حكومة رأس الخيمة
Government of Ras Al Khaimah

بلديـــــة رأس الخيمـــــة
Ras Al Khaimah Municipality

RAS AL KHAIMAH ENERGY EFFICIENCY & RENEWABLES STRATEGY 2040

ANNUAL REPORT 2023

His Highness Sheikh Saud bin Saqr Al Qasimi
UAE Supreme Council Member and Ruler of Ras Al Khaimah

"Energy and water are essentials of our lives and prosperity. They are an integral part of the social and economic development that we aspire to, so we must preserve and invest in them. The application of modern technology and the use of modern building materials in addition to the use of renewables will provide opportunities for all sectors to benefit from energy and water at a lower cost."

His Highness Sheikh Mohammed bin Saud bin Saqr Al Qasimi
Crown Prince of Ras Al Khaimah and Chairman of the Executive Council

"Competitiveness in energy and water costs is key to our development. Efficiency and care in the use of energy and water as well as the adoption of renewable sources of energy support competitiveness of our economy and conservation of the natural resources of our emirate."

His Excellency Munther Mohammed bin Shekar Al Zaabi
Director General, Ras Al Khaimah Municipality and
Chairman, Energy Efficiency and Renewables Committee

"As humanity faces the storms of the present and struggles with evolving scenarios on the horizon, we must turn to the beacon of sustainability to reach a better tomorrow. With the Energy Efficiency and Renewables Strategy 2040, Ras Al Khaimah contributes to the energy sustainability goals of the UAE and of the world, while providing concrete benefits to residents and businesses in the emirate."

FOREWORD

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

This is the sixth year of reporting on the Ras Al Khaimah Energy Efficiency & Renewables Strategy 2040 (EE&R Strategy). Established under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, UAE Supreme Council Member and Ruler of Ras Al Khaimah, the strategy aims to support the competitiveness and sustainability of Ras Al Khaimah's economy over the long run, by pursuing efficiency in energy use and reliable, cost-effective renewable energy supply.

For the broader economy of Ras Al Khaimah and the UAE, 2023 was a year of growth, offering favourable conditions for expanding sustainability programs. On the strategic front, the UAE Ministry of Climate Change and Environment (MoCCaE) completed the roadmap towards net zero emissions by 2050, with a key role for the energy sector.

Last year also provided an incredible opportunity to reinforce our initiatives as construction was initiated in a number of milestone projects within Ras Al Khaimah, including the Wynn Resort. This has led to an acceleration in new hospitality and residential projects across the emirate, providing a window of opportunity to fortify our efforts by ensuring that the developments embed sustainable energy provisions from the initial stages of construction.

The 28th UNFCCC's Conference of the Parties (COP28), which took place in Dubai, UAE, from 30 November until 12 December 2023, was also a landmark event that gave way to a number of breakthrough outcomes and decisions. This includes the Global Renewables and Energy Efficiency Pledge, which saw a commitment from 116 countries to triple global renewable energy capacity to at least 11,000 gigawatts and double the global average annual rate of energy efficiency improvements to more than 4% by 2030; a Loss and Damage Fund, with the first pledges totalling over USD 700 million, and where the UAE pledged USD 100 million; and a pledge to "transition away" from fossil fuel use in the final text of the Global Stocktake. COP28 saw a significant representation of projects from Ras Al Khaimah, which is increasingly in the global map of jurisdictions where climate action is prioritised.

2023 was a year of strong performance for the EE&R Strategy. More than 1,100 new Barjeel-compliant buildings were commissioned, and more than 40 existing buildings were contracted for retrofit. Key industries joined the industrial energy efficiency initiative which now involves companies representing nearly 50% of the industrial consumption of Ras Al Khaimah.

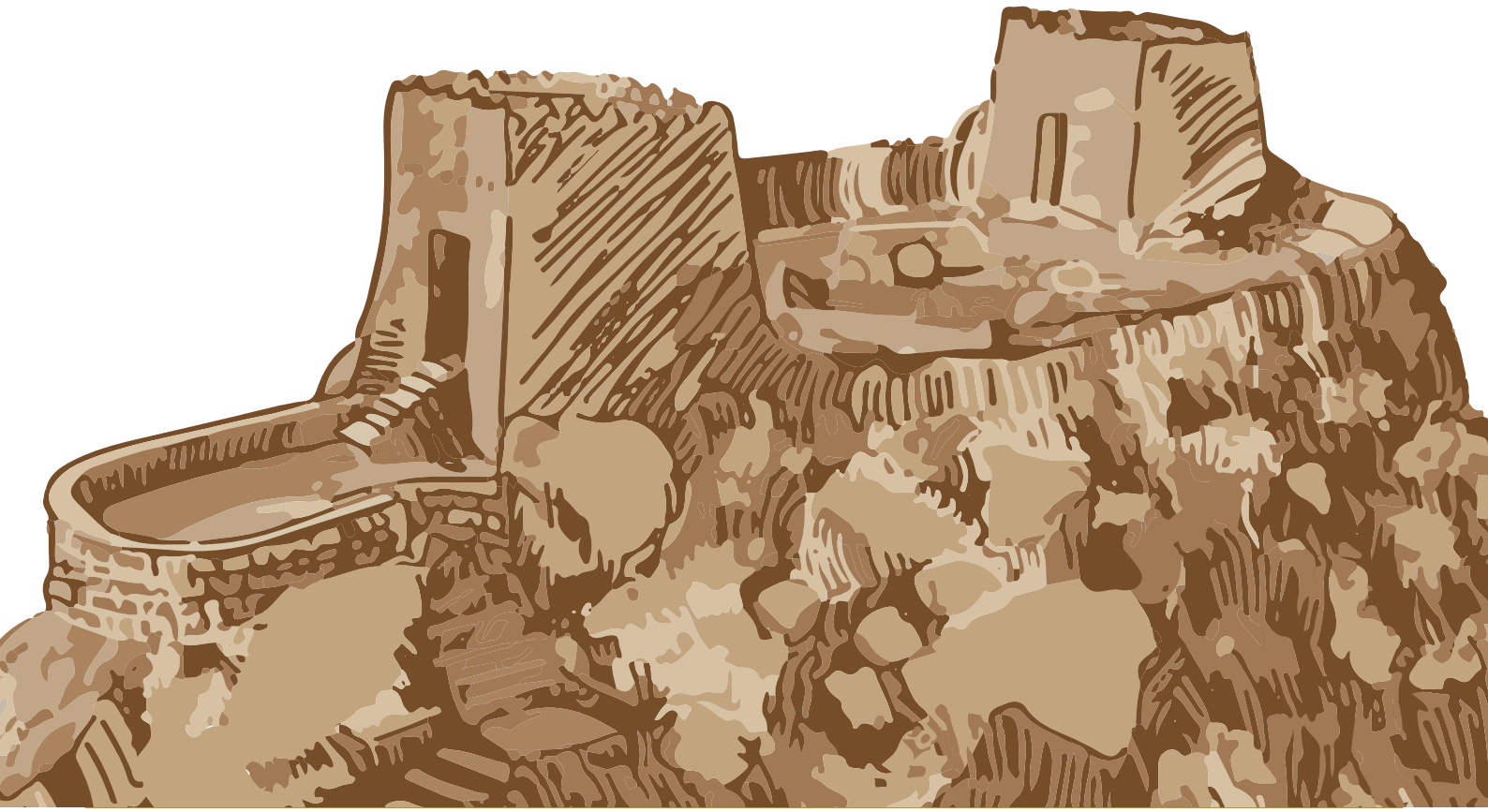
Several new initiatives were also activated in 2023. The sustainable community guidelines which were approved in 2022, are being implemented in a new and upcoming pilot community named the Awafi Sustainable District, which will see the development of nearly 200 villas.

The Manzily Energy Advice Service was also launched, providing free energy advice for homeowners. Since its launch, about 60 homeowners have benefited from the service.

Additionally, the government is also working on new capacity building initiatives to encourage local participation in particular from SMEs, and support the development of local talent with educational institutions.

In 2023, after 5 years of implementation, the EE&R Strategy undertook its planned review, which is a significant exercise in consideration of the UAE's commitments to net zero emissions by 2050. This work is expected to result in an expansion of scope, with the inclusion of new programs, and in deeper intervention of some existing programs, leading to acceleration in the pathway to lower emissions of the emirate. Reem, the Energy Efficiency and Renewables Office of Ras Al Khaimah Municipality, will further enhance its capabilities in preparation for this more ambitious plan of activities in the coming years.

We hope you enjoy reading this report, and we look forward to greater achievements in 2024.



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EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

The Energy Efficiency and Renewables Strategy of Ras Al Khaimah comprises nine programs supported by five enablers, is fully integrated into the broader Ras Al Khaimah Vision 2030, and is aligned with the federal agenda on energy, water and the environment. It supports the competitiveness of the Ras Al Khaimah economy by reducing costs and increasing the availability of energy and water while also building local capabilities in related sectors. The strategy is increasingly relevant today, as the benefits of sustainability for the health and well-being of individuals and for the competitiveness of businesses are being recognised in mainstream policy discourse.

A dedicated organisational set-up, including the EE&R Committee, Reem (within Ras Al Khaimah Municipality), Program Owners (government entities responsible for each program) and supporting entities, continued to ensure effective strategy implementation in 2023. The most notable achievements of the year were:

1. Completion of more than 1,100 Barjeel-compliant buildings in Ras Al Khaimah,

2. Contracting of more than 40 buildings for retrofits with more than 100 additional buildings in the pipeline,

3. Completion of 7 industrial energy audits, extending the initiative's coverage to nearly 50% of the total industrial electricity consumption,

4. Implementation of the sustainable community guidelines in a new and upcoming pilot community named the Awafi Sustainable District, which will see the development of nearly 200 villas,

5. The launch of Manzily Energy Advice Service, which has provided free energy advice to about 60 homeowners,

6. Development of new landscape standards and guidelines to modernise the landscape and ensure better integration with the urban environment.

These accomplishments represent a growing pipeline of projects expected to result in significant energy and water savings in the coming years. Apart from those listed above, several enablers were further enhanced to facilitate the long-term success of the strategy. Notable ones among them include the following:

1. Enhancing policy and regulation, including completion of the first phase for the development of a building energy rating system, development of contracting standards for solar projects, street lighting standards, financing mechanisms for energy efficiency projects, and launch of green public procurement initiatives such as "single-use plastic no more" and "go paperless";

2. Raising awareness, through multiple initiatives, including for example participation in COP28 along with multiple industry webinars, launch of an energy sustainability game (Manzily) to educate the youth on simple actions that can save energy and water in their home and an ongoing 'Energy Saving Tips' campaign;

3. Building capacity, including ongoing Barjeel training for engineers and consultants, extension of business set-up incentives to renewable energy consultancies and SMEs in the fields of smart energy management and industrial IoT and ongoing efforts of RAK Energy Innovation Competition: (SME Edition) to attract innovative start-ups and SMEs to address regional challenges in the fields of energy management, industrial efficiency and decentralised energy systems; and

4. Leveraging information systems, including the GIS Center's spatial analytics services, their SDI database of geospatial information, and Reem's own energy model to measure and verify energy savings and greenhouse gas emissions.

2

RAS AL KHAIMAH ENERGY EFFICIENCY & RENEWABLES STRATEGY 2040

30%
Energy Savings

20%
Water Savings

20%
Renewables

Ras Al Khaimah Energy Efficiency & Renewables Strategy 2040

Figure 1: Ras Al Khaimah Energy Efficiency & Renewables Strategy 2040

2. RAS AL KHAIMAH ENERGY EFFICIENCY & RENEWABLES STRATEGY 2040

2.1 Ras Al Khaimah's Energy Efficiency & Renewables Journey

The EE&R Strategy was established in 2018 under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, UAE Supreme Council Member and Ruler of Ras Al Khaimah. Its overarching objectives are to improve competitiveness and sustainability of the Ras Al Khaimah economy; while also building local skills, capabilities and a diverse market for products and services related to energy efficiency & renewables. It sets a target of 30% energy savings, 20% water savings and 20% contribution from renewable energy sources by 2040, compared to a 2017 baseline.

Figure 1 (boat graphic) illustrates the various programs of the strategy moving in synergy, taking Ras Al Khaimah forward to a modern and more sustainable world. Figure 2 (charts) shows its targets over time until 2040, and the expected contribution of each program to the overall targets.

