer months and support the development of more attractive, sustainable, and economically viable urban areas.

Figure 21: Outdoor thermal installations across Ras Al Khaimah

Manzily Energy Advice Service

In order to truly cultivate sustainable communities and buildings and drive lasting change, raising awareness and empowering homeowners to identify energy-saving opportunities is essential. Equipping individuals with knowledge and tools to make smarter energy choices helps reduce energy consumption and household costs, while also supporting lower environmental impact and contributing to more sustainable communities over time.

As such, the Manzily Energy Advice Service was launched by Ras Al Khaimah Municipality in 2023, providing free energy advice for homeowners. Homeowners can benefit from a quick assessment of opportunities for home improvements, such as energy and water savings, improved indoor air quality, and thermal comfort. The assessment is conducted by an expert nominated by Ras Al Khaimah Municipality, while a database of suppliers and contractors supports the implementation of recommendations.

Since its launch, about 250 homeowners have benefited from the service. Ras Al Khaimah Municipality has also partnered with EtihadWE to provide monetary incentives to residents who participate and achieve electricity savings. Under this partnership, EtihadWE provides Đ1 credit for every dirham saved in the homes of UAE nationals enrolled in the service. Interested applicants can sign up for Manzily here.

Building on the service platform of the energy advice, Ras Al Khaimah Municipality is currently exploring options to provide more concrete support to participants in implementing energy savings solutions. A pilot project for deployment of solar water heating solutions has been launched in collaboration with Solaris Kit, a company recognised as one of the winners of the first RAK Energy Innovation Competition – SME Edition.

"This service went beyond the traditional concept by offering an innovative and distinctive experience that helped us rethink how we use household appliances and manage water consumption more efficiently. The recommendations were carefully tailored to suit the needs of the household, and the advice was practical and easy to implement, which clearly contributed to reducing electricity and water consumption. The report also included smart solutions that enhance energy efficiency and promote sustainability, along with a noticeable improvement in the overall performance of home systems.

Rashid Hamad Alali
Homeowner,
Ras Al Khaimah

Figure 22: Manzily Energy Advice Service process: A step-by-step journey to a more efficient home

Efficient Appliances

Over 20% of electricity consumed in Ras Al Khaimah is attributed to the use of major household appliances such as air-conditioners, refrigerators and freezers, washing machines, and water heaters. The UAE Ministry of Industry & Advanced Technology (MOIAT) is responsible for establishing energy and water efficiency standards across the UAE, implementing the necessary conformity assessment scheme to ensure compliance, and promoting highly efficient appliances.

The performance standards maintained by MOIAT under the under the Energy Efficiency Standards and Labeling (EESL) programme are a key driver of adoption of efficient appliances in Ras Al Khaimah and the UAE. The EESL programme strategically combines Minimum Energy Performance Standards (MEPS), which set the minimum performance levels that appliances must meet before entering the UAE, and comparative labeling, showcasing a star rating scale of 1 to 5 stars, with 5 being the most efficient. These labels aid consumers in making informed decisions when purchasing appliances based on their performance. Launched in 2011, the EESL programme began regulating room air-conditioners and has successfully expanded to 12 major product categories.

The product categories included in the EESL programme are:

- Room air-conditioners
- Washing machines and dryers
- Refrigerators and freezers
- Electric storage water heaters
- Commercial air-conditioners
- Dishwashers
- Rotodynamic electric motors
- Television sets
- Elevators (Lifts)
- General lighting products: Lamps & control gears
- Outdoor lighting
- Water fixtures

The EESL programme, with standards and a conformity assessment system, is closely monitored and updated regularly to ensure alignment with the latest international performance levels. A key driver for the success of this programme is public awareness.

Reem conducts periodic awareness campaigns in Ras Al Khaimah, to promote adoption of higher classes of appliances, as defined in the performance standards issued by MOIAT. Also, the efficiency requirements for appliances expressed in various active programmes of the RIS Strategy, such as Barjeel and the Green Public Procurement Programmes, are aligned with MOIAT's definitions. Looking at the future, to further encourage the adoption of efficient appliances, Reem is studying the potential introduction of a mass replacement initiative, focused on the residential sector. The initiative would support households by offering cost effective replacements of key equipment, such as air conditioners and smart thermostats, helping residents reduce their electricity consumption.

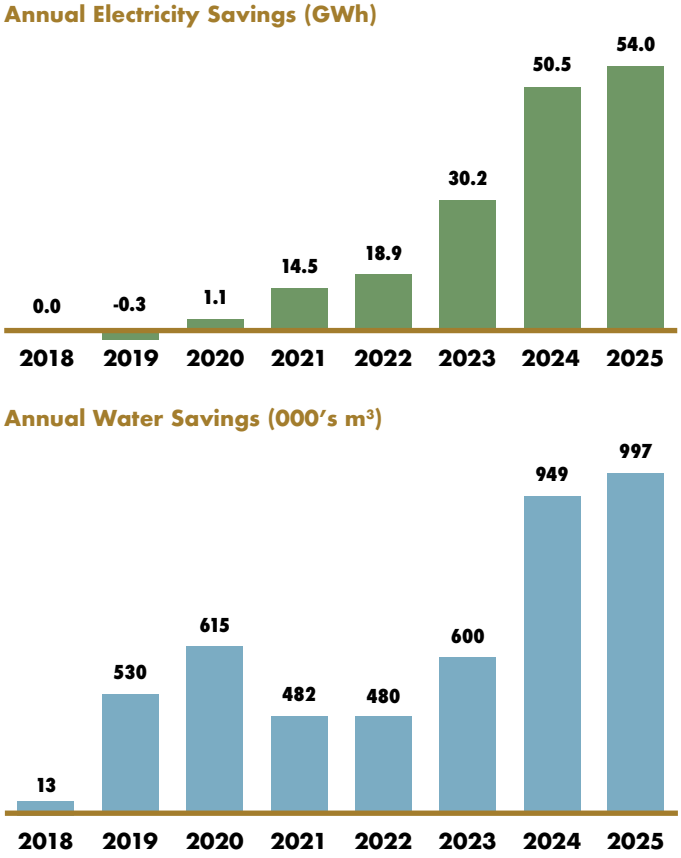


Figure 23: Energy and water savings from enforcement of efficient appliance standards

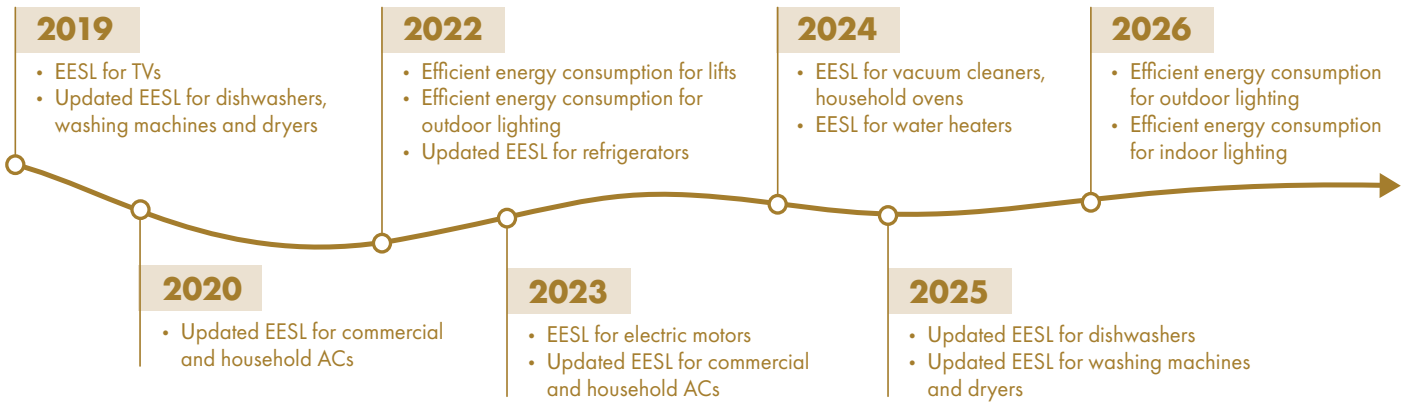


Figure 24: Timeline of EESL issuance and update

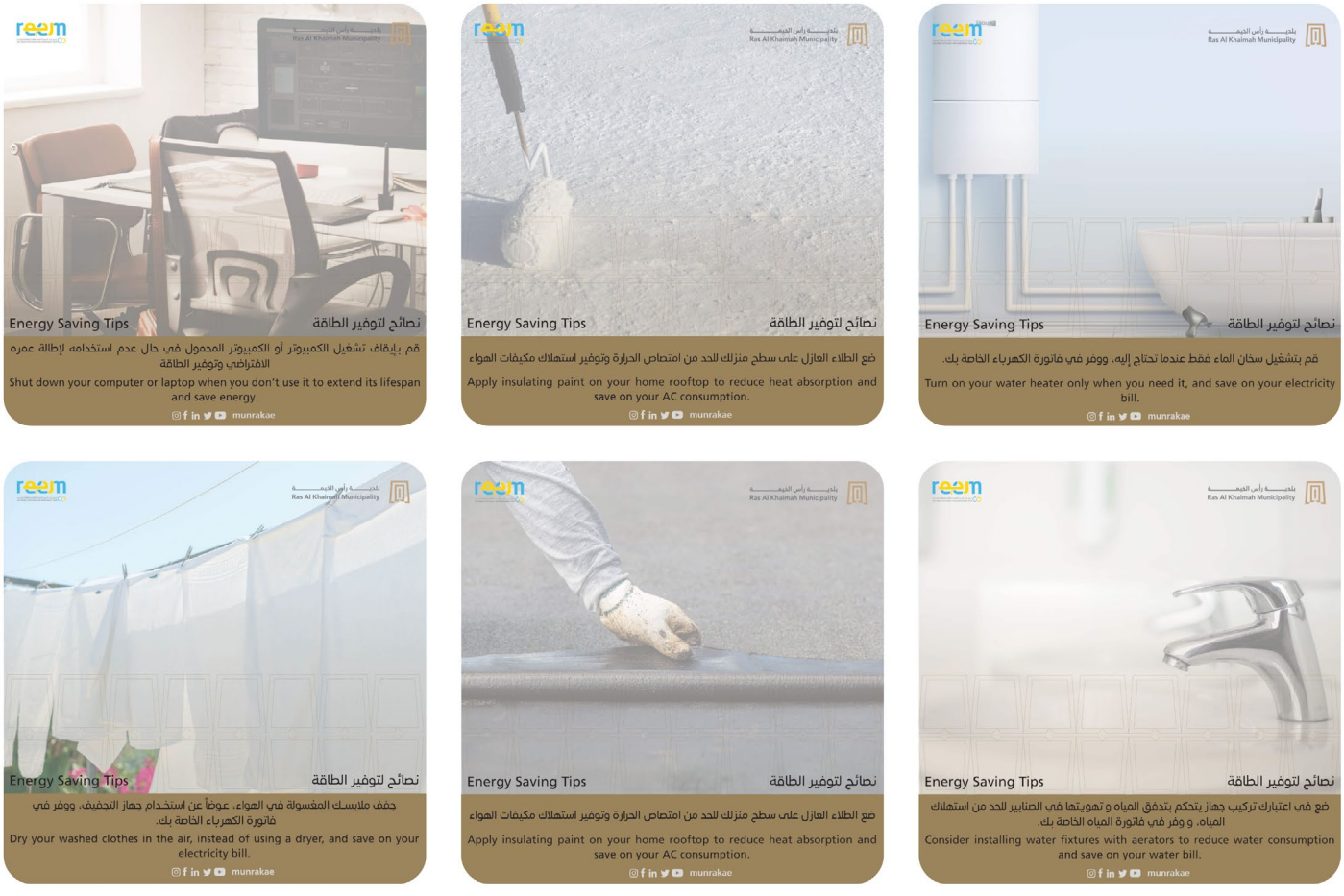


Figure 25: Examples of energy saving tips issued by Reem, Ras Al Khaimah Municipality in an ongoing awareness campaign on social media

Programme 11: Transport Decarbonisation

Programme Owner: هيئة رأس الخيمة للمواصلات RAK TRANSPORT AUTHORITY

Supporting Entities: Ras Al Khaimah Municipality, RAKGAS

The Transport Decarbonisation Programme addresses energy efficiency in Ras Al Khaimah's transportation sector by promoting the use of green vehicles, including conventional fuel-efficient, hybrid, and electric vehicles (EV). The programme aims for 80% of total vehicle sales in the emirate to be EVs and hybrids by 2050.

The Transport Decarbonisation Programme reflects our commitment to delivering sustainable and integrated transport solutions that improve quality of life and protect the environment. Through the development of intelligent infrastructure and smart mobility systems, we are translating our vision into practical progress that supports a more liveable and forward-looking emirate.

HE Eng. Esmaeel Hasan Al Blooshi
Director General,
Ras Al Khaimah
Transport Authority

In 2023, Ras Al Khaimah Transport Authority (RAKTA) launched the RAK Mobility Masterplan 2023–2030, a comprehensive strategy to advance sustainable public transportation in the emirate. The masterplan leverages technology, infrastructure improvements, and operational enhancements to promote more efficient, low-emission mobility and support the emirate's vision of a vibrant and liveable sustainable city.

To support this transition, significant progress has been made in developing the enabling infrastructure for electric mobility.

RAKTA signed Memoranda of Understanding (MOU) with EtihadWE and UAEV to support the expansion of the EV charging network across the emirate. In 2025, eight DC fast chargers and seven AC chargers were added, bringing the total number of charging points in Ras Al Khaimah to over 150. Further expansion is planned to meet growing demand.

Figure 26: Map of public electric vehicle charging stations in Ras Al Khaimah

A map of all public electric vehicle charging stations in Ras Al Khaimah is available on the Reem website and is continuously updated. Owners and operators of public charging stations in Ras Al Khaimah may have their stations advertised on the map free of charge by sending a request to Reem.

The Government of Ras Al Khaimah continues to lead by example in the adoption of efficient vehicles through its Green Public Procurement Programme. Of the 132 vehicles procured in 2025, 71% were efficient, including 7% electric and hybrid vehicles. Reem continues to facilitate such purchase decisions through market research and maintenance of a vehicle database with an integrated cost-comparison tool.

Electric vehicles now account for 17% of the total RAKTA taxi fleet, with 149 vehicles currently in operation. An additional 70 electric vehicles are planned for procurement this year, supporting progress towards the emirate's Vision 2030 objectives.

Complementing the growth of electric mobility, Ras Al Khaimah is also expanding alternative fuel infrastructure. RAKGAS is constructing compressed natural gas (CNG) stations across the emirate to support the adoption of cleaner fuel options, particularly for fleet and remote users. The use of CNG offers a lower-emission, cost-effective alternative to diesel, contributing to improved air quality and supporting the broader transition towards a diversified and lower-carbon transport system.

Public transport has also played a key role in reducing reliance on private vehicles. Since the introduction of intracity bus lines in priority areas in 2022, the network has contributed to shifting travel behaviour towards more efficient modes of transport. In 2025, public transport usage saw significant growth during peak hours, with intercity bus ridership reaching 1,750 passengers per day and intra city bus ridership reaching 1,200 passengers per day. The current intracity network consists of five routes, contributing to public transport coverage of approximately 56% across the emirate. In addition, the public transport fleet has collectively travelled more than 100 million kilometres, reflecting the scale and growing utilisation of the system.

As part of broader sustainability efforts, air quality monitoring sensors were installed on public buses in 2024 to support real-time tracking and analysis of pollution levels, enabling more data-driven environmental decision-making.

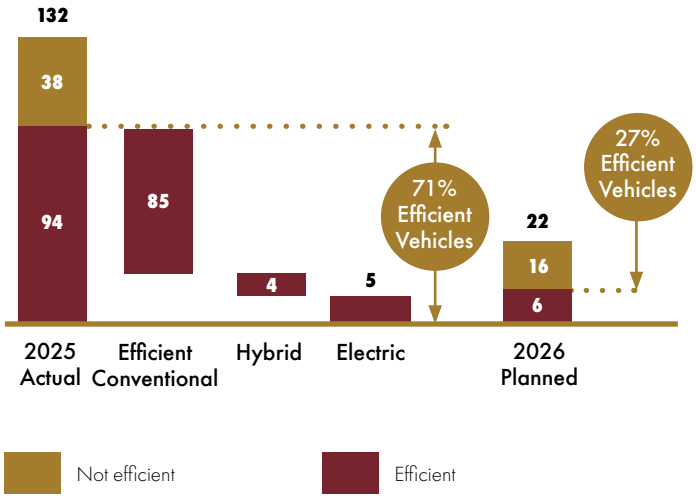


Figure 27: Government and semi-government vehicle purchases in 2025 and planned purchases in 2026

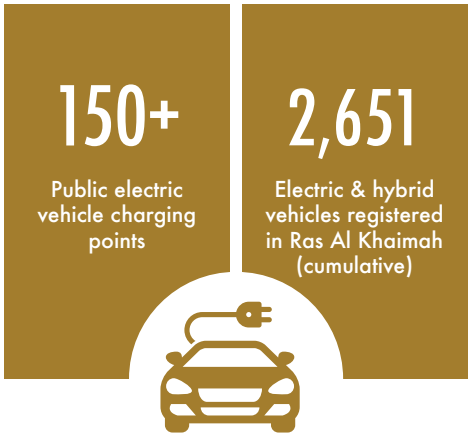


Figure 28: Total number of charging points and total number of EVs and hybrids registered in Ras Al Khaimah

Looking ahead, further expansion of infrastructure and services is planned to support growing demand and accelerate the transition to sustainable mobility. Additional EV charging stations are expected to be deployed across the emirate.