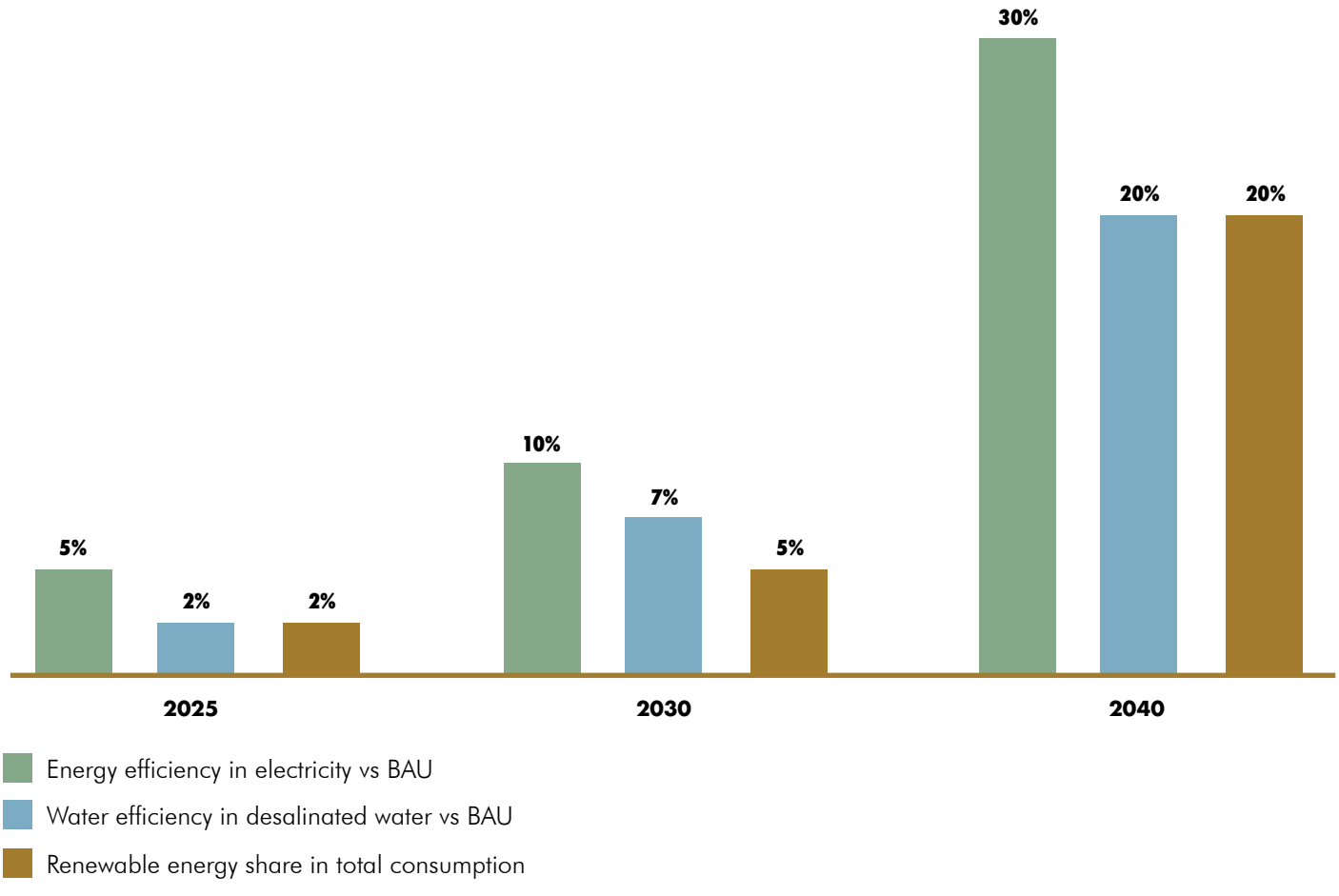


Figure 2: Main targets of the EE&R strategy

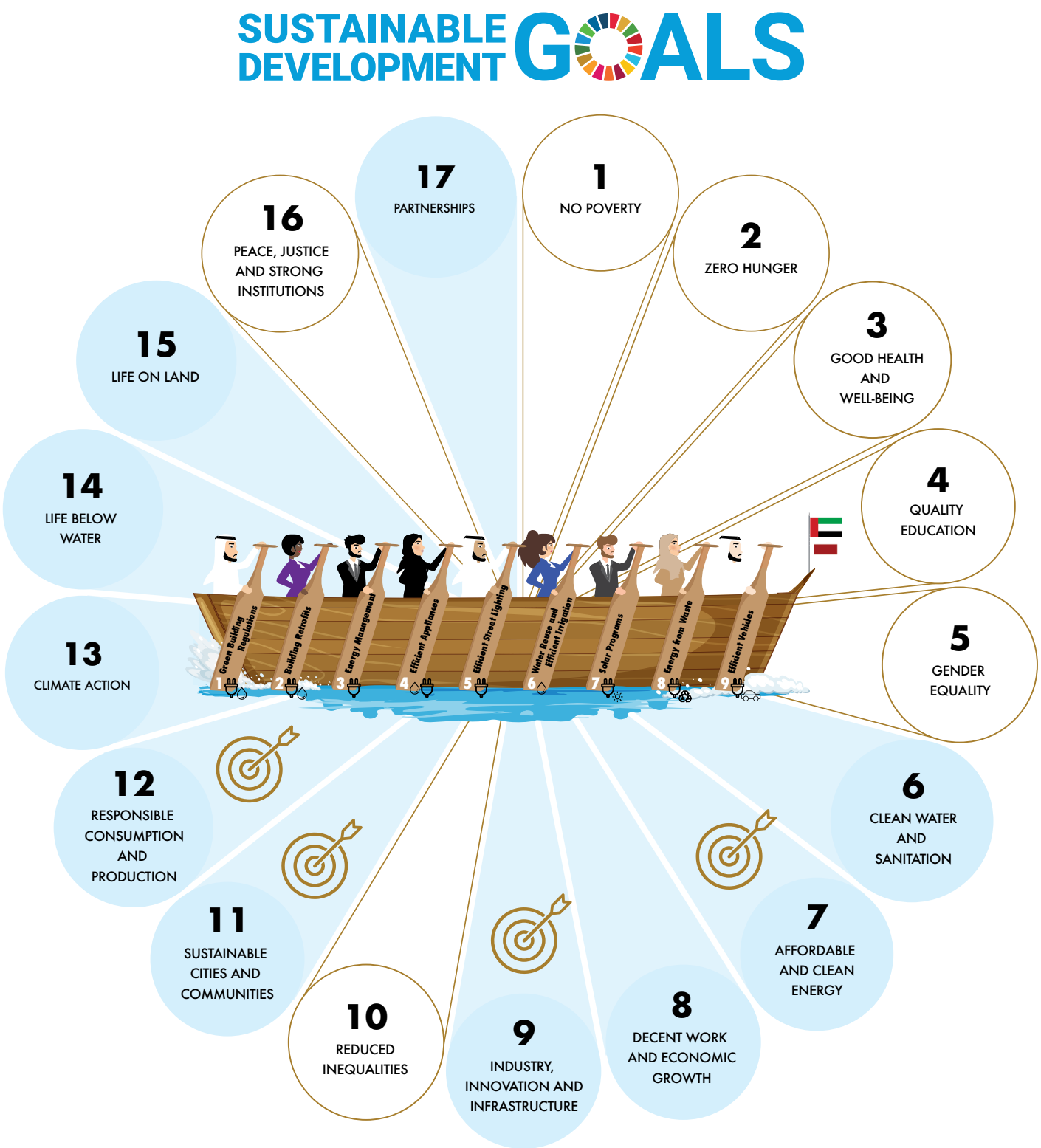


Figure 3: Assessment of EE&R Strategy 2040 contribution to the UN Sustainable Development Goals

Figure 3 (SDGs) demonstrates the alignment of the strategy with the sustainable development goals (SDGs).

Over 90% of the world's GDP is now covered by time-bound commitments to net-zero greenhouse gas emissions. In 2021, the UAE announced its ambitions to reach net-zero emissions by 2050, becoming the first country in the MENA region to make such a commitment.

In 2023, the UAE Ministry of Climate Change and Environment developed the national roadmap for the UAE towards net zero emissions by 2050. The energy strategy is currently undergoing review which incorporates new ways of supporting national targets.

2.2 Benefits of the EE&R Strategy

The main objective of the EE&R Strategy is to support reliable and cost-competitive access to energy and water resources for residents and businesses in Ras Al Khaimah by reducing the energy intensity of the economy and increasing the use of renewable resources.

The EE&R Strategy is expected to bring more than AED 9 billion of net benefits to Ras Al Khaimah's economy on a present value basis. These savings come primarily from reduced energy and water costs, reduced maintenance costs, and delayed investment costs.

Other significant benefits of the EE&R Strategy include the following:

1. Social benefits: the EE&R Strategy will improve the positioning of Ras Al Khaimah as an attractive place to live and work in. Additional jobs will be created for both national and expat communities in the manufacturing and service sectors connected to energy and water industries.

2. Economic and market benefits: the economic savings brought by the strategy will free up funds that may be reinvested for the benefit of Ras Al Khaimah and its local economy. The strategy will build additional economic resilience against price fluctuations of various conventional fuels. Increased competitiveness will attract more businesses and industries while further entrenching existing businesses in Ras Al Khaimah. Local markets will be created for energy efficiency and renewables products and services, which will contribute to GDP growth and create opportunities for private sector development. Enhanced work environments, efficient equipment and proper maintenance practices will improve the overall productivity of the economy. The strategy will benefit the real estate sector as the added value of efficient buildings is expected to gradually translate into price and rental premiums. The tourism sector will benefit from an image of leadership in environmental and economic sustainability.

3. Environmental, health and safety benefits: implementation of the EE&R Strategy will also create better living and working conditions through healthier indoor and outdoor environments in Ras Al Khaimah. It will, additionally, promote safety by replacing old equipment while reducing the use of hazardous substances. Environmental benefits, on the other hand, will come from better waste management practices, treatment and reuse of wastewater, use of electric and fuel-efficient vehicles and use of local plant species.

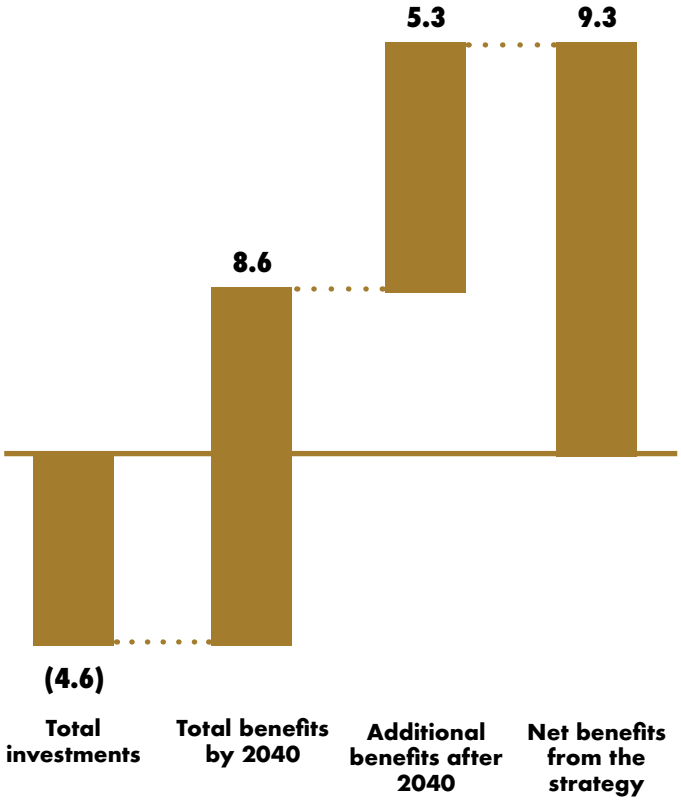


Figure 4: Benefits and costs of the EE&R Strategy (AED billion, present value in 2018)

2.3 EE&R Strategy Governance

A dedicated organisational set-up has been established to ensure effective strategy implementation. This includes Reem, the Energy Efficiency & Renewables Committee, and the government entities responsible for implementation of each of the programs and initiatives of the EE&R Strategy.

2.3.1 Reem

Reem, the Energy Efficiency & Renewables Office of Ras Al Khaimah Municipality, is the government office dedicated to driving and reporting on the implementation and continuous update of the EE&R Strategy. Its main organisational functions are shown in Figure 5.

2.3.2 Energy Efficiency & Renewables Committee

The Energy Efficiency & Renewables Committee guides and supports Reem in the implementation of the EE&R Strategy. The committee met six times in 2023, to discuss the status of strategy implementation and the development of new initiatives.

The Chairperson of the committee is H.E. Munther Mohammed bin Shekar, Director General of Ras Al Khaimah Municipality.

Figure 5: Main functions of Reem

Members of the Energy Efficiency & Renewables Committee

H.E. Munther Mohammed bin Shekar
Director General,
Ras Al Khaimah Municipality
Chairman

Raed Hilles
Acting Chief Operating Officer,
Public Services Department
Member

H.E. Khaled Fadel Al Ali
Director General,
Public Services Department
Member

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

H.E. Dr. Saif Al Ghais
Director General,
Environment Protection and
Development Authority
Member

Nitin Johar
Chief Financial Officer,
Investment and Development Office
Member

H.E. Eng. Esmaeel Hasan Al Blooshi
Director General,
Ras Al Khaimah Transport Authority
Member

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

Salim Bin Rabee'a
Executive Director,
Electricity Directorate,
Etihad Water and Electricity
Member

2.3.3 Implementation Responsibilities

Each program of the EE&R Strategy is assigned to a Program Owner, selected based on its mandate and expertise. The Program Owner is responsible for the overall execution of the initiatives of that program and is accountable for achieving program targets and operational objectives. In most cases, supporting entities are also identified to assist the Program Owner through the activation of program enablers or the execution of some initiatives within the program. The Program Owners and supporting entities are shown in Figure 6.

Program	Program Owner	Support
1. Green Building Regulations	Ras Al Khaimah Municipality	rakez
2. Building Retrofits	reem	IDO
3. Energy Management	reem	rakez
4. Efficient Appliances	Ministry of Industry & Advanced Technology	reem
5. Efficient Street Lighting	Public Services Department	Etihad Water & Electricity
6. Water Reuse & Efficient Irrigation	Public Services Department	reem
7. Solar Programs	reem	Public Services Department, IDO
8. Energy from Waste	Public Services Department	
9. Efficient Vehicles	RAK Transport Authority	reem, Etihad Water & Electricity

Figure 6: Program owners & supporting entities for all programs

H.E. Dr. Saif Al Ghais
Director General,
Environment Protection and Development Authority

"Energy efficiency and renewable energy are essential for our fight against climate change and environmental degradation. The Environment Protection and Development Authority supports the EE&R Strategy in raising awareness about the benefits of efficiency and through capacity-building programs."

Some supporting entities are assigned to develop and enhance cross-program enablers that support the foundations of multiple programs and the strategy as well. Figure 7 shows supporting entities for each strategy enabler.