Construction of new bus station facilities is currently underway while planning is in progress for additional installations in the Nakheel Micro-Mobility Hub, supporting more integrated and sustainable urban transport solutions. Several companies have expressed strong interest in participating in upcoming phases of development, indicating growing private sector engagement in the emirate's mobility initiatives.

The intracity public transport network is set to expand from five to seven routes in the next phase. In parallel, the transition to cleaner public transport will continue, with electric buses currently under trial operation and long-term plans targeting a fleet of up to 16 electric buses. Plans are also underway to expand the air quality monitoring initiative across additional vehicles to strengthen real-time monitoring capabilities.

Figure 29: Intracity buses in Ras Al Khaimah

Programme 12: Agriculture Decarbonisation

Programme Owner: Environment Protection & Development Authority

Supporting Entities: Ras Al Khaimah Municipality; reem; Ministry of Climate Change & Environment

The Agriculture Decarbonisation Programme is focused on reducing emissions in Ras Al Khaimah's agricultural sector. Emissions can be mitigated by transitioning to clean, renewable energy sources, and through more efficient management of agricultural activities, products and equipment.

The programme focuses on three main areas to achieve emissions reductions:

- **Improving equipment and processes** to reduce energy consumption and emissions;
- **Transitioning to renewable energy sources** for agricultural operations;
- **Promoting sustainable farming practices** that focus on efficient fertiliser use, regenerative agriculture, and sustainable livestock management.

To support these efforts, a carbon footprint dashboard is under development. This tool will calculate and track the carbon emissions from agricultural activities, which will help identify key sources of emissions, such as energy use and transportation. The data collected will guide decision-making and help pinpoint areas for improvement, driving the sector towards more sustainable practices.

The programme will also assess the potential impacts of climate change on agriculture in Ras Al Khaimah, working with local businesses to identify opportunities for reducing emissions and improving sustainable operations. In addition, it will raise awareness on the link between sustainable practices and climate change mitigation, encouraging broader participation in decarbonisation efforts.

Programme 13: Industrial Decarbonisation

Programme Owner: بلدية رأس الخيمة Ras Al Khaimah Municipality; reem – فريق رأس الخيمة لكفاءة الطاقة والطاقة المتجددة RAK ENERGY EFFICIENCY AND RENEWABLES TEAM

Supporting Entities: وزارة الطاقة والبنية التحتية MINISTRY OF ENERGY & INFRASTRUCTURE; وزارة التغير المناخي والبيئة MINISTRY OF CLIMATE CHANGE & ENVIRONMENT; وزارة الصناعة والتكنولوجيا المتقدمة MINISTRY OF INDUSTRY & ADVANCED TECHNOLOGY; RAKGAS; rakez RAS AL KHAIMAH ECONOMIC ZONE

The Industrial Decarbonisation Programme aims to substantially reduce greenhouse gas emissions from industries in Ras Al Khaimah. This is particularly important because industrial activities are responsible for more than 80% of the emirate's total emissions. By helping industries lower their carbon footprint, the programme seeks to ensure that businesses remain competitive as the global economy increasingly shifts toward low-carbon production, stricter environmental regulations, and sustainable supply chains.The cement sector, a major emitter due to its hard-to-abate energy and process emissions, is a key focus area. The programme pursues decarbonisation objectives through multiple levers, including industrial energy efficiency, use of sustainable product substitutes, transition to alternative fuels, and deployment of carbon capture, utilisation and storage (CCUS) solutions where feasible for residual emissions.

The Industrial Energy Audit Initiative was established to help companies in Ras Al Khaimah identify energy savings and emissions reduction opportunities. Under the initiative, Reem offered participating industries incentivised energy audits in exchange for commitments to report on implementation. Initially launched as voluntary, the initiative was strengthened in 2024 through Amiri Resolution No. 20 of 2024, which mandates periodic energy audits and progress reporting for large industrial facilities.

To support implementation, Reem continues to engage with local industrial companies offering specialised audit support and a knowledge-sharing platform. To ensure these services are delivered efficiently and at minimal cost, Reem procures technical expertise at scale by empanelling qualified auditing companies and establishing competitive pricing and service frameworks. Auditing companies have been empanelled across a wide range of industrial sectors, including quarries, cement, ceramics, glass, packaging, and more. These external experts work alongside specialised personnel from Reem throughout the process.

By the end of 2025, 14 companies completed energy audits in their facilities, covering a baseline of more than 1.1TWh of annual electricity consumption representing over 70% of industrial electricity consumption in the emirate. These audits identified over 100 GWh of electricity savings, over 60,000 m³ of water savings, and significant reductions in diesel, coal, and natural gas consumption, with an overall average payback period of less than two years. In parallel, more than 120

Figure 30: Al Ghail Industrial Zone, Ras Al Khaimah

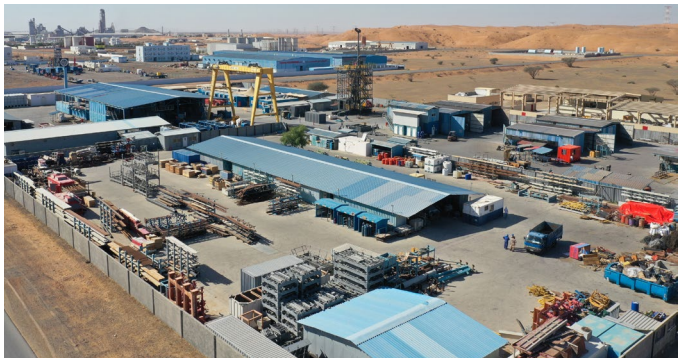


Figure 31: Al Hamra Industrial Zone, Ras Al Khaimah

industry employees participated in four knowledge-sharing sessions organised as part of the initiative. These sessions covered key topics for industries in Ras Al Khaimah and were delivered in collaboration with expert teams from organisations such as Taka Solutions on Cooling as a Service (CaaS), GRFN and Siemens on variable frequency drives (VFDs), Johnson Controls International (JCI) on heat pumps, and Machinery People on compressed air systems.

Regarding cement, initial regulatory steps are being made toward decarbonisation. The 2025 update of the Ras Al Khaimah Building Code, issued by Ras Al Khaimah Municipality, introduced revised provisions for cement use in construction. The updated code allows the use of any cement material that meets defined strength and durability requirements, creating greater flexibility for designers and developers. This opens the door for wider adoption of green cement, encouraging more sustainable material choices while maintaining structural integrity and performance standards.

Moving forward, some next steps for cement decarbonisation include further assessment of alternative fuels, supplementary cementitious materials (SCMs), and carbon capture, utilisation and storage (CCUS) technologies in preparation for upcoming federal cement standards and carbon pricing policies.

> **Industrial energy efficiency is one of the most effective ways to strengthen cost competitiveness while reducing emissions. We are working with industry to accelerate the adoption of smarter technologies and operational practices that deliver lasting economic and environmental value.**

Dia Alshamsi
Senior Energy Engineer, Reem

Figure 32: Participating industrial companies at the end of 2025

Figure 33: Empanelled auditors at the end of 2025

Deep Dive:

RAK Ceramics: Pioneering the UAE's first high-purity CO_2 capture plant

Sustainability remains at the core of our growth strategy at RAK Ceramics. Our partnership with Gulf Cryo marks a significant milestone in advancing our decarbonisation and resource efficiency journey. By embracing innovative solutions that reduce our environmental footprint, we continue to drive meaningful impact across our operations while supporting the UAE's Net Zero 2050 Vision.

Abdallah Massaad
Group CEO, RAK Ceramics

1st
Industrial-scale carbon capture facility in the UAE

17,000 Metric tons
CO_2 captured annually

99.99%
CO_2 purity

Why Carbon Capture Matters for Industrial Decarbonisation

Carbon capture is a critical part of RAK Ceramics' decarbonisation roadmap, addressing process-related emissions inherent in energy-intensive manufacturing that cannot be eliminated through efficiency measures alone. It complements ongoing efforts in energy optimisation, circular manufacturing, and water stewardship, enabling a more integrated approach to emissions reduction.

In 2025, RAK Ceramics reached a major sustainability milestone by partnering with Gulf Cryo to establish the UAE's first industrial carbon recovery and reuse facility. The project represents the country's first industrial-scale facility capable of producing 99.99% pure CO_2, from captured industrial emissions, demonstrating how emissions from heavy manufacturing can be converted into valuable industrial inputs. This initiative also positions Ras Al Khaimah as a leader in practical, systems-led industrial decarbonisation, moving beyond emissions reduction to circular carbon utilisation.

From Innovation to Operational Deployment

The system captures CO_2 from natural gas-based production emissions before purifying and liquefying it through an energy-efficient process to produce 99.99% pure food-grade CO_2, for industrial application within the UAE.

The facility serves both energy-intensive industries and sectors requiring high-purity CO_2, including food and beverage, healthcare, agriculture, and energy. It is particularly relevant for manufacturers seeking to reduce emissions while maintaining operational efficiency.

The key innovation lies in capturing low-concentration CO_2 from industrial processes and converting it into high-purity, commercially usable CO_2 at scale. The system integrates capture, purification, and local redistribution, creating a closed-loop industrial model aligned with circular economy principles.

How High-Purity CO_2 Capture Works

The plant captures approximately 17,000 metric tons of CO_2 annually (producing 99.99% pure, food-grade CO_2). The facility enables the conversion of emissions into a valuable, reusable resource, with recovered CO_2 redeployed across sectors such as food and beverage, healthcare, and agriculture. Applications include carbonation, preservation, and cold chain processes.

This strengthens domestic CO_2 availability, reduces reliance on imports, and contributes to measurable emissions reduction. It also supports cost efficiencies and reinforces supply chain stability.

Advancing the UAE's Net Zero 2050 Ambition

Aside from being critical to RAK Ceramics' decarbonisation roadmap, the facility supports the UAE's Net Zero 2050 ambition by capturing emissions at source and reintegrating them into productive use, reducing overall carbon intensity. It also aligns with Ras Al Khaimah's Integrated Sustainability Strategy 2050 by advancing resource efficiency, emissions reduction, and circular industrial systems.

As the UAE's first operational carbon capture and utilisation model, it demonstrates a scalable approach to industrial decarbonisation while reinforcing long-term economic competitiveness in a low-carbon global economy.

Powering a Circular Carbon Economy Across Industries

Industries benefiting from this high-purity CO_2 supply include the UAE's food and beverage sector, which remains a major consumer for carbonation, preservation, and packaging processes requiring rigorous food-grade standards.

The healthcare sector also benefits through its use in medical applications and specialised gas mixtures, while manufacturing and industrial operations utilise it across a range of production processes, supporting operational continuity and reinforcing the UAE's commitment to local industry development.

Local CO_2 production enables the UAE to retain and reuse emissions within its own industrial value chain, transforming waste into a productive input. This strengthens the circular carbon economy by closing the loop.

At the same time, the new plant reinforces national sustainability ambitions by reducing external dependencies, lowering transport-related emissions, and strengthening local industry resilience.

The Road Ahead

This collaboration demonstrates that manufacturers can move decisively from ambition to action in addressing climate challenges. It reinforces the role of private sector investment in advancing scalable, technology-led decarbonisation aligned with global frameworks such as the United Nations Sustainable Development Goals, particularly SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

Looking ahead, carbon capture is increasingly likely to become a standard solution across heavy industries in the UAE, especially in sectors such as cement, ceramics, and energy. Technologies that enable emissions reduction without compromising industrial output are likely to gain traction, with early adopters establishing pathways for scale.

As the next phase of its decarbonisation journey, RAK Ceramics continues to focus on improving efficiency and circularity across its operations. In 2025, RAK Ceramics recorded a 2.09% reduction in energy consumption, with continued efforts planned to reduce energy, water, and emissions intensity across its tiles, sanitaryware, faucets, and tableware manufacturing operations.

Building on these efforts, including the capture of approximately 17,000 metric tonnes of CO_2 annually at 99.99% purity 336 tCO_2e savings through rail transport, and a 35.5% reduction in sulfur dioxide emissions, the aim is to further decouple growth from resource consumption while shaping a lower-impact, future-ready manufacturing model.

4

RIS Strategy Enablers

Awareness

Events & Media Coverage

Following the launch of the RIS Strategy in 2024, Ras Al Khaimah prioritised awareness and implementation in 2025, focusing on embedding the strategy across sectors and aligning key stakeholders. This was achieved through participation in international and regional platforms, alongside targeted workshops, awareness sessions, and stakeholder engagements to communicate priorities, share best practices, and strengthen implementation capabilities.

In 2025, Ras Al Khaimah Municipality participated in the International Energy Agency's 10th Annual Global Conference on Energy Efficiency in Brussels, Belgium, where the emirate's Industrial Decarbonisation Programme under the RIS Strategy was presented. The strategy was also showcased at Middle East Energy, highlighting how the energy transition is being embedded into sustainable development plans.

Ras Al Khaimah Municipality further participated in the GPP Policy Hack hosted by UAE Independent Climate Change Accelerators (UICCA) and Abu Dhabi's Department of Government Enablement (DGE), highlighting the emirate's experience in implementing green public procurement (GPP), including existing regulations and key lessons learned in integrating environmental considerations into government procurement processes.

At events organised by the Emirates Green Building Council, Ras Al Khaimah Municipality participated in two workshops, including a session on the Zero Readiness and Resilience Framework, structured around five key pillars: government leadership, finance, data, mindset, and technical solutions, and a second session focused on national progress, challenges, and opportunities to accelerate action in the green building sector. These sessions facilitated knowledge exchange, cross-disciplinary collaboration, and alignment on pathways towards the UAE's net zero ambition.

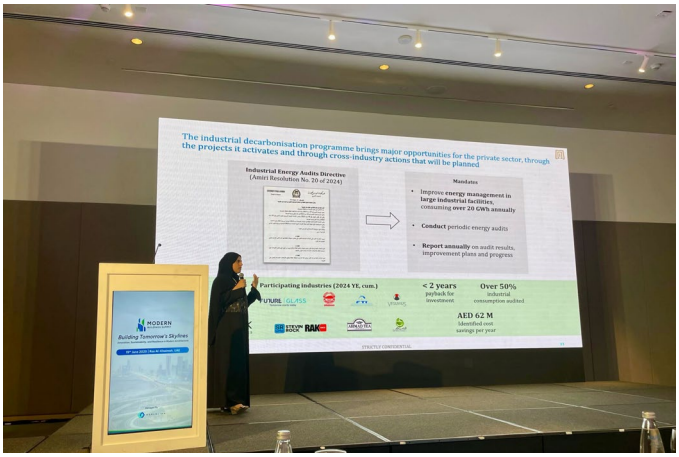
At the Modern Buildings Summit, organised by Worldlink Conferences, Ras Al Khaimah Municipality presented how the RIS Strategy is advancing energy efficiency in the built environment and supporting more sustainable communities. Key highlights were also presented at WETEX 2025, and Big 5 Global in Dubai, where Ras Al Khaimah Municipality outlined its approach to the energy transition, emphasising the government's leading role in building capabilities and delivering scalable examples of success. At the Ras Al Khaimah Investment & Business Summit 2025, the Municipality highlighted how the growing pipeline of energy efficiency projects supports long-term economic growth and strengthens preparation for a low-carbon future.

Yasser Ahm

STIRLING HOSPITALITY ADVISORS
مرجان
Marjan
Tatiana Veller
Managing Director at Stirling Hospitality
Khaled Assaf

TCL
Sustainability partner
GORD
Talks sponsor
SEELEY INTERNATIONAL
Organized by
mgi events

اصنع في الإمارات
MAKE IT



Awareness Sessions and Workshops

In parallel, Reem continued to drive awareness through sector-specific programmes and community-focused initiatives. One example is the Solar Support Programme awareness session conducted for consultants in collaboration with the Permitting Department – Qualification Section, which aimed to facilitate smoother approvals and maximise deployment of solar capacity in the emirate.

Further engagement included a workshop on upcoming standards for the cement industry, bringing together key stakeholders across the value chain, including manufacturers, end users, and raw material suppliers, to explore pathways and opportunities for decarbonisation in line with global and local trends.

Reem also hosted a dedicated workshop to support government and government-owned companies in adopting Green Public Procurement (GPP) practices under Resolution No. 19 of 2024, as well as an awareness session for healthcare staff from Emirates Health Services (EHS) and the Aman Shelter for Women and Children, highlighting the role of behavioural change in energy management.