Enabler	Supporting Entity
Awareness and Capacity Building	reem, rakez, Environment Protection & Development Authority
Financing Mechanisms	Ras Al Khaimah Government Department of Finance, IDO
Research and Innovation	
Information Systems	Electronic Government Authority
Policy and Regulation	

Figure 7: Enablers and supporting entities

2.4 Progress & Achievements

2.4.1 Main Achievements over the course of the Strategy

Significant progress has been achieved towards the goals of the EE&R Strategy since its launch in 2018. A summary of these achievements is listed below:

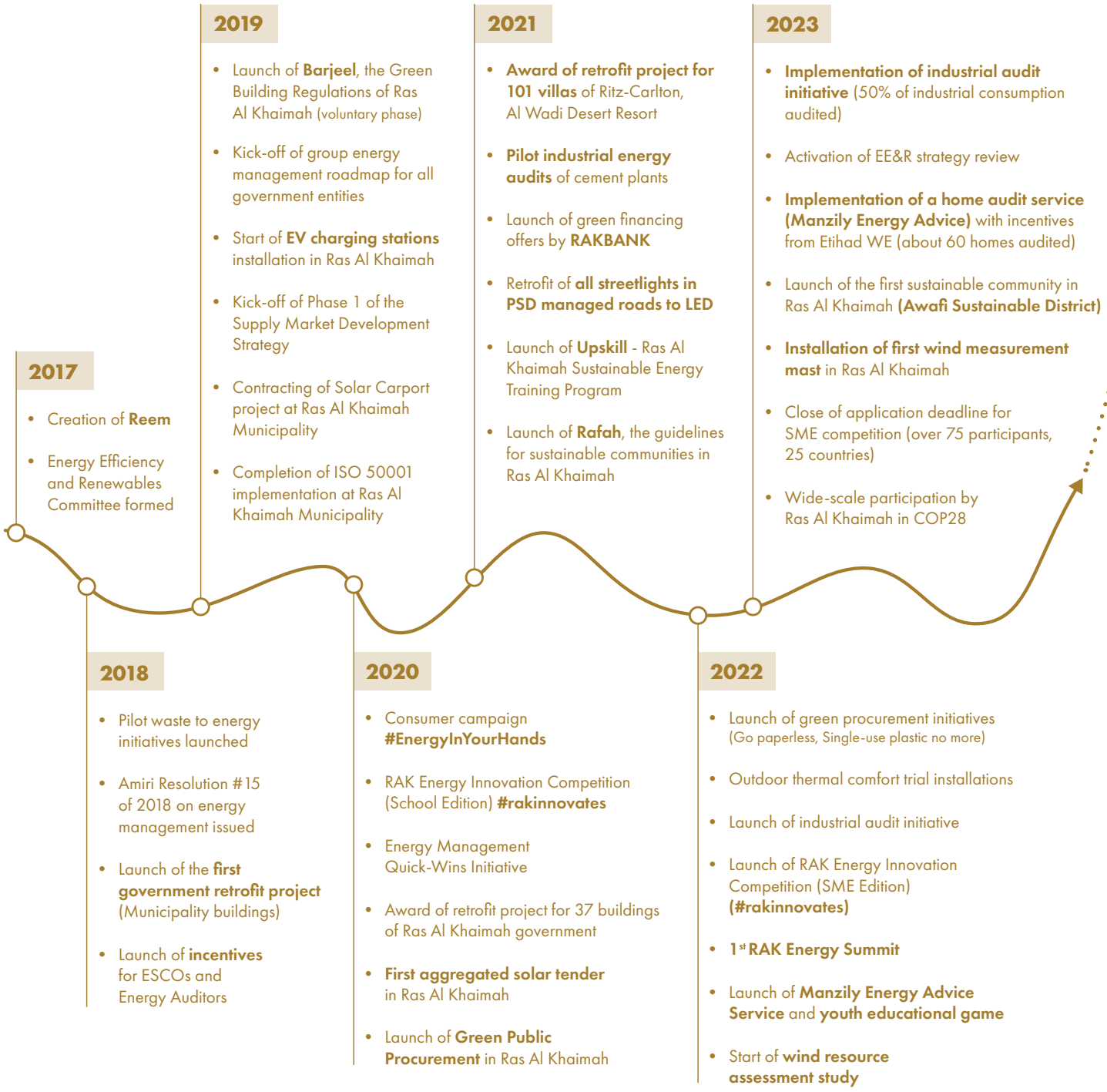


Figure 8: Initial acheivements of the EE&R Strategy by year end

The following roadmap is our expectation of future milestones in the strategy until 2040:

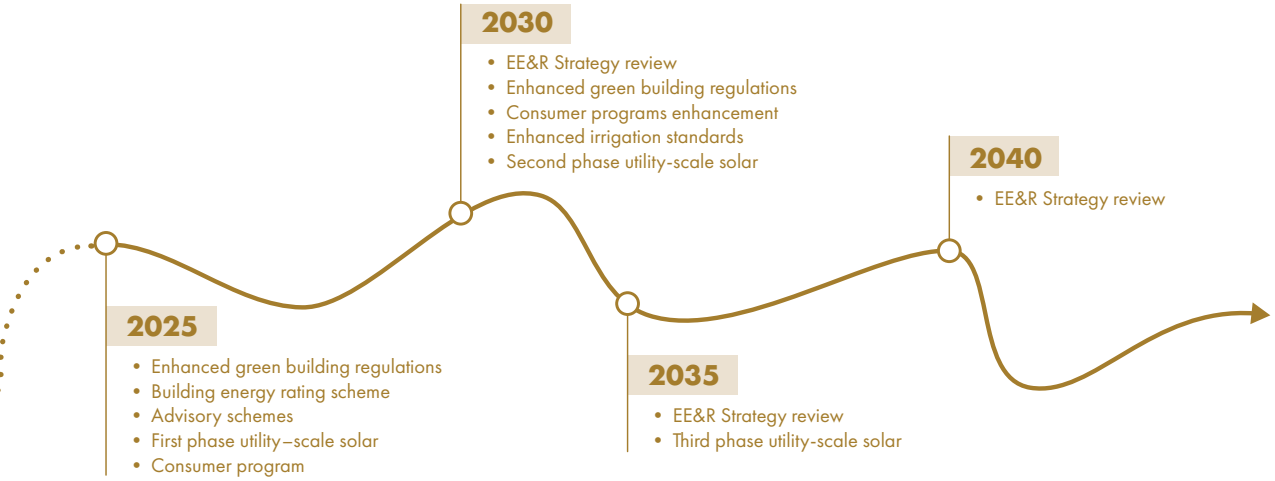


Figure 9: EE&R Strategy roadmap

2.4.2 Progress of Strategy Implementation in 2023

Implementation of the strategy has resulted in a series of achievements in 2023, the most notable of which are:

1. Completion of more than 1,100 Barjeel-compliant buildings in Ras Al Khaimah,

2. Contracting of more than 40 buildings for retrofits with more than 100 additional buildings in the pipeline,

3. Completion of 7 industrial energy audits, extending the initiative's coverage to nearly 50% of the total industrial electricity consumption,

4. Implementation of the sustainable community guidelines in a new and upcoming pilot community named the Awafi Sustainable District, which will see the development of nearly 200 villas,

5. The launch of Manzily Energy Advice Service, which has provided free energy advice to about 60 homeowners,

6. Development of new landscape standards and guidelines to modernise the landscape and ensure better integration with the urban environment.

These accomplishments represent a growing pipeline of projects expected to result in significant energy and water savings in the coming years. Apart from those listed above, several enablers were further enhanced to facilitate the long-term success of the strategy. Notable ones among them include the following:

1. Enhancing policy and regulation, including completion of the first phase for the development of a building energy rating system, development of contracting standards for solar projects, street lighting standards, financing mechanisms for energy efficiency projects, and launch of green public procurement initiatives such as "single-use plastic no more" and "go paperless";

2. Raising awareness, including multiple initiatives, for example participation in COP28 along with multiple industry webinars, launch of an energy sustainability game (Manzily) to educate the youth on simple actions that can save energy and water in their home and an ongoing 'Energy Saving Tips' campaign;

3. Building capacity, including ongoing Barjeel training for engineers and consultants, extension of business set-up incentives to renewable energy consultancies and SMEs in the fields of smart energy management and industrial IoT and ongoing efforts of RAK Energy Innovation Competition: (SME Edition) to attract innovative start-ups and SMEs to address regional challenges in the fields of energy management, industrial efficiency and decentralised energy systems; and

4. Leveraging information systems, including the GIS Center's spatial analytics services, their SDI database of geospatial information, and Reem's own energy model to measure and verify energy savings and greenhouse gas emissions.

2.4.3 Energy & Water Savings

In total, nearly 124 GWh of electricity and nearly 1.4 million m^3 of water were saved in Ras Al Khaimah throughout 2023. All programs are now showing firm results in terms of savings. Apart from electricity and water, direct savings of 251 GWh thermal of fossil fuel energy were achieved by the Energy from Waste and Efficient Vehicles Programs. These direct savings of fossil fuels are equivalent to more than 9,000 cars being taken off the road for a year. A detailed breakdown of the measured and verified savings by the program is provided in Figure 10.

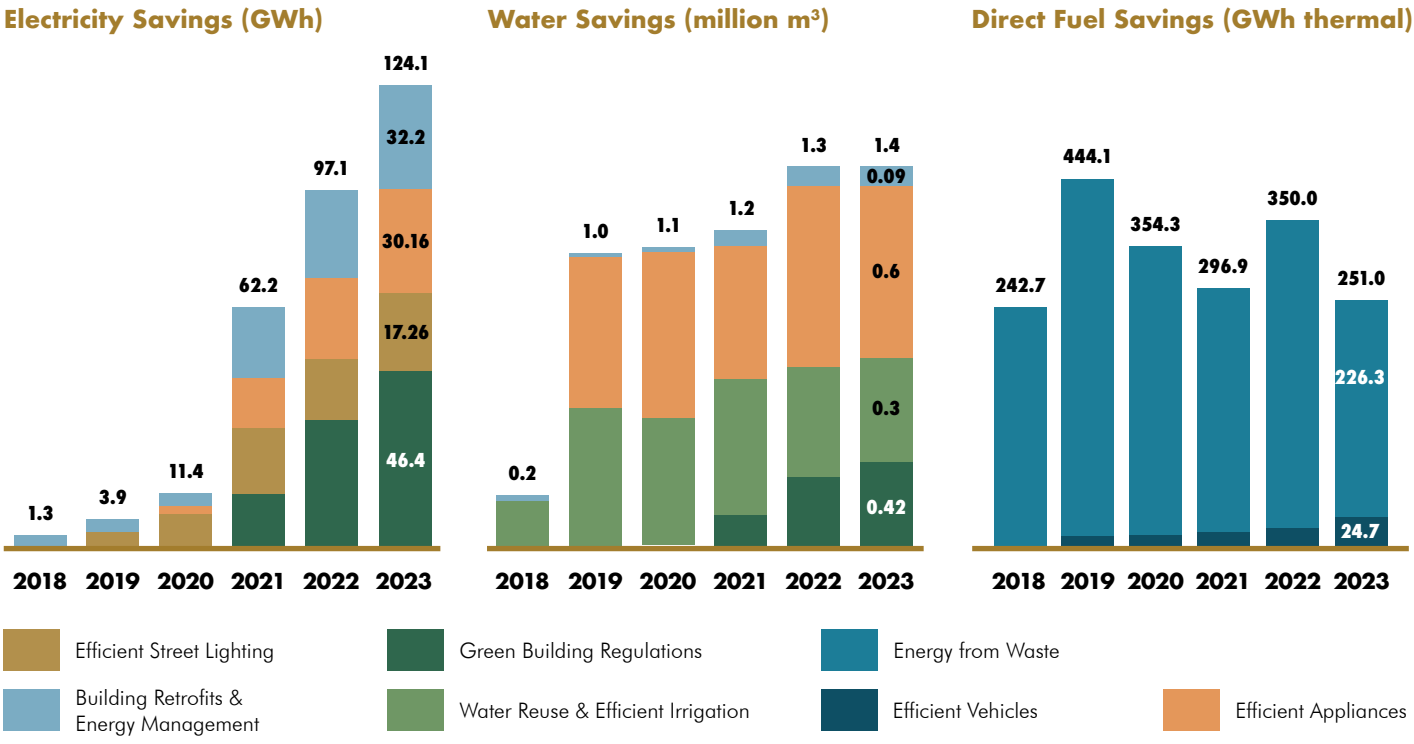


Figure 10: Annual energy and water savings achievements by program

2.4.4 Greenhouse Gas Inventory

Ras Al Khaimah completed a GHG inventory for the year 2023, in accordance with the GHG Protocol for Cities. The BASIC level of reporting was adopted for 2023, 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 this year. Notable exclusions include emissions from international transportation, land use, agricultural activities and GHG capture by vegetation.

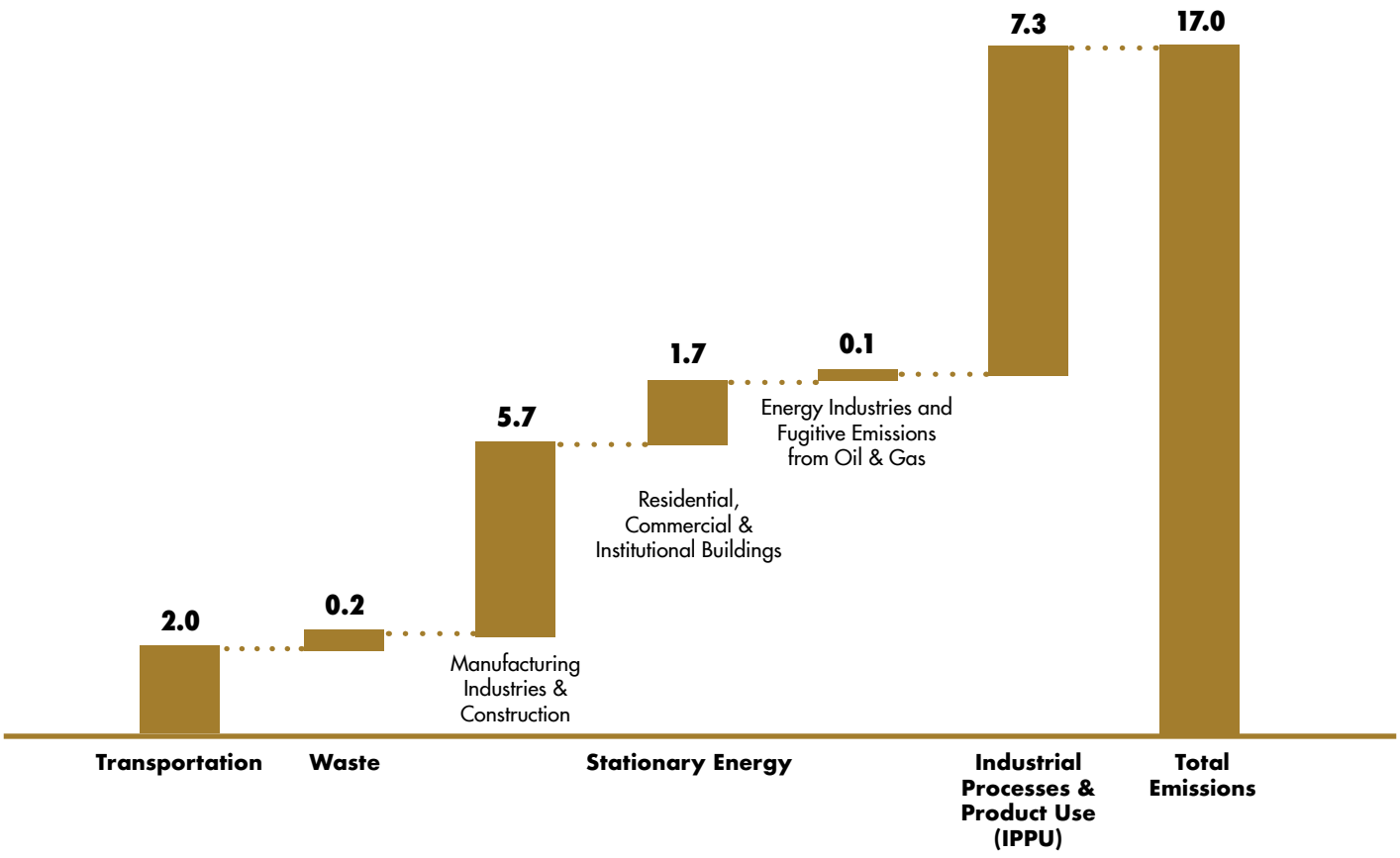
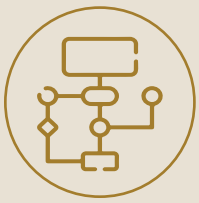