Ras Al Khaimah Municipality also concluded a successful workshop presenting new regulations and guidelines promoting sustainable energy in the emirate, including Energy Management and Green Public Procurement requirements for government entities, as well as Energy Audit obligations for large industries. The workshop was attended by over 100 representatives from government entities, government-owned companies, and industry.

Manzily Programme

Manzily is an awareness programme targeting residents and youth. It comprises at the moment two initiatives: the Manzily educational game, launched at RAK Energy Summit in 2022, and the Manzily Energy Advice Service, launched in 2023.

The Manzily game was developed through the voluntary efforts of students from the American University of Ras Al Khaimah, in collaboration with a private company, Footprints. The interactive game enables players to help a fictional family improve energy consumption through behavioural changes and equipment upgrades. Participants, particularly students, learn practical sustainable practices across multiple levels and can earn a certification as "Sustainable Energy Ambassadors." The game has already engaged hundreds of students through Reem-led awareness sessions and was also showcased at COP28.

The Manzily Energy Advice Service, described earlier in this report, has been promoted through a range of awareness initiatives, including social media video campaigns and collaborations with media personality Munther Almuzaki. The service was also presented at COP28, further expanding its reach and impact.

In 2025, the programme expanded its outreach across schools in Ras Al Khaimah. Awareness sessions were conducted at the American School, Al Najah Girls School, Al Ro'ya Girls School, and Adhen School. Through interactive quizzes and real-life scenarios, students explored practical ways to save energy and water at home. Each participant earned recognition as a Sustainable Energy Ambassador supporting the programme's goal of inspiring the next generation of environmentally conscious individuals.

Figure 34: Manzily game awareness sessions

RAKTA Awareness Campaigns

In 2025, RAKTA launched the first edition of the Excellence in Transportation Award 2025, recognising outstanding individuals and entities across Ras Al Khaimah's transport sector. The initiative highlighted drivers who exemplify discipline, safety, and service quality, reinforcing the emirate's commitment to high standards in mobility services.

Organised in collaboration with key partners, including Economic Group Holdings, Qatar Insurance Company, the American University of Ras Al Khaimah, and the Ras Al Khaimah Department of Knowledge, the award attracted more than 120 applicants representing 14 operators across various transport categories. The initiative aims to foster a culture of recognition and motivation, encouraging continued excellence and professional commitment within the sector.

In addition, RAKTA organised a series of youth awareness workshops, further supporting community engagement and promoting safe and responsible transport practices among younger generations.

EPDA Awareness Campaign

In 2025, EPDA organised clean-up and planting campaigns garnering participation from approximately 390 volunteers, covering the Khor Al Muzahmi protected area and other locations across the emirate. A total of 9,385 mangrove trees were planted under the "Green Cover" project, contributing to the enhancement of coastal ecosystems and biodiversity.

Capacity Building

Green Procurement

Green Public Procurement (GPP) is a process whereby government entities seek to procure products and services with lower lifecycle environmental impact compared to other functionally similar products and services.

GPP was launched in Ras Al Khaimah in November 2020. It supports the competitiveness of the economy by reducing energy and water consumption, avoiding greenhouse gas (GHG) emissions and stimulating a local market for sustainable products and services. The programme also plays a key role in building capacity among government procurement teams to integrate sustainability into purchasing decisions.

> **Green Public Procurement is a powerful mechanism for advancing sustainable development by embedding environmental considerations into government purchasing decisions. Since the programme's launch in Ras Al Khaimah, we have focused on raising awareness, building institutional capacity, and supporting government entities in integrating sustainability criteria into their procurement processes. Expanding the adoption of these practices is essential to ensuring that sustainability becomes a fundamental component of decision-making across government, delivering long-term environmental, economic, and social benefits**

Asma Alshehhi
Senior Energy Engineer, Reem

The GPP programme is supported by specific guidelines issued by Ras Al Khaimah Municipality. The Ras Al Khaimah Department of Finance (DoF) and the Investment and Development Office (IDO) serve as GPP administrators, responsible for promoting and coordinating GPP implementation across government entities and government-owned companies. Initially, implementation was voluntary to allow entities to define their own pace and level of participation.

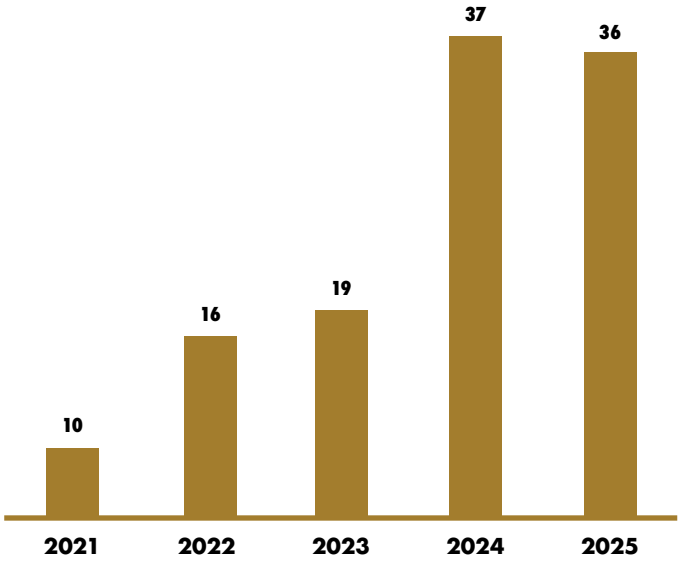


Figure 35: Government entities and semi-government entities participating in the GPP programme of Ras Al Khaimah

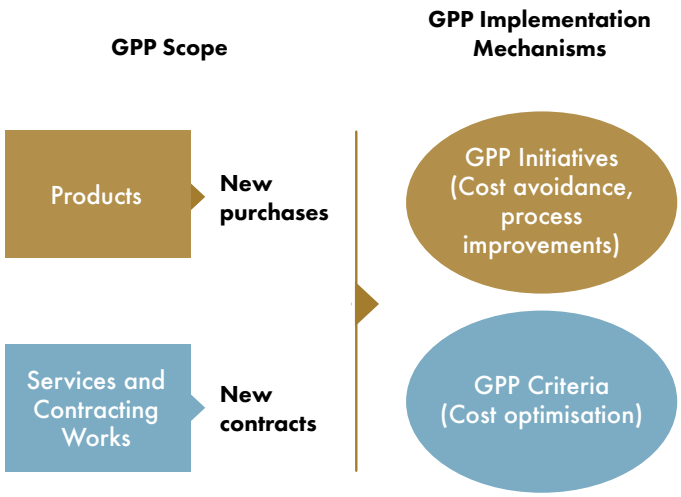


Figure 36: Scope of the Green Public Procurement Guidelines of Ras Al Khaimah

Following the issuance of Amiri Resolution No. 19 of 2024, implementation of Green Public Procurement (GPP) continued to expand across over 35 government entities and government-owned companies in Ras Al Khaimah. Capacity-building efforts were strengthened through ongoing training sessions and technical support, enabling more effective use of the upgraded procurement management system and consistent tracking of green purchases.

During 2025, entities further integrated green procurement criteria into purchasing processes, supporting more sustainable practices across key categories while enhancing compliance monitoring and reporting.

Additionally, a cross-learning forum has been established to encourage collaboration and knowledge sharing. This includes bi-monthly progress meetings and quarterly fireside chats with regional and international experts, fostering continuous improvement in sustainable procurement practices.

The impact of GPP continues to grow, with a significant share of government purchase now meeting GPP criteria. In 2025, around Đ20 million in government spending was directed toward green procurement.