Figure 11: Carbon footprint of Ras Al Khaimah by sector in 2023 (million tonnes of CO_2 equivalent)

3

THE NINE PROGRAMS



3.1 Green Building Regulations

Program Owner: بلديـــــة رأس الخيمـــــة Ras Al Khaimah Municipality

Supporting Entity: rakez RAS AL KHAIMAH ECONOMIC ZONE

Abdulla Samhan
Executive Director, Urban Planning and Development Sector, Ras Al Khaimah Municipality

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 2023, more than 3,000 Barjeel-compliant buildings have been built, with more than 6,500 permitted for construction in the coming years. Barjeel is undergoing periodic updates to ensure its standards follow the pace of global technology development.

In 2023, we initiated the development of a building energy rating system. This system will be used to incentivise the improvement of both new and existing buildings by providing recognition to highly energy-efficient buildings in the market. The first phase of this project (development of a regulatory approach) has been completed, and we are now in the second phase of survey and analytical modelling, which will support the detailed design.

Going beyond buildings, the Municipality has developed guidelines for sustainable communities that address the public realm in four areas of improvement: livability and mobility, energy, water, and resource efficiency. The guidelines are being implemented in a new and upcoming pilot community named the Awafi Sustainable District, which will see the development of nearly 200 villas and is being overseen by a dedicated team comprising experts from the Municipality and the Public Services Department. Eligible citizens can sign up at the Municipality to book a plot for a villa in the district and benefit from living in a more sustainable and environmentally friendly community.

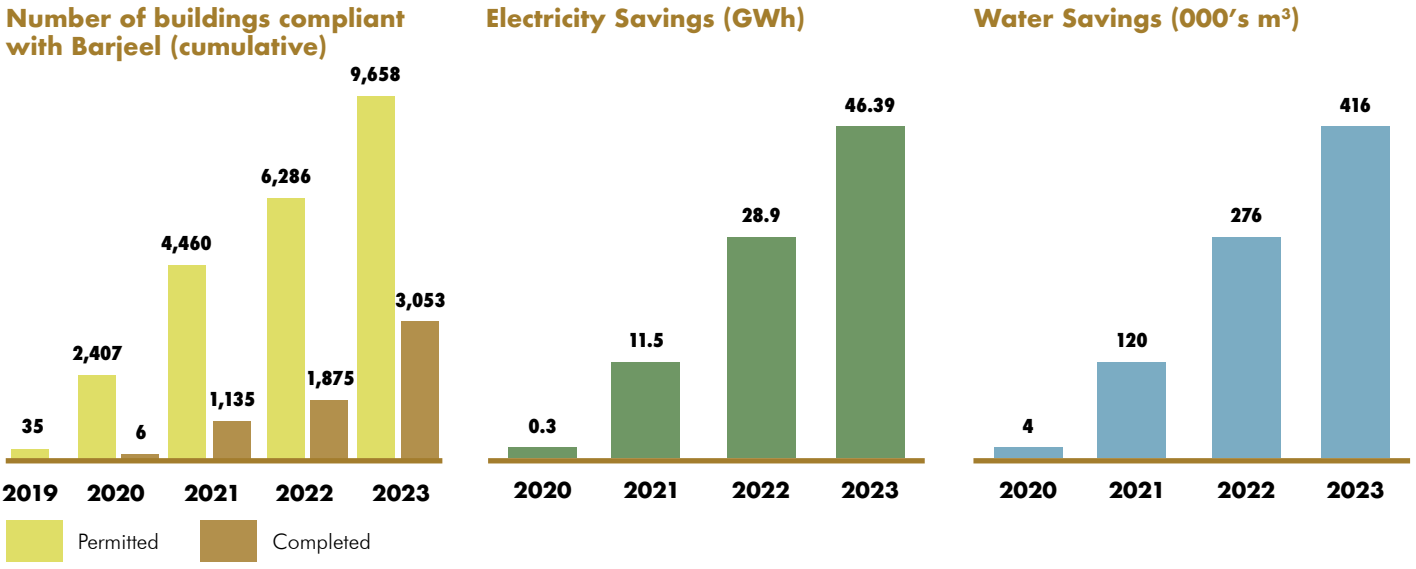


Figure 12: Main results of the Green Building Regulations Program

3.2 Building Retrofits

Program Owner: Ras Al Khaimah Municipality – reem

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

Pablo Izquierdo
Manager, Energy Services, Reem, Ras Al Khaimah Municipality

Nada Al Safarini
Senior Energy Auditing and M&V Engineer, Reem, Ras Al Khaimah Municipality

The Building Retrofits Program was established to deliver energy savings in existing buildings through upgrades focused on major energy-consuming systems. The program has developed rapidly following its first project in 2018. By the end of 2023, more than 300 buildings have been retrofitted. The market is served by a conspicuous group of reputable ESCOs. The list of accredited ESCOs, comprise at the end of 2023, 19 companies, who by virtue of their accreditation are involved in all project tenders managed by Reem.

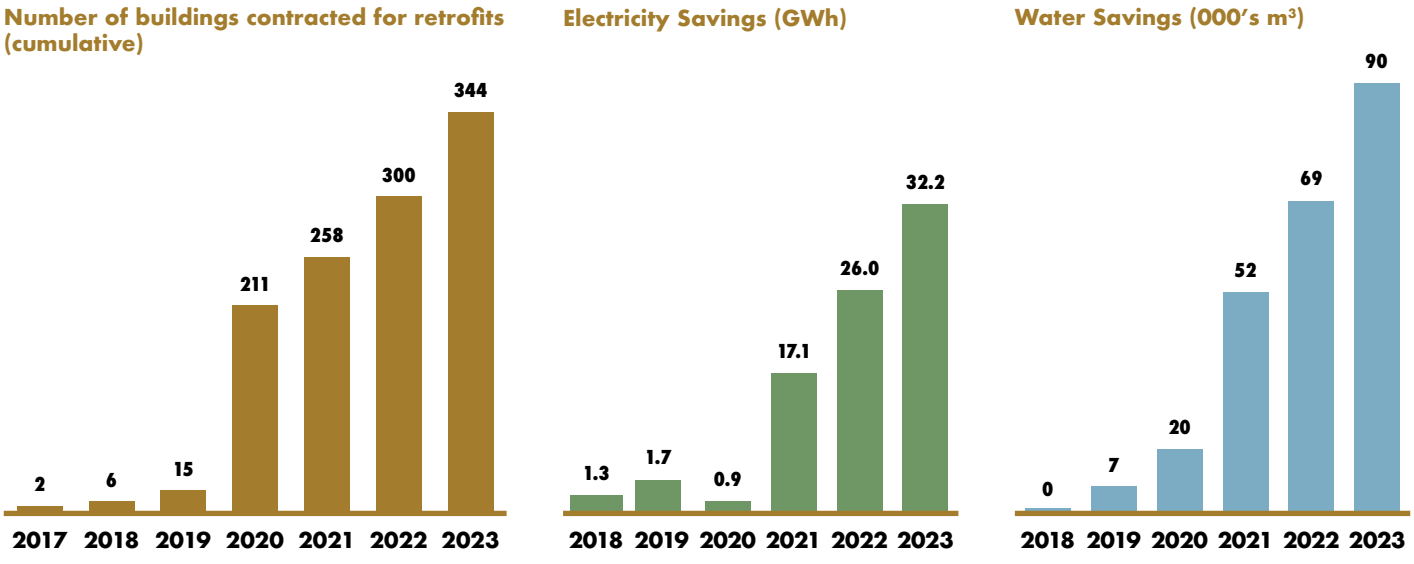


Figure 13: Main results of the Building Retrofits Program

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 are demonstrating strong economic benefits with average savings exceeding 25% and payback times averaging less than 4 years. The prevalent contract model in government projects is a guaranteed savings scheme, while in the private sector there are variety of methods, where the standard engineering procurement construction model prevails.

Ongoing projects include among others the retrofit of a large pipeline of 100+ semi-government buildings, as well as a number of mosques in the emirate, all of which are now in tendering and contracting phase. Given the relevance of the hospitality sector and as part of the Sustainable Destination Certification achieved by Ras Al Khaimah, a plan is being developed to support hotels that want to become more energy efficient. While developing the pipeline of new projects, Reem is also exploring new contracting methods, such as cooling as a service, and new approaches to address buildings of smaller sizes.

While these programs address the commercial and government sectors, Reem is also working towards methods that support energy efficiency actions taken by residents. A new initiative was launched in 2023 under the name of Manzily Energy Advice Service, which provides 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 60 homeowners have benefited from the service. RAK Municipality has also partnered with Etihad Water and Electricity (EtihadWE) to provide monetary incentives to residents that participate in the Manzily Energy Advice Service and achieve electricity savings. Under this partnership, EtihadWE is providing AED 1 credit for every AED saved in homes of UAE nationals enrolled in the service.

Interested applicants can sign up for Manzily here.

"The experts from the Manzily Program significantly enhanced my understanding of home equipment, including electrical appliances, air conditioning systems, lighting, and faucets. Their guidance on optimising AC temperature settings, minimising water usage, selecting energy-efficient windows, and establishing regular maintenance routines—such as cleaning the ACs and the solar panels for outdoor lighting—proved invaluable.

I extend my sincere appreciation to everyone involved in this program."

Omar Rashid bin Zuaid
Homeowner, Ras Al-Khaimah

3.3 Energy Management

Program Owner: Ras Al Khaimah Municipality – reem

Supporting Entity: rakez – RAS AL KHAIMAH ECONOMIC ZONE

Dia Alshamsi
Senior Energy Engineer,
Reem, Ras Al Khaimah Municipality

Aaesha Alsaadi
Renewable Energy Engineer,
Reem, Ras Al Khaimah Municipality

The Energy Management Program aims to promote more 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 EE&R Strategy envisages the government as a champion of energy management practices. As a result in 2023, Ras Al Khaimah government became the first in the world to achieve ISO 50001 energy management certification for all its entities. A total of 24 government entities are now certified. Reem has supported these government entities in establishing processes and methods, through a combination of training, advisory and project management. Results in terms of energy savings are already substantial in excess of 23% of baseline spend on a whole government basis.

Industries in Ras Al Khaimah are also being targeted through the recently launched Industrial Energy Audit Initiative. This initiative aims to help companies in Ras Al Khaimah identify opportunities for energy savings and emissions reductions. As part of this initiative, Reem offers participating industries an incentivised energy audit in exchange for a commitment of the companies to report on implementation. Industries representing about 50% of the industrial electricity consumption within the emirate are participating in the initiative.

Going forward, the program will develop along three main themes:

1) Increasing penetration of the target market, by addressing a larger number of high energy users in the industrial and commercial sectors;

2. Improving the tools available to monitor and manage energy consumption, starting from automation of the government energy management systems (EnMS);

3. Pursuing synergies with other similar initiatives run by the federal government, to provide higher benefits for participants in the program.

Deep-dive: Energy management in the Government of Ras Al Khaimah

Adoption of energy efficiency in the government was mandated through a directive, Amiri Resolution No. 15 of 2018, setting an overall target of 20% energy and water savings by 2022, compared to a 2017 baseline for all government entities and state-owned enterprises.

Immediate action was taken to retrofit the main buildings of the Municipality and of RAKEZ, the free zone, in 2018-2019.

The onset of the pandemic, in 2020, offered the opportunity to focus more on consumption behaviours, taking advantage of some new opportunities, such as reduced use of office spaces due to the introduction of remote work. A coordinated approach led to the adoption of quick-wins, resulting in about 10% energy savings on a whole-government basis with nearly no investment. These results encouraged participating entities to take more durable steps, through the implementation of complete energy management systems (EnMS) in line with ISO 50001. These include, among others, energy policies, targets, monitoring and reporting tools, periodic audits, monthly workshops, and management meetings to ensure that the pursuit of energy optimisation opportunities are part of the planning and management processes of each organisation.

In parallel, the retrofit of government buildings was accelerated. A group sourcing approach was adopted to retrofit 46 buildings of the government, through energy performance contracting. The approach brought economies of scale and allowed to include in the scope even smaller buildings that were not targetable individually. A total investment of AED 14 million was made, guaranteeing a payback in 3.5 years.

As a result of the improvements in assets and consumption behaviours, overall savings of 23.5% were achieved on the utility bills vs. the 20% target. Equally important, in view of future developments and continuous improvement, was the upgrade of organisational capabilities in energy management.