GPP Champions of Ras Al Khaimah

Najla Alshehhi
Ras Al Khaimah Municipality

Maryam Ahmed Alnaqbi
Ras Al Khaimah Department of Finance (DoF)

Areej Alaqrabawi
RAK Department of Knowledge

Javid Ali
RAK Medical & Health Sciences University

Hazem Kanaan
Public Services Department

Maryam Alshehhi
RAK Media Office

Ahmed Fayez
Investment and Development Office

Eman Sayed Ahmed
RAK Modern Private School

Bdoor Alhmood
Department of Economic Development

Rawan Alshehhi
Department of Civil Aviation

Jonathan Tungu
Ras Al Khaimah Economic Zone (RAKEZ)

Renju Thomas
RAK Academy

Anood Hamed Subait
Customs Department

Arbab Kashif Noor
Antiquities and Museums Department

Majda Alzaabi
Ras Al Khaimah Chamber of Commerce

Othman Khalid
Emirates Club

Salwa Alnaqbi
Public Prosecution Department

Sameera Abdulla Ghulab
Human Resources Department

Sheebu Varghese
Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research

Madhu Nair
RAK Ports

Maryam Thani Albannay
Environment Protection & Development Authority

Abrar Sherif
Electronic Government Authority

Achraf Hassani
RAK International Airport

Fabian Baird
RAK Mining & Exploration Holding LLC (Stevin Rock)

Alexander Barn
RAK Broadcasting Authority

Abdulaziz Aldhuhoori
RAK Transport Authority

Joseph Nader
Marjan

Mahra Alshehhi
Ras Al Khaimah Center for Statistics and Studies

Mariam Alshehhi
Amiri Diwan

Ahmad Sultan Al Hamadi
General Resources Authority

Anton Kreventsov
RAKGAS and RAK Petroleum Authority (RAKPA)

Ahmed Sheiha
Ras Al Khaimah Courts Department

Junaid Vatake Parambath
Department of Protocol and Hospitality

Sidhiq Ahammed
Ras Al Khaimah Tourism Development Authority

Abhijit Suresh Sawant
RAK Hospital

Khadija Al Shehhi
American University of Ras Al Khaimah (AURAK)

Supply Market Development

Coordinated efforts are being made to strengthen the supply chain in support of the RIS Strategy. Ras Al Khaimah Economic Zone (RAKEZ) and Ras Al Khaimah Department of Economic Development (RAK DED) are leading this initiative. Multiple collaborations are already in place with trade councils from a wide range of countries, aimed at attracting new players and fostering a robust ecosystem for products and services functional to the energy transition. In 2025, RAKEZ continued to strengthen international collaboration and business engagement through strategic partnerships and targeted networking initiatives. Engagement with the Netherlands Business Council included the organisation of a BENELUX networking event hosted at RAKEZ, fostering stronger ties with the European business community.

Achieving our sustainability ambitions requires sustained investment in people, skills, and knowledge. At DED, we are focused on strengthening local capabilities, advancing sustainability expertise, and supporting the development of a business ecosystem that can drive long-term economic and environmental progress. Through close collaboration with government entities and private sector partners, we remain committed to fostering a culture of innovation and continuous learning that will support Ras Al Khaimah's sustainable development journey for generations to come.

HE Dr. Abdulrahman Al Shayeb Al Naqbi
Director General, DED

The transition to a more sustainable economy will be driven not only by policy, but by the businesses and entrepreneurs developing the solutions of tomorrow. At RAKEZ, we are committed to creating an environment where innovative companies can establish, grow, and scale their operations while contributing to Ras Al Khaimah's sustainability ambitions. Today, RAKEZ supports over 40,000 companies, with nearly 19,000 new businesses joining in 2025 alone, reflecting the impact of our efforts to attract investment, foster collaboration, and enable access to opportunities while strengthening the emirate's position as a hub for sustainable industries, innovation, and long-term economic growth.

Ramy Jallad
Group CEO, RAKEZ

Collaboration with the Turkish Business Council also progressed through a joint meeting focussed on exploring business opportunities and activating membership engagement.

RAKEZ further expanded its engagement with the British Chamber of Commerce Dubai (BCCD) through participation in the Partnering Growth in Ras Al Khaimah event, while also taking part in the Doing Business in the UAE event in Manchester, UK. In partnership with the German Emirati Joint Council for Industry and

Commerce (AHK), RAKEZ hosted a Business Breakfast - Ras Al Khaimah Edition, followed by the signing of a Memorandum of Understanding. This was complemented by a sector-focused visit from the German hydrogen and energy industry to Ras Al Khaimah.

Further strengthening international ties, RAKEZ hosted an Inter-Council SME Business Networking event in May, bringing together representatives from Ukraine, Turkey, Poland, Serbia, the Czech Republic, Malaysia, and Kazakhstan through a Business Breakfast - Ras Al Khaimah Edition.

As part of Reem's mandate, efforts are ongoing to continuously expand and enhance the supply market for products and services supporting the energy transition. A key initiative in this area is the RAK Energy Innovation Competition – SME Edition (#rakinnovates), which launched its second cycle following the success of its inaugural edition.

The second cycle of the competition focuses on solutions addressing three key regional challenges: digitisation, decentralisation, and decarbonisation, with applications spanning areas such as smart resource management, distributed renewable energy systems, and industrial emissions reduction. Three winners will be selected and will receive a cash prize of ₿100,000, an attractive business set-up package from RAKEZ, and dedicated business development support.

RAK Energy Innovation Competition
SME EDITION

Deep Dive:
SolarisKit: Advancing Decentralised Solar Solutions in Ras Al Khaimah

Ras Al Khaimah has created a truly enabling ecosystem for innovation, allowing us to expand our involvement in the local market and explore new opportunities across hospitality and residential developments, not only within the UAE but also in other countries.

Faisal Ghani
Founder and CEO,
SolarisKit

As the winner of the Decentralised Energy Systems Challenge under the first RAK Energy Innovation Competition (SME Edition), SolarisKit highlights Ras Al Khaimah's growing role as a hub for clean energy innovation, showcasing how decentralised solar technologies can support sustainable infrastructure and improve energy efficiency in challenging climates.

Establishment and Market Position

SolarisKit Ltd is a UK-based clean technology company, established in 2019 and headquartered in Dundee, Scotland. The company has since expanded its footprint to the United Arab Emirates, with manufacturing operations based in Ras Al Khaimah under SolarisKit Global FZ LLC.

Designing in the UK and manufacturing locally in the UAE, SolarisKit specialises in flat-packed solar thermal collectors for residential and commercial applications. Its innovative approach reduces transportation costs and associated carbon emissions while enabling scalable deployment across diverse markets.

Innovation in Solar Thermal Technology

SolarisKit is recognised for developing flat-pack, self-assembled solar thermal collectors. The system is specifically engineered to perform in extreme heat and hard water conditions, making it particularly suited to the Gulf region.

Its prismatic collector design enables efficient heat capture while maintaining a compact, space-saving form. This allows for easier installation and reduced logistical complexity, supporting broader adoption of solar water heating technologies across urban and remote environments alike.

From Competition to Market Implementation

As the winner of the Decentralised Energy Systems Challenge under the first edition of the RAK Energy Innovation Competition (SME Edition), SolarisKit has strengthened its real-world implementation portfolio within the emirate.

Through the competition, the company successfully completed a pilot project at Rixos Al Mairid and is currently exploring opportunities to retrofit beachfront villas. These initiatives demonstrate the practical application of decentralised solar solutions within Ras Al Khaimah's hospitality and residential sectors.

The competition also facilitated high-level engagement with key stakeholders, enabling SolarisKit to establish collaborations with multiple entities.

Supporting Local Manufacturing and Global Expansion

SolarisKit's presence in Ras Al Khaimah has enabled the company to scale its manufacturing capabilities while serving both regional and international markets. From its Ras Al Khaimah-based facility, the company has expanded its reach, exporting products to markets such as Iraq and Botswana.

In parallel, SolarisKit is working closely with EtihadWE and Ras Al Khaimah Municipality on residential solar water heater installations, further embedding its technology within the local energy ecosystem. SolarisKit's success reflects the broader impact of the RAK Energy Innovation Competition – SME Edition (#rakinnovates).

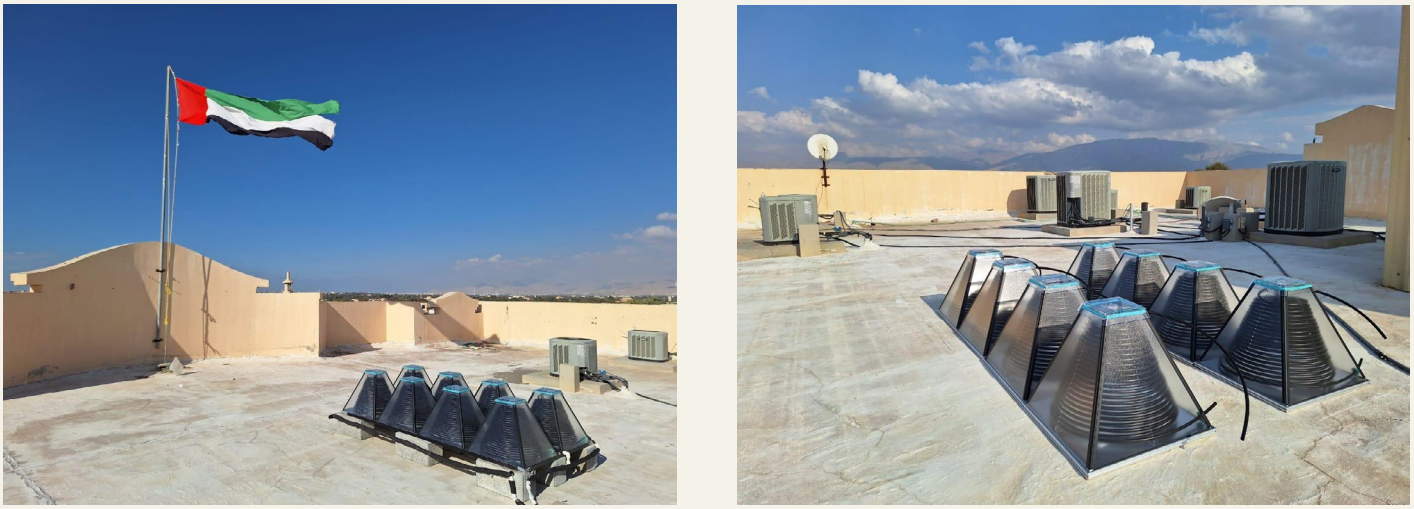


Figure 37: Flat-packable, self-assembled solar thermal collector installation in a household in Ras Al Khaimah