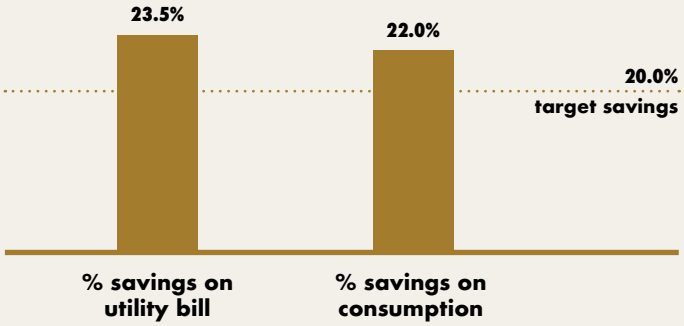


Figure 14: Savings in government vs. Amiri Resolution No. 15 of 2018 target

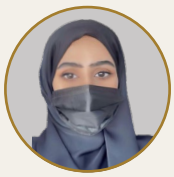
Figure 15: Government entities that are ISO50001 certifed by end of 2023

Energy Principals of Ras Al Khaimah Government

Ali Alhebsi
Environment Protection and Development Authority

Alexander John
Department of Civil Aviation

Ammar Zuhair
General Resources Authority



Amna Alshehhi
Mohammed bin Saud Al Qasimi Foundation

Athari Alneaimi
Ras Al Khaimah Customs Department

Abdulla Alriyami
Public Prosecution Department

Ebrahim Albelooshi
Department of Protocol and Hospitality

Fatima Al Kait
Electronic Government Authority

Jehan Al Kurdi
Ras Al Khaimah Government Media Office

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

Sultan Alhammadi
Antiquities and Museums Department

Khaled Issa
Department of Finance

Mayed Al Shamsi
Ruler's Court

Amna Al Malek
Ras Al Khaimah Human Resources Department

Nawal Alshimely
Ras Al Khaimah Courts Department

Fatemah Altenaiji
Ras Al Khaimah Center for Statistics and Studies

Ammar Chredi
Emirates Club

Arnold Yco Pangilinan
Ras Al Khaimah Municipality

Samira Sulaiman
Ras Al Khaimah Public Services Department

Vishnu Girija
Ras Al Khaimah Chamber of Commerce

Yaqoob Al Zaabi
Ras Al Khaimah Department of Economic Development

Muhammad Ghanem
RAK Broadcast Authority

Hiba Badran
Ras Al Khaimah Tourism Development Authority

Logain Kamal
Ras Al Khaimah Transport Authority

Dr. Ali Alani
Ras Al Khaimah Economic Zone

Deep-dive: Industrial Energy Audits

Reem engages with local industrial companies through voluntary agreements, offering support for specialised audits and a knowledge-sharing platform in exchange for an obligation of participants to report on energy consumption and implementation of identified energy efficiency measures.

In order to provide the service at minimal cost for participants, Reem procures specialised experts support at scale by empanelling capable auditing companies and defining a framework of competitive prices for their services. Auditing companies have been empanelled for a number of industrial sectors including quarries, cement, ceramics, glass, packaging, and more. These external experts are accompanied by specialised personnel from Reem throughout the service.

By the end of 2023, seven industries had completed energy audits in their facilities, with a baseline of more than 1,100 GWh of electricity consumption per annum. These audits have identified more than 100 GWh of electricity savings, nearly 60,000 m^3 of water savings and other significant diesel, coal and natural gas savings, with an overall payback time of just 1.7 years.

Additionally, more than 120 employees of industries participated in the four knowledge sharing sessions organised as part of the industrial energy audit initiative. The sessions covered relevant topics for most industries in Ras Al Khaimah and were delivered in collaboration with leading expert teams in each of these topics such as those from Taka Solutions on cooling as a service, GRFN and Siemens on variable frequency drives (VFDs), JCI on heat pumps and Machinery People on compressed air systems.

Figure 16: Participating industrial companies at the end of 2023

Figure 17: Empanelled auditors at the end of 2023

3.4 Efficient Appliances

Program Owner: UNITED ARAB EMIRATES MINISTRY OF INDUSTRY & ADVANCED TECHNOLOGY

Supporting Entity: Ras Al Khaimah Municipality, reem

H.E. Dr. Farah Al Zarooni
Assistant Undersecretary, the Standards and Regulations Sector, UAE Ministry of Industry and Advanced Technology (MoIAT)

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 and Advanced Technology (MoIAT) is responsible for establishing energy and water efficiency standards across the UAE and implementing the necessary conformity assessment scheme to ensure compliance. In support of these national regulations, a comprehensive "Efficient Appliances Program" is adopted in the emirate of Ras Al Khaimah, promoting highly efficient appliances and maximising the benefits of these performance standards.

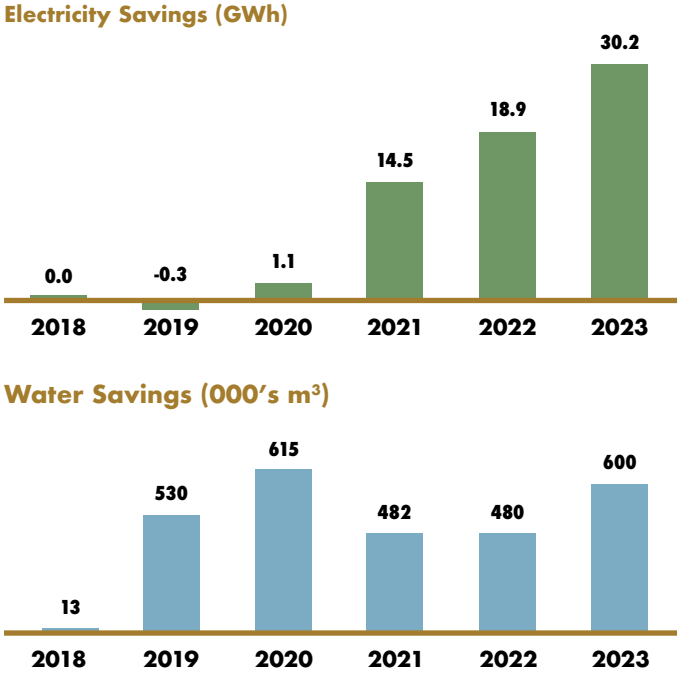


Figure 18: Energy and water savings from enforcement of efficient appliance standards

The "Efficient Appliances Program" is primarily driven by the performance standards enforced by MoIAT under the Energy Efficiency Standards and Labeling (EESL) program. The EESL program 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 program began regulating room air-conditioners and has successfully expanded to 12 major product categories.

The product categories included in the EESL program are:

1. Room air-conditioners
2. Washing machines and dryers
3. Refrigerators and freezers
4. Electric storage water heaters
5. Commercial air-conditioners
6. Dishwashers
7. Rotodynamic electric motors
8. Television sets
9. Elevators (Lifts)
10. General lighting products: Lamps & Control gears
11. Outdoor lighting
12. Water fixtures

The EESL program, 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 program is public awareness.

The Municipality is running an Energy Savings Tips campaign to inform residents of the importance of appliance efficiency. New initiatives such as the Manzily game and the Manzily Energy Advice Service also support public awareness.

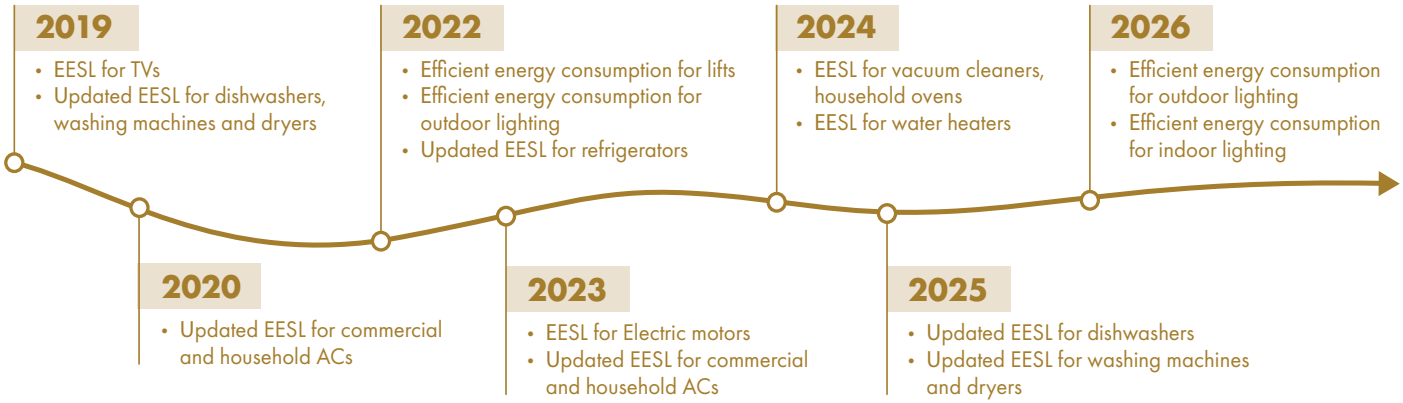


Figure 19: Timeline of EESL issuance and update

Figure 20: Examples of energy saving tips issued by Reem, Ras Al Khaimah Municipality in an ongoing awareness campaign on social media

3.5 Efficient Street Lighting

Program Owner: دائرة الخدمات العامة Public Services Department

Supporting Entity: الاتحاد للماء والكهرباء Etihad Water & Electricity

Raed Hilles
Acting Chief Operating Officer,
Public Services Department

Urban communities benefit from street lighting through enhanced road safety and outdoor comfort. With this in mind, Ras Al Khaimah Vision 2030 targets achieving 65% coverage of street lighting across all roads in Ras Al Khaimah.

Today, the Works Agency of the Public Services Department manages more than 400 km of lit roads across Ras Al Khaimah and the streetlighting expansion program has released projects in 2024 to increase this coverage by approximately 100km. All existing streetlights under PSD management have been replaced with LEDs.

While the Public Services Department manages most public roads, RAKEZ, RAK Ports, and other master developers manage about 122 km of roads in industrial zones and private master communities. These have largely already adopted efficient street lighting practices, with 100% of their streets lit with LEDs. RAKEZ streetlights are also integrated with dimmers, resulting in additional savings.

On the regulatory front, internal standards for street lighting were developed by the Public Services Department. These standards consider both the energy efficiency of lighting as well as light pollution reduction and have been applied to all new street lighting projects starting in 2022. In 2023, the Public Services Department initiated the use of smart lights upon replacement as part of their regular maintenance procedure. These smart lights can be monitored and controlled remotely through the PSD Control Centre.

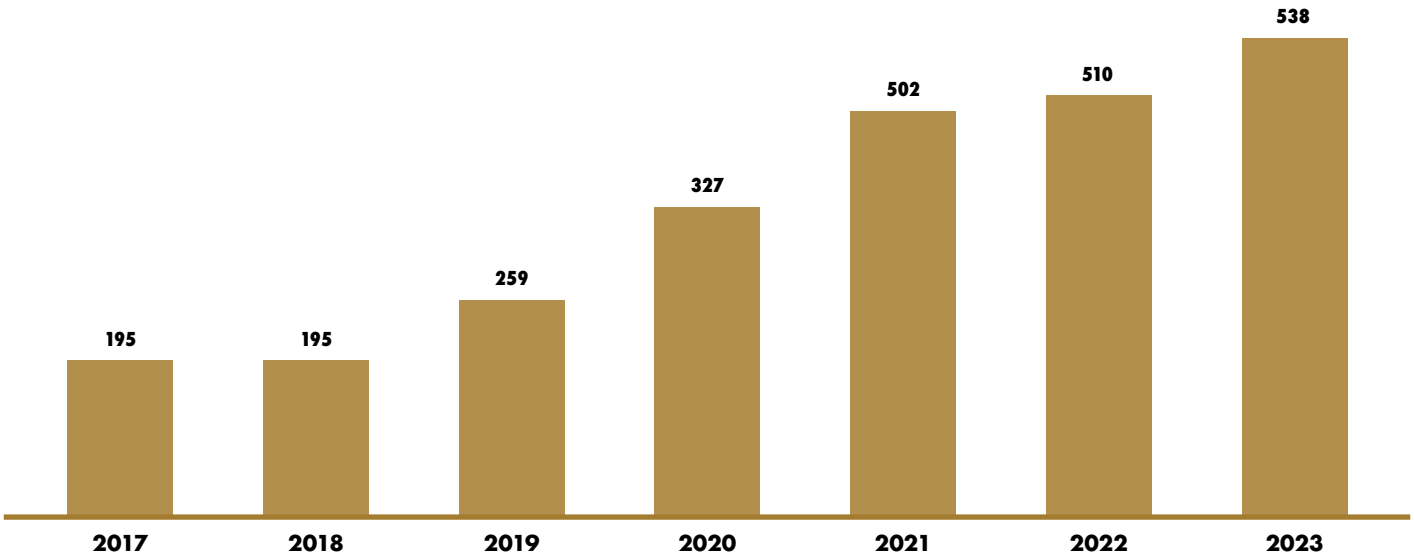


Figure 21: Roads with efficient LED street lighting (km)

3.6 Water Reuse & Efficient Irrigation

Program Owner:

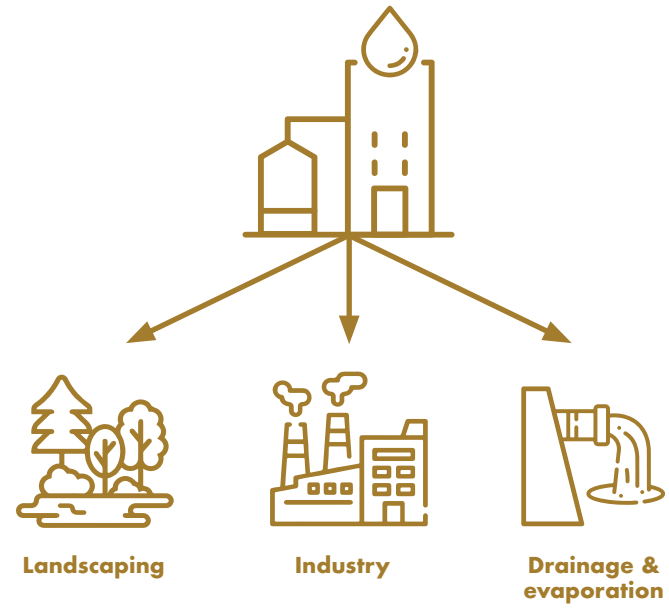
Supporting Entity:

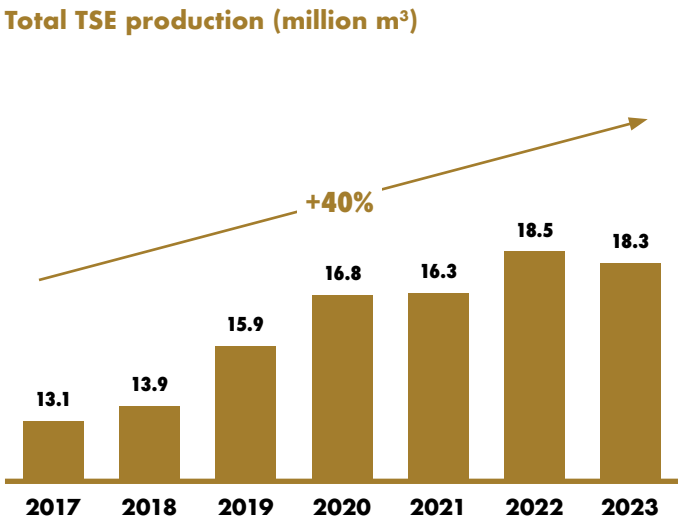
Raed Hilles
Acting Chief Operating Officer,
Public Services Department

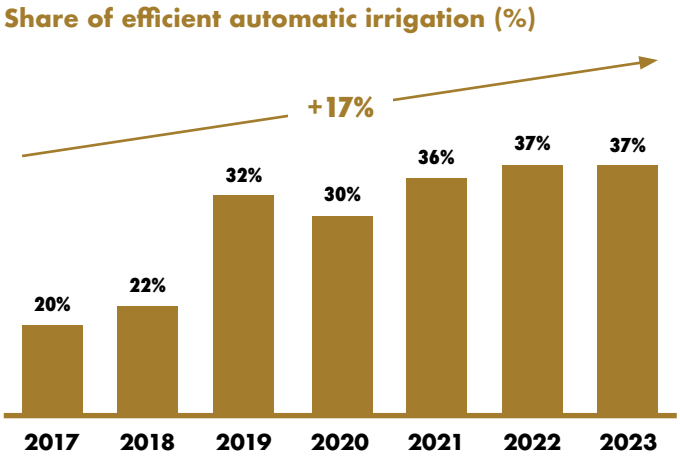
The Wastewater Agency has initiated planning on Phase 1 of an emirate-wide wastewater masterplan. This phase includes approximately 50 km of primary TSE network in Sectors 4 and 6 of Ras Al Khaimah, and a new Centralised Sewage Treatment Plant that will be located adjacent to the existing Al Jazeera Landfill site. This TSE network will connect to existing networks in residential and mixed-use developments like Marjan Island, Al Hamra, and Mina Al Arab, creating a single integrated network. It will also lay the backbone for further TSE network expansion in these areas in the future.

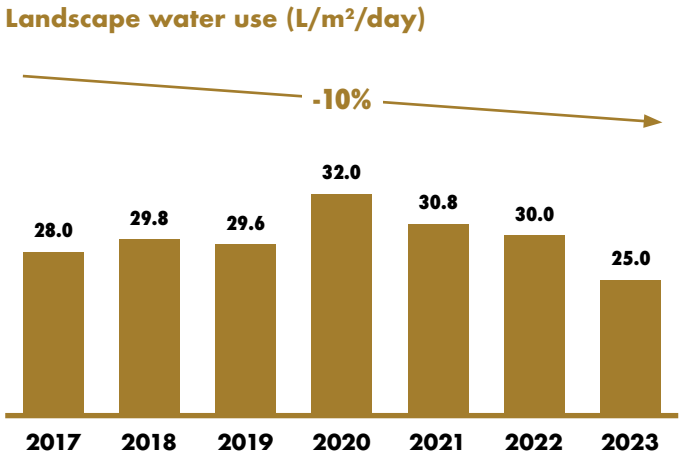
The construction of a TSE polishing plant is being commissioned and is expected to begin operations within the third quarter of 2024. This will boost TSE usage, by allowing TSE to be used for additional industrial purposes. In 2023, the project to refurbish existing sewage trunk lines was completed, resulting in a small improvement in the amount of sewage being collected and TSE being produced.

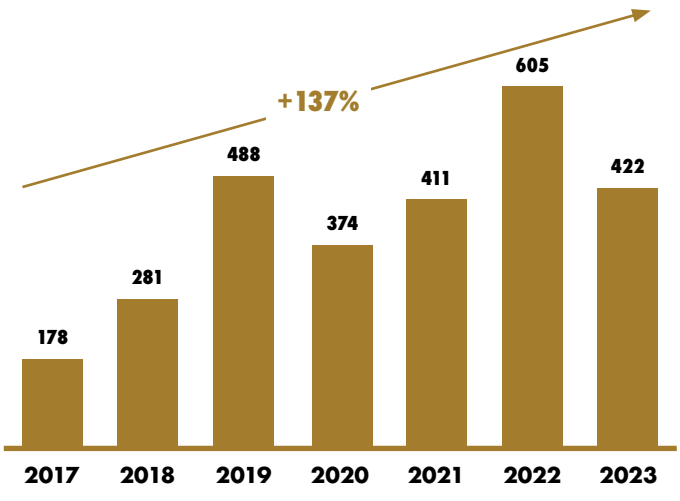
On the landscaping front, the Landscape Agency continued to deploy efficient landscaping projects. In 2023, new landscape standards and guidelines were developed by the Public Services Department to modernise the landscape and ensure better integration with the urban environment. The aim is to optimise the environment for residents by ensuring more seamless integration with parks and streetscapes, better shade, and the use of native and adaptive plants that require less water, contributing to a more water-efficient landscape.











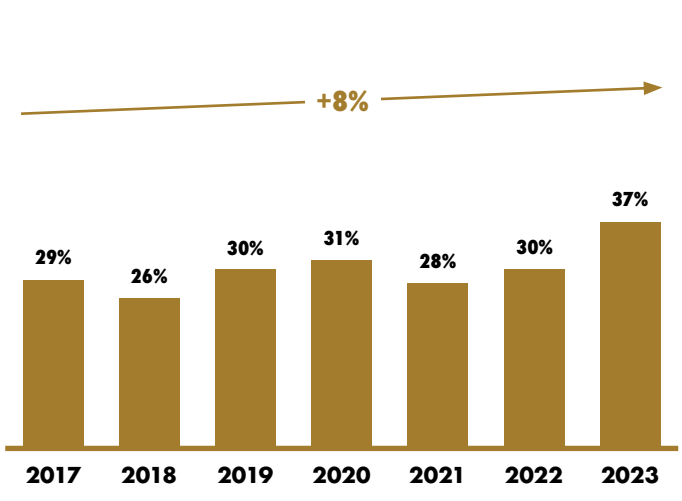


Figure 22: Wastewater flows in Ras Al Khaimah

3.7 Solar Programs

Program Owner: Ras Al Khaimah Municipality – reem

Supporting Entity: Public Services Department; IDO Investment & Development Office of Ras Al Khaimah

Utkarsh Jain
Manager,
Renewable Energy, Reem,
Ras Al Khaimah Municipality

The Solar Programs aim to leverage the potential of Ras Al Khaimah's abundance in solar irradiation for cost-effective electricity supply through regulatory enablers, pilot projects and capacity-building initiatives. We have set an ambition to reach 1,200 MWp of installed renewable energy capacity in Ras Al Khaimah by 2040, of which 600 MWp is expected to come from distributed installations and the remaining from utility-scale projects.

Our first distributed renewables installation, a 230 kWp solar carport at the Municipality head office, continues to supply about 15% of the building's energy needs.

Federal Decree-Law No. 17 of 2022, which mandates Etihad Water and Electricity (EtihadWE) to facilitate the connection of distributed renewables to their grid, is expected to facilitate the expansion of the market for distributed renewables in the Northern Emirates, including Ras Al Khaimah.

Many new buildings completed in 2023 are also ready for future solar installations, given the solar readiness requirements set out in Barjeel. Other applications of renewable energy are also being explored. In 2022, Reem initiated a wind resource assessment study to measure wind speed in areas of high potential. Stage 1 of the study, a desktop assessment, was completed, and Stage 2 was initiated in 2023, which saw the installation of a first wind mast for detailed on-site measurement of wind at Wadi Shawka. Wind data in every location will be collected for at least 12 months and further analysed to estimate potential for wind generation.

Looking forward, an area of opportunity that is being explored by Ras Al Khaimah Municipality is about the potential of pumped hydro energy storage in the mountains of Ras Al Khaimah. Pumped hydro can serve the UAE's energy storage needs by balancing intermittency.

Figure 23: Wind measurement mast in Wadi Shawka, Ras Al Khaimah

3.8 Energy from Waste

Program Owner:

دائـرة الـخـدمـات الـعـامـة
Public Services Department

Raed Hilles
Acting Chief Operating Officer,
Public Services Department

The Waste Management Agency is responsible for the safe and timely collection, recycling, treatment, and disposal of all solid waste generated in Ras Al Khaimah. The Energy from Waste Program of the EE&R Strategy was developed as an integral part of the emirate's waste management strategy. The program has the potential to generate significant amounts of energy from waste while also reducing the amount of waste sent to landfills.

Various methods are being adopted to convert waste into energy including:

- **Fuel production:** Several waste streams, such as camel waste, wood waste, waste tyres, used cooking oil, and textile waste, are already being processed into fuels for local cement plants.
- **Incineration:** A capacity expansion of the existing medical waste incinerator was commissioned in 2023. Nearly all of the medical waste produced in 2023 was treated locally in this incinerator.

Additional projects are being implemented to divert various types of waste from landfills. This includes the development of a recycling plant for construction and demolition waste. Preparations were completed by the end of 2023 to ensure approvals and permits are secured in 2024. Additionally, PSD is studying the conversion of green waste and palm trees into biomass, contributing to sustainable waste management practices. In 2023, a trial of a new composting technology was conducted in collaboration with VRM Biologik, an Australian company, aiming to enhance the treatment and recycling of organic waste.

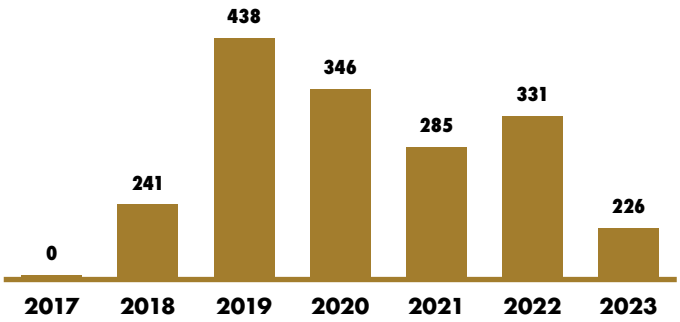


Figure 24: Primary energy from waste (GWh thermal)

A focus on waste segregation is essential for the success of the Energy from Waste Program. An upgraded materials recovery facility completed in 2020 has enabled the initial segregation of municipal solid waste and the recovery of valuable materials, including potential fuel sources. Ras Al Khaimah is on a long-term technological, regulatory and enforcement journey towards high quality segregation.

Another important focus area for waste management is to improve the quality of services offered. A project has been initiated to upgrade fleets and containers, increase the number of routes and manpower and enhance performance standards to reach 100% resident satisfaction.

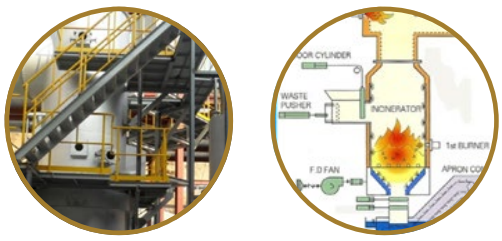


Figure 25: Medical waste incinerator in Ras Al Khaimah

3.9 Efficient Vehicles

Program Owner: RAK TRANSPORT AUTHORITY

Supporting Entity: Ras Al Khaimah Municipality, reem, Etihad Water & Electricity

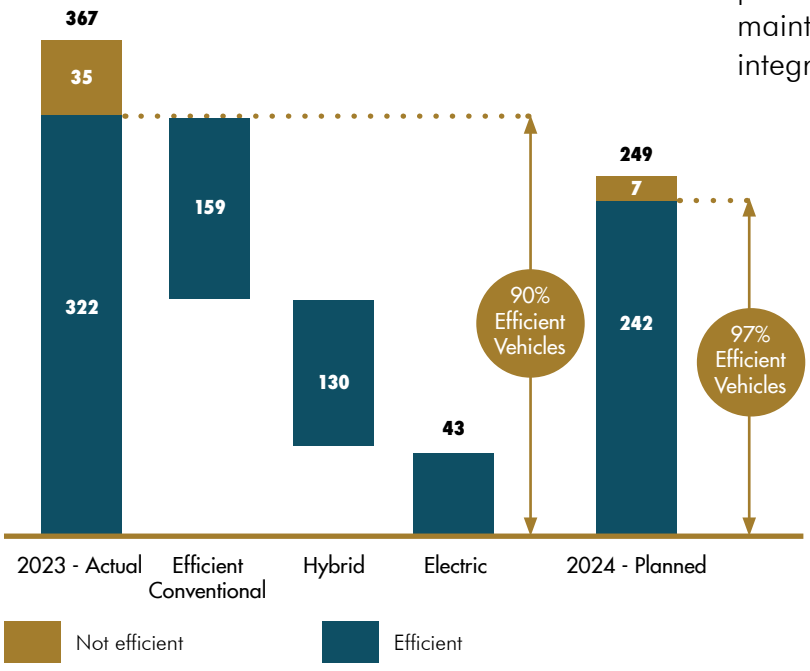
H.E. Eng. Esmaeel Hasan Al Blooshi
Director General, Ras Al Khaimah Transport Authority

The Efficient Vehicles Program addresses energy efficiency in Ras Al Khaimah's transportation sector by promoting the use of vehicles requiring a lower amount of fuel, including conventional fuel-efficient, hybrid, and electric vehicles. In particular, the program targets 50% penetration of EVs and hybrids in new vehicle sales in Ras Al Khaimah by 2040.