Upskill – Ras Al Khaimah Sustainable Energy Training Programme

Upskill, Ras Al Khaimah's training programme in sustainable energy, was designed to expand capabilities and expertise in the field of energy efficiency and renewable energy in the emirate. The training programme offers trainings and certifications from reputed local and international providers such as Clean Energy Business Council (CEBC), The Green Spoon Management Consultancies and Emirates Green Building Council from the UAE, Direktin from Italy, Energy Institute from the UK and National Thermal Power Corporation Limited (NTPC) from India. Reem is also collaborating with Ras Al Khaimah Human Resources Department, RAK DED and RAKEZ to promote this initiative among government and private sector employees.

Upskill is featured on the Reem website where interested participants from Ras Al Khaimah can avail of a discount on one or more of the 40 listed training courses by simply filling a form. Courses range from technical topics such as sustainable buildings, industrial energy efficiency, renewable energy, and green mobility to finance, for management, technical personnel and students.

UPSKILL
Ras Al Khaimah Sustainable Energy Training Program

Clean Energy Business Council Middle East & North Africa
مجلس صناعات الطاقة النظيفة الشرق الأوسط وشمال أفريقيا

EmiratesGBC
مجلس الإمارات للأبنية الخضراء
Emirates Green Building Council

THE GREEN SPOON
MANAGEMENT CONSULTANCIES

DIREKTIN
connecting innovations

एनटीपीसी
NTPC

energy institute

Figure 37: Upskill training programme providers

Partnerships & Collaboration

Throughout 2025, Ras Al Khaimah continued to strengthen partnerships and collaboration to support knowledge exchange, share best practices, and advance implementation of the RIS Strategy. These efforts reflect a shared vision across government institutions to support the emirate's sustainability and decarbonisation goals.

Key milestones demonstrated this momentum. Ras Al Khaimah Municipality and the Comune di Chieti, Italy, signed a Letter of Intent to strengthen collaboration on sustainable development, with a focus on energy transition, industrial efficiency, and green mobility. The agreement also supports knowledge exchange and business engagement between the two regions.

In 2025, RAKTA, partnered with Joby Aviation, a company developing electric air taxis for commercial passenger services, and Skyports Infrastructure, through the signing of a strategic MoU. The agreement aims to establish a long-term collaboration to launch a passenger air taxi service network in Ras Al Khaimah by 2027, positioning the emirate at the forefront of advanced air mobility solutions.

Figure 38: MoU signing between Ras Al Khaimah Municipality and Comune di Chieti

Figure 40: MoU signing between EPDA and RAK Police

Figure 39: MoU signing between RAKTA and Joby Skyports

Figure 41: MoU signing between RAKTA and XPENG AEROHT

RAKTA also signed a strategic MoU with XPENG AEROHT, based in Guangzhou, China, to collaborate on the advancement and application of flying car technologies in Ras Al Khaimah. The partnership will explore use cases across tourism, emergency response, and other future mobility applications, supporting the emirate's vision for innovative and sustainable transport solutions.

EPDA strengthened its commitment to strategic collaboration in 2025 through partnerships supporting environmental protection, innovation, and sustainable development. A Strategic Partnership Agreement was signed with RAK Police General Headquarters, reinforcing cooperation on environmental protection and regulatory alignment. EPDA also partnered with Quest for Adventure to advance eco-tourism and educational tourism, through interactive experiences for visitors and researchers.

Additional, agreements were concluded with key partners, including Al Amsal Venom Research L.L.C – Abu Dhabi, to strengthen collaboration with specialised research and medical institutions, supporting innovation and knowledge exchange.

RAK Energy Summit: Building Momentum towards 2026

RAK Energy Summit is Ras Al Khaimah's flagship sustainable energy event, held biennially under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, UAE Supreme Council Member and Ruler of Ras Al Khaimah.

Established to convene policymakers, utilities, industry leaders, technology providers, academia and investors, the Summit creates opportunities to shape dialogue, strengthen collaboration and accelerate sustainable energy and climate priorities across the UAE and the wider GCC region.

Following the successful edition in 2024, preparations commenced for the third RAK Energy Summit, which will take place from 25 to 27 November 2026 at RAK Expo Centre. Organised by Ras Al Khaimah Municipality in partnership with Etihad Water and Electricity (EtihadWE), the 2026 edition will build on the momentum of previous Summits while strengthening regional and international participation.

Guided by the theme "Create and Contribute to the Sustainable Energy Goals of the Future," the 2026 programme will explore key priorities shaping the region's sustainability agenda, including energy efficiency, renewable energy, future grids, artificial intelligence and digitalisation, carbon markets, sustainable mobility, and the decarbonisation of hard-to-abate industries. Through keynote addresses, panel discussions, technical sessions, networking forums and an exhibition, the Summit will promote knowledge exchange, showcase emerging technologies and facilitate collaboration across the public and private sectors.

As Ras Al Khaimah continues to advance its sustainability ambitions, the Summit plays an important role in strengthening the emirate's sustainable energy ecosystem by fostering strategic partnerships, showcasing opportunities, attracting investment and supporting the growth of a competitive and resilient energy sector.

"The real value of bringing people together lies not only in the conversations that take place, but in the ideas, partnerships and opportunities that continue long after the event concludes. By creating an environment where these connections can flourish, the RAK Energy Summit helps position Ras Al Khaimah as a destination for sustainable energy innovation, collaboration and investment while ensuring that Ras Al Khaimah remains connected to the conversations shaping the future of sustainable energy.

Ruqiya Azeez Shariff
Head of Awareness & Capacity Building Section, Reem

RAK ENERGY SUMMIT
قمة رأس الخيمة للطاقة

Financing Mechanisms

Incentives for individuals

Group financing mechanisms such as those adopted in the Ras Al Khaimah government retrofit project, have proven to be beneficial as they guarantee attractive returns on investment due to scale. This approach also helps cover buildings that would not otherwise be targetable by individual projects.

A first set of green financing offerings for individuals have also been launched by RAKBANK. These include discounted terms for green mortgages, green vehicle loans, as well as favourable financing terms for home retrofit works and home renewable energy installations. Details of the offering and how to avail of it can be found here.

Ras Al Khaimah Municipality has also partnered with Etihad Water and Electricity (EtihadWE) to provide monetary incentives to residents who participate in the Manzily Energy Advice Service and achieve electricity savings. Under this partnership, EtihadWE provides Đ1 credit for every Dirham saved in the homes of UAE nationals enrolled in the service. Interested applicants can sign up for Manzily here.

Incentives for industries

Industrial companies are offered subsidised energy audits and access to technical support through the industrial audits initiative. In return, participants commit to reporting energy data and implementing efficiency measures. Financing options are available to help cover audit costs.

Incentives for set-up of new companies

Companies operating as ESCOs, Energy Auditors and companies recognised in industrial energy management and renewable energy continue to reap the benefits of incentives offered by RAKEZ and RAK DED in the form of highly discounted business set-up fees. This type of incentive was provided to 13 eligible companies by the end of 2025.

Information Systems

The GIS Center was established in 2016 within the Municipality and is responsible for integrating and managing all geospatial data of Ras Al Khaimah on a single platform. The GIS Center periodically collects data from more than 15 data custodians, including local and federal government entities and utility companies. This data is then made available to the Municipality and other partner entities for urban planning, development and studies.

The GIS Center has supported Reem since the development of the EE&R Strategy in 2017 and 2018. One of the first studies of building roof polygons and roof materials in Ras Al Khaimah supported the development of the renewable energy ambitions of the emirate. Following strategy roll-out, the GIS center has supported a number of exploratory and planning studies related to planning of utility networks including electricity, water and wastewater, besides techno-economic studies related to building energy ratings, solar energy, wind energy, and agrivoltaics.