As of 2023, a total of 66 charging points have been installed across 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 use of electric vehicles continues to be incentivised through free charging at the 10 charging stations that belong to EtihadWE.

Of the 367 vehicles procured by the Government of Ras Al Khaimah in 2023, 90% were efficient, including 47% electric and hybrid vehicles. The levels of efficiency of vehicles procured by the government is expected to improve further as the Green Public Procurement guidelines are updated to include more stringent criteria on light vehicle purchases. Reem continues to facilitate such purchase decisions through market research, maintenance of a vehicle database and an integrated cost-comparison tool.



66
Public electric vehicle charging points

1,825
Electric & hybrid vehicles registered in Ras Al Khaimah (cumulative)

Figure 26: Government vehicle purchases in 2023 and planned purchases in 2024

Figure 27: Intracity buses in Ras Al Khaimah

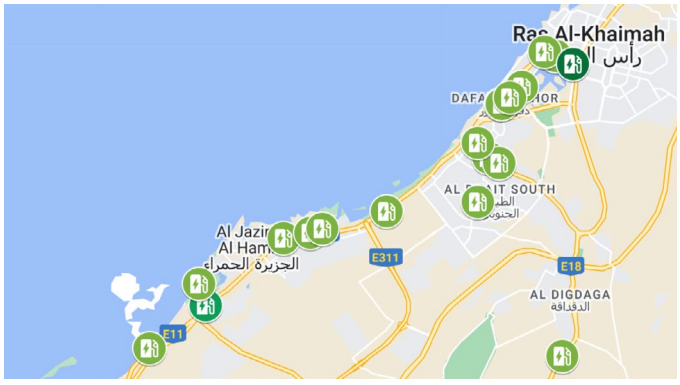


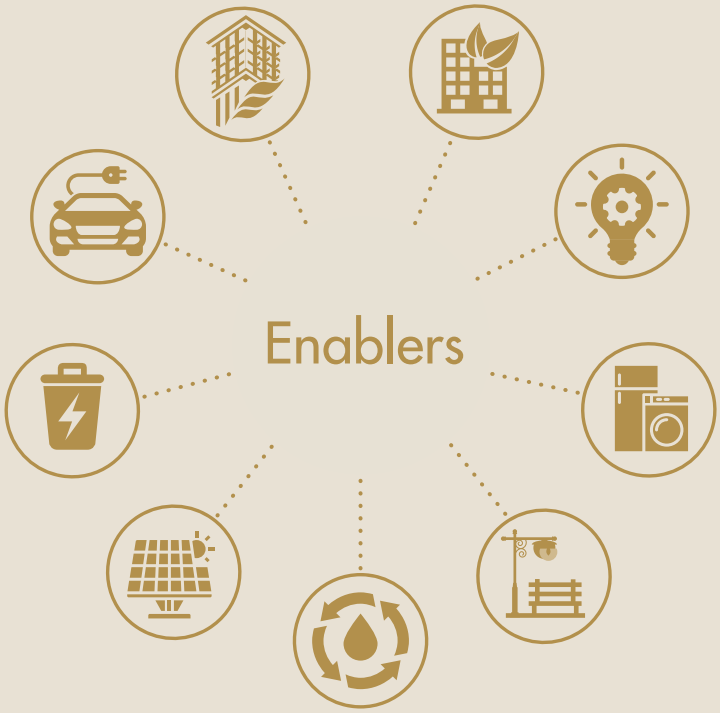
Figure 28: Map of public electric vehicle charging stations in Ras Al Khaimah

In 2022, the first set of intracity bus lines was activated in priority areas, with plans for future expansion. These public transport routes are useful in reducing the number of inefficient cars and diverting traffic to more efficient public transport. Since launch, the new buses routes have shown remarkable levels of utilisation, exceeding 1,200 passengers per day at peak.

There is a need to go beyond these achievements to fully capture the potential for efficiency and emissions reduction in the transportation sector. Ras Al Khaimah Transport Authority, with its vision to become a pioneer in sustainable transportation and to create a more vibrant and livable sustainable city, is developing RAK Mobility Masterplan 2023-2030, a broader strategy for sustainable public transportation that leverages technology, infrastructure and operational advancements. RAKTA is currently developing a plan to expand the network of electric vehicle (EV) superchargers across the emirate. This initiative, in collaboration with key stakeholders, aims to promote greater adoption of electric vehicles in Ras Al Khaimah. By enhancing the EV infrastructure, RAKTA seeks to significantly reduce carbon emissions from the transportation sector, contributing to the emirate's sustainability goals.

4

THE ENABLERS



4.1 Awareness: Events & Media Coverage

Program Owner: Ras Al Khaimah Municipality – reem

Ruqiya Shariff
Manager, Awareness & Capacity Building, Reem, Ras Al Khaimah Municipality

2023 was the year of COP28, the 28th United Nations Climate Change Conference. COP28 was the largest ever climate summit, with nearly 85,000 people visiting the event. COP28 further confirmed that Ras Al Khaimah is on the global map of active, innovative players in climate action, underlined by the high number of initiatives and projects that the government and companies of Ras Al Khaimah showcased at the event.

The following initiatives of Ras Al Khaimah were presented at COP28:

- Environmental Sustainability (EPDA)
- Natural Hydrogen (RAK Petroleum Authority)
- Industrial Efficiency (RAKEZ, RAK Ceramics, Stevin Rock, Star Cement and UNIDO)
- Energy Management (RAK Municipality)
- Sustainable Tourism (RAK Tourism Development Authority)
- Outdoor Thermal Comfort (American University of Ras Al Khaimah)
- Eco-label and 1 million and one trees (EPDA)
- RAK School Sustainability Program (RAK Department of Knowledge)
- Manzily Energy Advice Service (RAK Municipality)
- Green Mobility Framework (RAKTA)
- Carbon Sequestration in Rocks (RAK Petroleum Authority)
- Manzily Educational Game (RAK Municipality)

The Ras Al Khaimah Government Media Office (RAKGMO) supported Ras Al Khaimah's participation in COP28. As part of a media campaign, RAKGMO produced a video series, "Ras Al Khaimah's Path to Sustainability," placing the spotlight on several sustainability initiatives in the emirate, featuring participating entities. Additionally, RAKGMO maintained an active media presence throughout COP28.

1 million and one trees (EPDA)

Addressing Plastic Pollution Debate

Carbon Sequestration in Rocks (RAK Petroleum Authority)

Department of Energy Panel

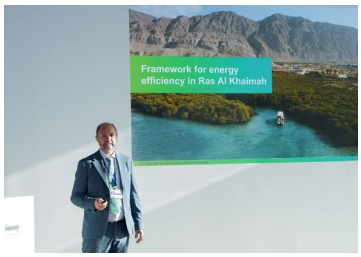
Eco-label (EPDA)

Environmental Sustainability (EPDA)

Greening Education Panel

Industrial Energy Efficiency (RAKEZ, UNIDO, RAK Ceramics, Star Cement, Stevin Rock)

Manzily Educational Game (RAK Municipality)



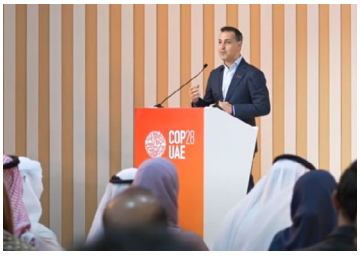
Manzily Energy Advice Service (RAK Municipality)

Masdar Retrofitting Cities Panel

Natural Hydrogen (RAKPA)

Outdoor Thermal Comfort (AURAK)

Schneider Electric Panel



Sustainable Tourism (RAKTDA)

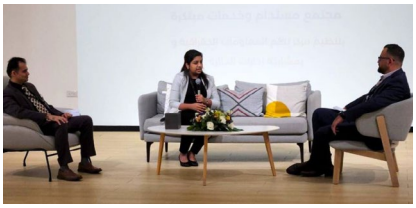
Green Mobility Framework (RAKTA)

Figure 29: Highlights from COP28

World Climate Summit, Dubai

Road to COP 28, Dubai

Green Goals Summit, Dubai



UAE Innovation Week, Ras Al Khaimah

Energy & Sustainability Summit, Dubai

IEA Conference, Paris

UAE Ministry of Education NSTI Festival, Dubai

World Future Energy Summit, Abu Dhabi

Manzily Game Workshop at WFES, Abu Dhabi

Utilities Power Week, Dubai

Figure 30: Highlights from participation in industry events

4.2 Awareness: Manzily

Awareness and educational programs promoting sustainable energy among SMEs, residents and youth are yielding encouraging results.

Manzily, an educational video game was built entirely on voluntary efforts by students of the American University of Ras Al Khaimah and a private partner, Footprints. In the game, players help a family improve their energy consumption at home through behavioural changes and equipment upgrades. Players, particularly children, can learn several sustainable practices while playing, and be certified as "Sustainable Energy Ambassadors" when they complete all the levels. Hundreds of students have already experienced the game in several awareness sessions conducted by Ras Al Khaimah Municipality in collaboration with the UAE Ministry of Education. The game was presented to visitors of COP28 on various occasions.

Several awareness initiatives, such as through social media, radio programs and print media were run to promote participation of residents in the Manzily Energy Advice Service. The service provided, free of charge by Ras Al Khaimah Municipality in collaboration with Etihad Water and Electricity (Etihad WE), aims at providing residents recommendations on how to improve consumption in their home.

Development team

Launch of the game with students from RAK Academy

Work session of volunteers developing the game

Manzily game

Figure 31: Development of the Manzily educational game

4.3 Capacity Building

Program Owner: Ras Al Khaimah Municipality – reem

Asma Alshehhi
Energy Engineer, Reem,
Ras Al Khaimah Municipality

4.3.1. 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 GPP program is supported by specific guidelines issued by Ras Al Khaimah Municipality. By recommendation of the EE&R Committee, Ras Al Khaimah Department of Finance (DoF) was selected as GPP Administrator, responsible for supporting and coordinating implementation of GPP in the government. Implementation of GPP is voluntary at this stage, to allow each government entity to define their own pace and depth of participation.

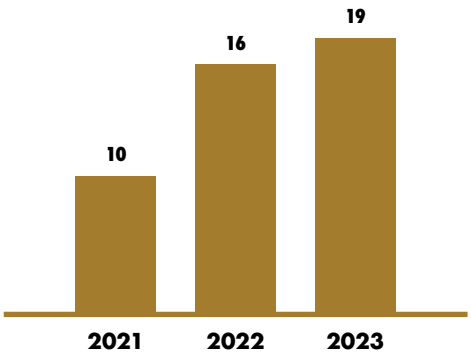


Figure 32: Number of government entities participating in the GPP program of Ras Al Khaimah

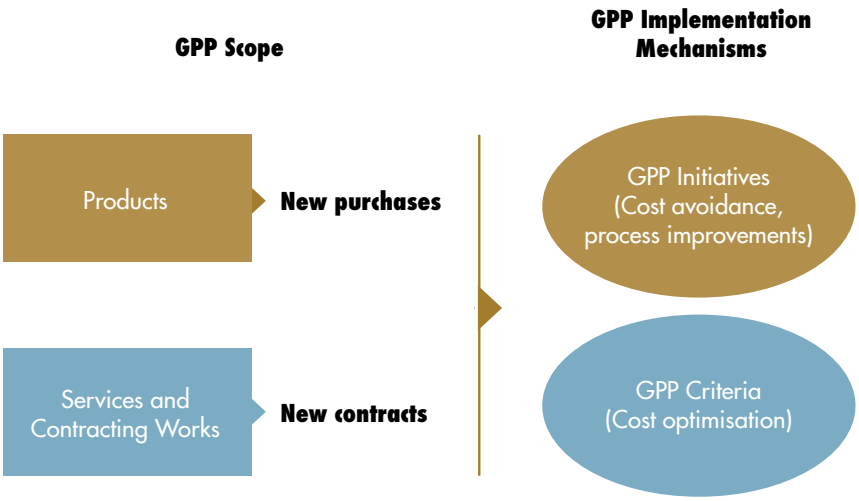


Figure 33: Scope of the Green Public Procurement Guidelines of Ras Al Khaimah

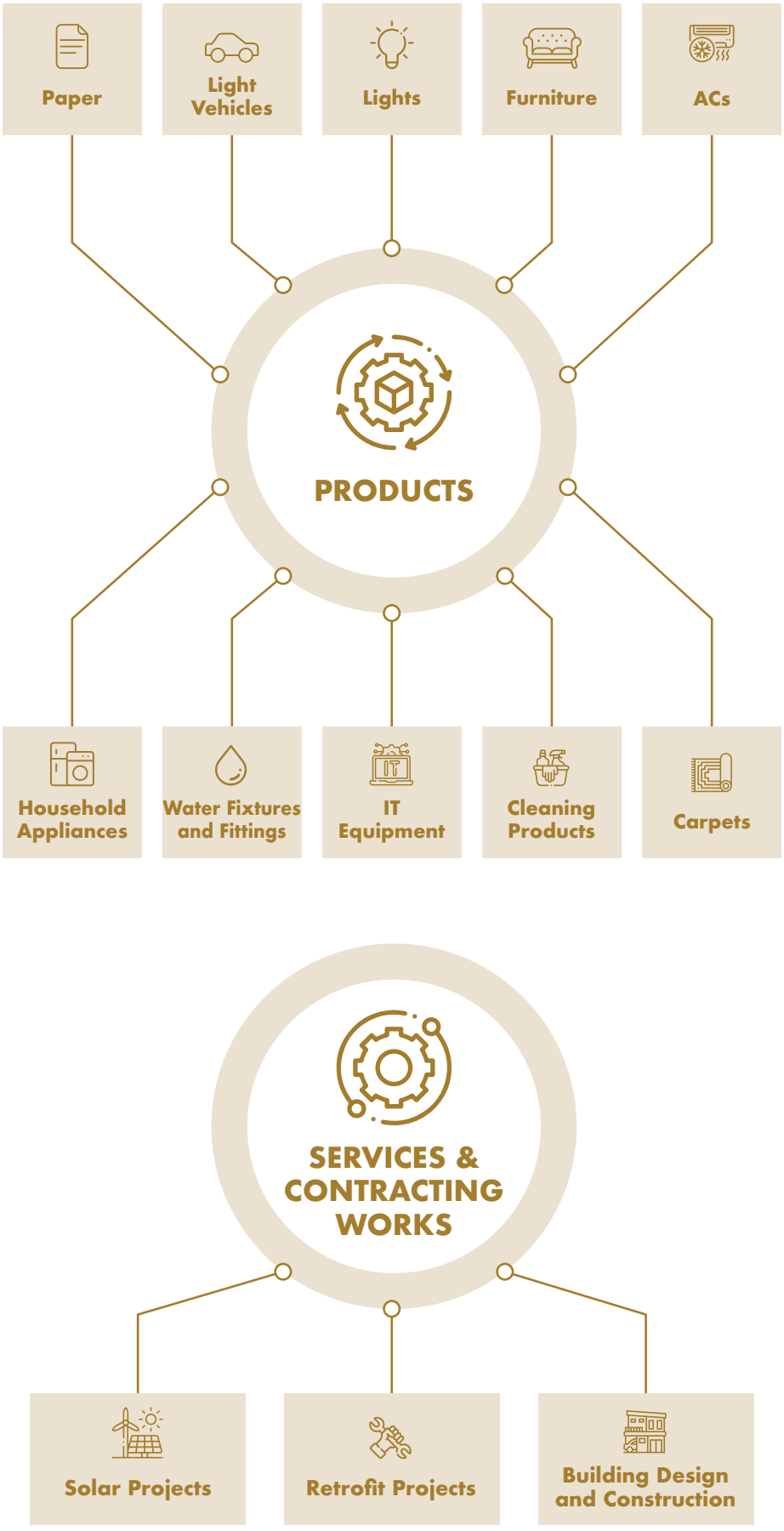


Figure 34: Purchase categories with green criteria in Green Public Procurement Guidelines of Ras Al Khaimah