5

Future Outlook

Future Outlook

Building on the progress achieved in 2025, implementation of the RIS Strategy is expected to accelerate further in 2026 and the coming years. Existing programmes will continue to expand in scale and impact, while newer initiatives will begin making tangible progress.

Key Priorities for 2026

Hydrogen Exploration

Natural hydrogen exploration activities are expected to progress toward pilot drilling, testing, and potential collaboration with specialised international partners.

Utility-Scale Renewable Energy Studies

Studies into utility-scale renewable energy solutions, particularly wind energy and pumped storage hydropower, will continue to advance.

Distributed Solar PV Expansion

Further deployment of distributed solar PV systems is expected following the implementation of EtihadWE's Distributed Solar System (DSS) regulations, supported by continued awareness and market facilitation efforts.

Environmental Monitoring and Data Collection

Under the Environment Protection pillar, the programmes will continue to expand with a strong emphasis on data monitoring and activation of a strategy exercise.

Energy Efficiency and Decarbonisation

- The scope of retrofit activities is expected to extend in both breadth (number of buildings) and depth (type of interventions), particularly within the public sector.
- Following completion of energy audits across the majority of industrial electricity consumption in Ras Al Khaimah in line with Resolution No. 20 of 2024, the focus will shift toward implementation of identified energy-saving and emissions reduction measures.
- Decarbonisation efforts will increase in on hard-to-abate sectors, particularly cement and concrete, supported by the Cement Decarbonisation Framework.

Regulatory Development

- The Building Energy Rating Scheme will enter Phase 2, focusing on the development and calibration of the rating tool in preparation for future implementation.
- Development of utility-sector regulations will continue in alignment with the RIS Strategy's long-term sustainability objectives.
- Barjeel, Ras Al Khaimah's Green Building Regulations, will remain applicable to all new buildings. Studies to enhance these requirements will continue to inform potential future updates.

Capacity Building and Awareness

- The RAK Energy Innovation Competition (SME Edition) will continue supporting startups and SMEs developing region-specific solutions, alongside broader efforts to strengthen local market capacity and attract specialised service providers, technology companies, and international partnerships to support implementation of the RIS Strategy
- Public awareness and stakeholder engagement initiatives will continue through workshops, training programmes, communication campaigns, and sector-focused events.
- The third edition of RAK Energy Summit will take place in Ras Al Khaimah, a crucial regional meeting amid the growing importance of sustainable energy in the strategies of GCC countries.

As programme implementation gains momentum, Reem will keep expanding its role in monitoring, coordination, and technical support across the RIS Strategy. Key focus areas include:

- Continuous enhancement of the regulatory framework supporting all programme areas;
- Support for new and existing building retrofit, energy management, and solar PV projects;
- Exploration of innovative business models and financing solutions for retrofit and solar initiatives;
- Development of local market capacity through pipeline development, incentives, training, awareness campaigns, and events;
- Strengthening of service offerings for residential and industrial energy users;
- Continuous improvement of monitoring, reporting, and risk management processes within the RIS Strategy.

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Ras Al Khaimah Economic Zone

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HE Dr. Abdulrahman Al Shayeb Al Naqbi, Ras Al Khaimah Department of Economic Development

HE Esmaeel Hassan AlBlooshi, Ras Al Khaimah Transport Authority

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Ahmed Abdulkareem, Ras Al Khaimah Police

Ahmed Fayez, Investment and Development Office of Ras Al Khaimah

Ahmed Suwaid, Ras Al Khaimah Economic Zone

Ahmed Warsame, Al Hamra

Dr Ahmad Yousef , EtihadWE

Dr. Ali Alani, Ras Al Khaimah Economic Zone

Alia Busamra, ENOC

Basheer Bakroun, Marjan

Cleo Eleazar, Ras Al Khaimah Economic Zone

Fadi Al Adwan, Marjan

Faisal Ghani, SolarisKit

Fatima Alzaabi, Ras Al Khaimah Municipality

Hanin Afana, Ras Al Khaimah Public Services Department

Harilal Kutty, Al Hamra

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Milan Novak, Pure Alternative Energy

Mohamed AbouHemid, Ras Al Khaimah Public Services Department

Mohammed Altair, RAK Properties

Mouza Al Suwaidi, Ras Al Khaimah Municipality

Nitin Johar, Investment and Development Office of Ras Al Khaimah

Nowshin Khaleque, RAKGAS

Raed Hilles, Ras Al Khaimah Public Services Department

Ramy Jallad, Ras Al Khaimah Economic Zone

Reem Alshehhi, Ras Al Khaimah Public Services Department

Ruqayya Al Shehhi, Ras Al Khaimah Municipality

Sanjeet Dangi, Ras Al Khaimah Transport Authority

Shamma Aadel Aljallaf, Ras Al Khaimah Public Services Department

Shamma AlAwadhi, Ras Al Khaimah Transport Authority

Sufiya Sheikh, RAK Ceramics

Glossary of terms

AC: Air Conditioner

Đ: UAE Dirhams

AQI: Air Quality Index

Barjeel: The Green Building Regulations of Ras Al Khaimah

BAU: Business as Usual

CCUS: Carbon Capture, Utilisation and Sequestration

COP28: 28th Conference of the Parties to the United Nations Framework Convention on Climate Change

DSS: Distributed Solar System

EE&R Strategy: Energy Efficiency & Renewables Strategy 2040

EESL: Energy Efficiency Standards and Labels

EPDA: Environment Protection & Development Authority

ESCO: Energy Service Company

Etihad WE: Etihad Water and Electricity Company

EV: Electric Vehicle

EVCS: Electric Vehicle Charging Station

GHG: Greenhouse Gas

GDP: Gross Domestic Product

GIS: Geographic Information System

GPP: Green Public Procurement

GWh: Gigawatt-hours

HE: His/Her Excellency

HH: His/Her Highness

IDO: Investment and Development Office of Ras Al Khaimah

IPPU: Industrial Processes and Product Use

ISO: International Organization for Standardization

IT: Information Technology

km: kilometre

kWh: kilowatt-hours

kWp: kilowatts-peak

LED: Light Emitting Diode

LEED: Leadership in Energy and Environmental Design

LNG: Liquified Natural Gas

m: metres

m^2: square metres

m^3: cubic metres

MOCCAE: UAE Ministry of Climate Change & Environment

MOEI: UAE Ministry of Energy & Infrastructure

MoIAT: UAE Ministry of Industry & Advanced Technology

MOU: Memorandum of Understanding

MT: Metric Tonne

MW: Megawatts

MWp: Megawatts-peak

PV: Photovoltaic

PSD: Public Services Department

P.O.: Post Office

RAK: Ras Al Khaimah

RAKCOC: Ras Al Khaimah Center for Outdoor Comfort

RAKEZ: Ras Al Khaimah Economic Zone

RAKGAS: Ras Al Khaimah Gas Company

RAKTA: Ras Al Khaimah Transport Authority

Reem: Sustainable Energy Sector of Ras Al Khaimah Municipality

RIS Strategy: Ras Al Khaimah Integrated Sustainability Strategy 2050

SCM: Supplementary Cementitious Material

SWRO: Seawater Reverse Osmosis

SME: Small and Medium Enterprise

TSE: Treated Sewage Effluent

UAE: United Arab Emirates

UAQ: Umm Al Quwain

Contact information

Editor & Publisher

بلديـــــــة رأس الخيمـــــــــة
Ras Al Khaimah Municipality

Ras Al Khaimah Municipality
P.O. Box 4, Ras Al Khaimah, UAE
Tel: +971 7 246 6666
Email: info.eer@mun.rak.ae

Programme Owners and RAK Sustainability Committee Members

Investment and Development Office
P.O. Box 12222, Ras Al Khaimah, UAE
Tel: +971 7 227 7888
Email: info@ido.ae

Ras Al Khaimah Economic Zone
P.O. Box 10055, Ras Al Khaimah, UAE
Tel: +971 7 204 1111
Email: info@rakez.com

Environment Protection & Development Authority
Ras Al Khaimah, UAE
Tel: +971 7 233 3371
Email: info@epda.rak.ae

Public Services Department
Ras Al Khaimah, UAE
P.O. Box 1661, Ras Al Khaimah, UAE
Tel: +971 7 228 5688
Email: info@pwsd.rak.ae

RAK Transport Authority
Ras Al Khaimah, UAE
Tel: 800 1700
Email: info@rakta.gov.ae

RAKGAS
Ras Al Khaimah, UAE
Tel: +971 7 227 7555
Email: info@rakgas.ae