2023 marks the third full year of GPP implementation. 19 government entities have already adopted GPP by issuing an internal GPP policy mandating the application of the GPP guidelines in purchases of the entity. About AED 17 million of government purchases have been made based on GPP criteria in 2023. The existing business management software of the government, SAP, has been upgraded to support the recording and monitoring of green purchases. The first training on the upgraded software for recording green purchases was completed in January 2024. A cross-learning forum has been established, including monthly progress meetings with the procurement team of participating government entities, and quarterly fireside chats with regional and international experts.

GPP Champions of Ras Al Khaimah Government

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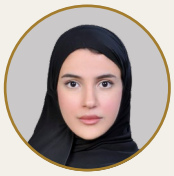

Mahra Alali
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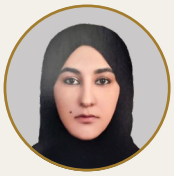

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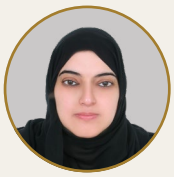
Protocol and Hospitality Department



Majda Alzaabi
Ras Al Khaimah Chamber of Commerce

4.3.2 Supply Market Development

As part of Reem's mandate, efforts are being made towards continuous expansion and improvement of the supply market for goods and services in the energy efficiency and renewables sector.

The SME Edition of the RAK Energy Innovation Competition (#rakinnovates) offers an opportunity for start-ups and SMEs from around the world to get market exposure and form strategic partnerships in the power, water, and industrial sectors of the UAE.

More than 75 companies from over 25 countries with solutions addressing one or more of three regional challenges in the fields of energy management, industrial efficiency and decentralised energy systems participated.

One winning start-up or SME will be selected for each challenge, and the three winners will receive a cash prize of AED 100,000, a pilot project, an attractive business set-up package from RAKEZ, and support to business development. The winners will be awarded in 2024 following thorough evaluation.

In the meantime, 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 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 2023.

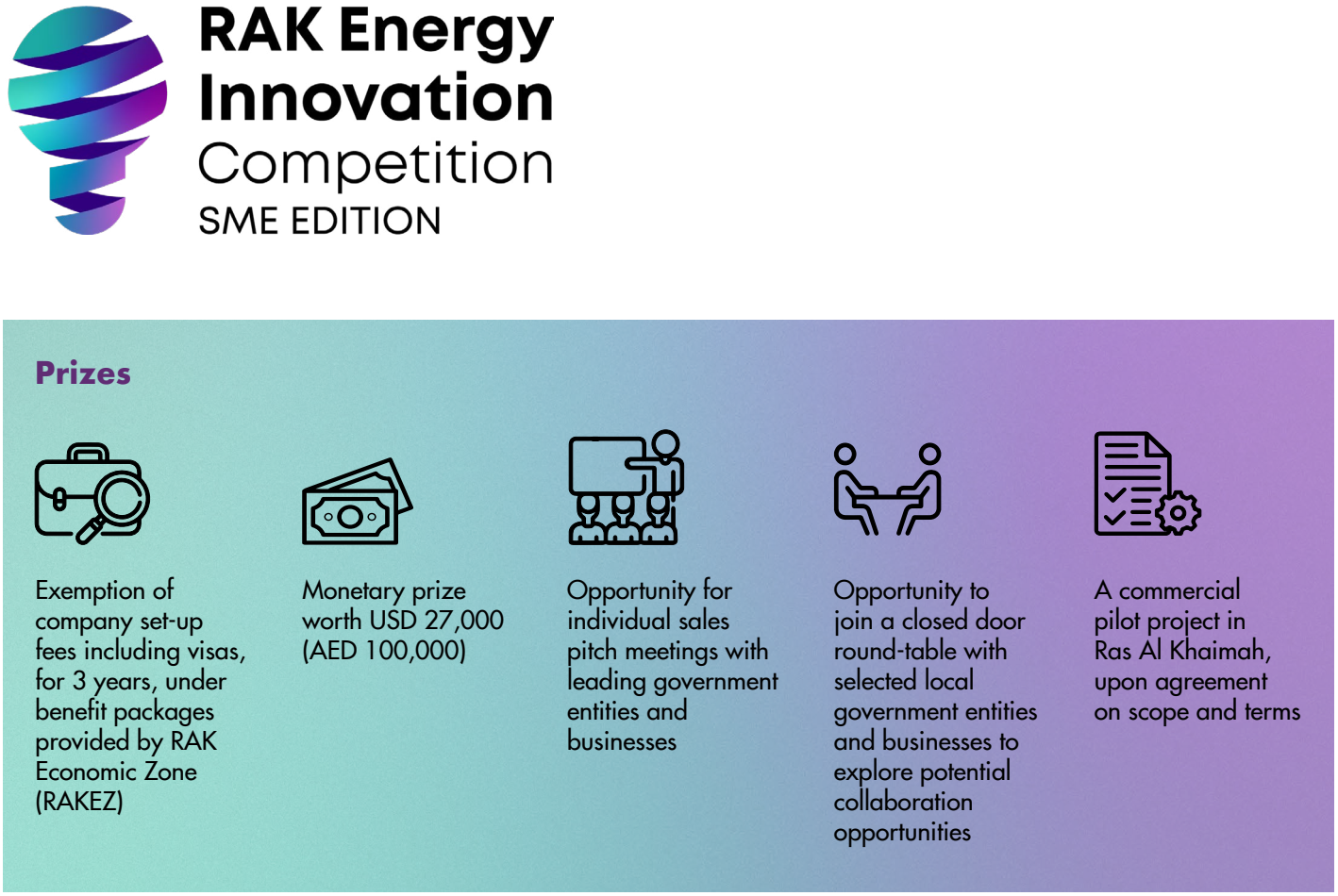


Figure 35: Benefits for winners of the RAK Energy Innovation Competition (SME Edition)

4.3.3 Upskill - Ras Al Khaimah Sustainable Energy Training Program

Program Owner: Ras Al Khaimah Municipality – reem

Ruqiya Shariff
Manager, Awareness & Capacity Building, Reem, Ras Al Khaimah Municipality

UPSKILL
Ras Al Khaimah Sustainable Energy Training Program

Upskill, Ras Al Khaimah's training program in sustainable energy, was designed to expand capabilities and expertise in the field of energy efficiency and renewable energy in the emirate. The training program offers trainings and certifications from reputed local & international providers such as Clean Energy Business Council (CEBC), The Green Spoon Management Consultancies, Leoron 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 HR 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.

Clean Energy Business Council Middle East & North Africa – مجلس صناعات الطاقة النظيفة الشرق الأوسط وشمال افريقيا
EmiratesGBC – مجلس الإمارات للأبنية الخضراء Emirates Green Building Council
THE GREEN SPOON MANAGEMENT CONSULTANCIES
LEORON Professional Development Institute
DIREKTIN connecting innovations
एनटीपीसी NTPC
energy institute

Figure 36: Training providers of the Upskill program

4.3.4 Partnerships & Collaboration

Throughout 2023, Reem continued to build relationships to gain knowledge, share know-how, and gather support for the EE&R Strategy. In 2023, Reem signed an MOU with the Gulf Organisation for Research and Development (GORD) to collaborate on developing energy efficiency, emissions measurement, carbon credits and sustainability education.

During and on the sides of COP28, new collaborations were established with a number of international governments, businesses, and NGOs working in various sustainability-related fields. These include multi-billion dollar energy and resources businesses, consultancies, standardisation bodies and associations and startups developing new technologies in alternative fuels, remote sensing, clean mobility, renewable energy, water recycling, geothermal energy, efficient cooling, and other related sectors.

4.4 Financing Mechanisms

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 projects by single organisations.

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.

4.5 Information Systems

The GIS Center, responsible for integrating and managing all geospatial data of Ras Al Khaimah on a single platform, has supported Reem since the development of the strategy in 2018. A study 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, several 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 agriPV have been conducted leveraging the services of the GIS Center. Ongoing projects foresees the development of a solar calculator, to support residents and businesses to estimate the potential of solar PV projects in their premises.

5
FUTURE OUTLOOK

5. FUTURE OUTLOOK

Implementation of all programs of the EE&R Strategy is being accelerated and scaled up in its ongoing ramp-up phase. The year 2024 is expected to show a continuation of the efforts made in previous years. We will also begin an update of the overall strategy, following completion of a federal roadmap to net-zero emissions by 2050.

In 2024, Barjeel will continue to be applied to all new buildings in Ras Al Khaimah, while undergoing its periodic update. The pilot project for Ras Al Khaimah's Sustainable Community Guidelines will continue to be closely monitored while the development of a new building rating system gathers pace. Contracting for several semi-government and commercial buildings is expected under the Building Retrofits Program. The second edition of the RAK Energy Innovation Competition, this time targeted towards SMEs and start-ups, will be completed.

The most important priorities for 2024 are listed below:

1. Completion and activation of a revised strategy to align with UAE Net Zero by 2050;

2. Further enhancement of the regulatory framework for sustainable urban development and outdoor comfort;

3. Strengthening of the energy audit and monitoring framework for industries;

4. Extension of the Building Retrofits Program to semi-government entities and mosques;

5. Further enhancement of infrastructure and standards to support water reuse, public landscaping, waste recycling and waste to energy;

6. Promotion of end-user awareness and engagement across all societal segments through communication, training and incentives.

The revised strategy will integrate several aspects of energy, environment, and climate change into a comprehensive sustainability framework. The objective is to go beyond energy efficiency initiatives and play a more active role in emissions reduction to take advantage of new opportunities created by the ongoing uptake in real estate, hospitality and industrial sectors.

As program implementation gathers momentum, Reem will continue to monitor and support the EE&R Strategy. The main priorities of Reem in this regard are as follows:

1. Continuous enhancement of the regulatory framework in support of the programs;

2. Support to existing and new building retrofit, energy management and solar PV projects;

3. Exploration of new business models and financing mechanisms for building retrofit and solar PV projects;

4. Development of local market capacity through project pipeline development, incentives, training, awareness campaigns and events;

5. Strengthening of new service lines addressing residential and industrial energy users;

6. Continuous optimisation of the M&V, reporting and risk management processes for the EE&R Strategy.

6
ACKNOWLEDGEMENTS

6. ACKNOWLEDGEMENTS

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Electronic Government Authority

Emirates Green Building Council

Environment Protection and Development Authority

Etihad Water and Electricity Company

Executive Council of Ras Al Khaimah

Federal Authority for Identity, Citizenship, Customs and Port Security

Investment and Development Office

RAK Transport Authority

Ras Al Khaimah Department of Economic Development

Ras Al Khaimah Department of Finance

Ras Al Khaimah Economic Zone

Ras Al Khaimah Municipality

Ras Al Khaimah Police

Ras Al Khaimah Public Services Department

Ras Al Khaimah Ruler's Office

Ras Al Khaimah Statistics Center

Regulatory & Supervisory Bureau (Dubai)

UAE Ministry of Climate Change and Environment

UAE Ministry of Education

UAE Ministry of Energy and Infrastructure

UAE Ministry of Industry and Advanced Technology

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7. GLOSSARY OF TERMS

AC: Air Conditioner

AED: UAE Dirhams

AgriPV: Agriphotovoltaics

Barjeel: The Green Building Regulations of Ras Al Khaimah

BAU: Business as Usual

EE&R Strategy: Energy Efficiency & Renewables Strategy 2040

EESL: Energy Efficiency Standards and Labels

EPDA: Environment Protection and Development Authority

ESCO: Energy Service Company

MoIAT: UAE Ministry of Industry and Advanced Technology

Etihad WE: Etihad Water and Electricity Company

EV: Electric Vehicle

EVCS: Electric Vehicle Charging Station

GDP: Gross Domestic Product

GIS: Geographic Information System

GWh: Gigawatt-hours

H.E.: His/Her Excellency

IDO: Investment and Development Office

IPCC: Intergovernmental Panel on Climate Change

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

m: metres

m^2: square metres

m^3: cubic metres

MSW: Mixed Solid Waste

MW: Megawatts

MWp: Megawatts-peak

M&V: Measurement and Verification

PP: Percentage Points

PSD: Public Services Department

P.O.: Post Office

RAK Academy: Ras Al Khaimah Academy

RAKEZ: Ras Al Khaimah Economic Zone

Reem: The Energy Efficiency & Renewables Office of Ras Al Khaimah Municipality

RDF: Refuse-Derived Fuel

SME: Small and Medium Enterprise

TSE: Treated Sewage Effluent

UAE: United Arab Emirates

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