










ESG AT EMAAR

Our out-of-the-box approach to creating living spaces and cityscapes has created some of the world's most recognisable landmarks. As society becomes sustainability-conscious, spaces need to transform. Our sustainability strategy is in progress and will define how we make this happen.

GREENPRINT FOR THE FUTURE

Challenges drive progress. Our ambition of becoming a sustainability leader in our industry is motivated by the need to master the challenges of climate change. Several opportunities exist, and we are already working to embed sustainability in many ways.

Focus areas		Material topics
 Climate action	 Energy management	Energy management and renewable energy usage Environment compliance
 Waste management	 Water management	Stakeholders People Partners and suppliers Communities Customers Investors
 Sustainable operations	 Sustainable district cooling	

+ 3.16 MW
Renewable energy capacity

+ 34%
Waste segregation rate

+ Conducted LEED pre-feasibility studies across our communities.

All figures mentioned are for operations in UAE, unless otherwise stated.

Strategic mandate

At Emaar, we are driving change at different levels. Our commitment to UAE's Net Zero by 2050 agenda furthers our sustainability objectives.

Aspire to be an industry leader in sustainability

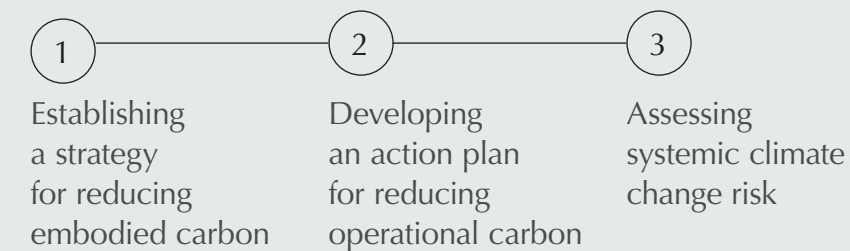
- Clean water
- Affordable clean energy
- Automation and process optimisation
- Waste management

Several initiatives are underway both across our projects under development and at our inhabited communities that address water conservation, emissions reduction and clean energy, process optimisation and resource use management, waste management and responsible material use.

Our strategy for climate action involves developing an action plan to reduce operational carbon and develop sustainable communities. In keeping with the global shift towards greener construction methods, we are also developing strategies for reducing embodied carbon and using planet-friendly materials, fixtures and design standards.








Climate action strategy



We have adopted several quality management systems to add greater rigour and discipline to our operations and lend efficacy to the transition towards sustainability. These well-defined, verifiable systems are helping to streamline our energy, environment, facility, asset and service quality standards. They have established clear and tangible ways to consolidate on gains, while ensuring that all actions follow an iterative mechanism, which can also be scaled up.

Attaining environmental excellence

 ISO 14001 Environment Management System	 ISO 55001 Asset Management System
 ISO 50001 Energy Management System	 ISO 9001 Quality Management System
 ISO 41001 Facility Management System	



Climate Control Awards 2022
Emaar District Cooling LLC

Burj Khalifa

The Burj Khalifa's spire is well-known throughout the world. Less well-known are the ongoing water, energy and emissions conservation initiatives. Even though it shines brightest in the night sky, we ensure that its brilliance is self-sustaining.

- + 987 MWh in electricity savings
- + 398.8 MTCO₂eq emissions avoided
- + ~537,000 MT of refrigeration avoided
- + Conserved ~926,000 imperial gallon of domestic water



Dubai Fountain

The world's largest performing fountain is actually quite tardy in terms of water conservation and energy use

- + ~9,286,000 imperial gallons of domestic water conserved
- + Variable frequency drive (VFD) panels are used to control energy use on-demand basis, with 64% energy savings. Downsized compressors, LED lights at filtration stations reduce consumption by 55-60% of conventional means.



Dubai Opera

While this unique performing arts platform hosts world-renowned performers and is a big draw for all art and music lovers, what goes unknown is how smartly it also uses natural resources.

- + 9.5 MWh in electricity savings per show
- + 3.84 MTCO₂eq emissions avoided
- + 4,600 MT of refrigeration saved per show
- + 6,110 imperial gallons of water conserved per show

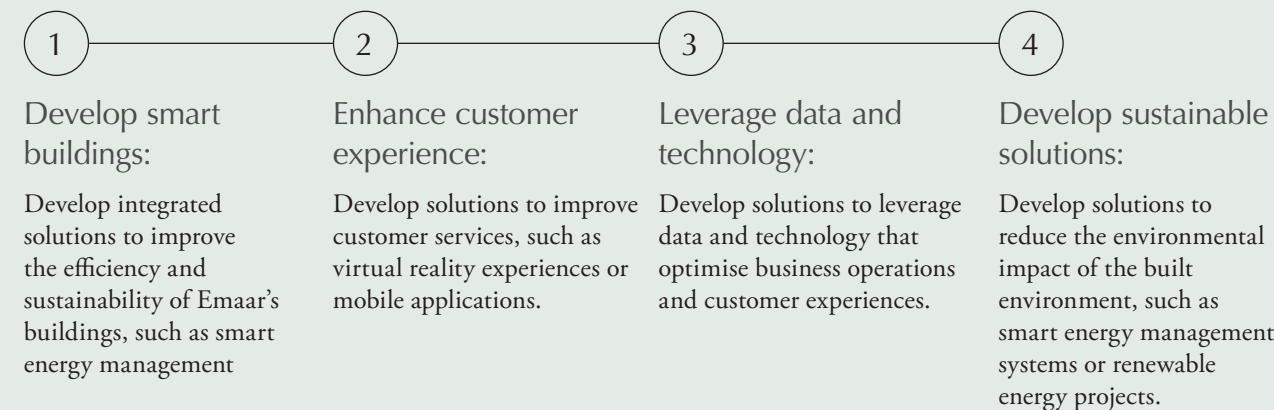


Emaar Innovation Challenge: Curating next-generation solutions

The Emaar Innovation Challenge was launched in 2022 to encourage ideation for more sustainable urban living. The Challenge was left open to all innovators, including entrepreneurs and start-ups. All entries

were then evaluated by an expert panel on parameters of creativity, feasibility, scalability, user experience, and potential impact. The Emaar Innovation Challenge received 240 entries from 43 countries.

The Emaar Innovation Challenge presented four critical challenges to innovators:



With the winning solutions, we hope to enhance sustainability in our operations and the services we deliver.



Energy management

Our energy management initiatives aim to reduce greenhouse gas emissions, fossil fuel usage and operational costs, while enhancing equipment efficiency. The Emaar Energy Management Process (EMP) lies at the core of our energy management thinking. It has been established with the aim of optimising operational asset efficiencies and maximising renewable energy opportunities. EMP helps us increase revenues by reducing energy usage and costs, improve our competitive position as a world-class facility management company and lowers Emaar Properties' and UAE's carbon impact.

650.42 GWh

Total energy consumption in the UAE

The total energy consumption in India, and Turkey has been 39.28 GWh and 44.84 GWh respectively, with energy-efficient measures in planning to reduce consumption.

Energy conservation and shift to renewables

In line with the target of reaching Net Zero by 2050, we have undertaken a number of initiatives in support of clean energy. From expanding the coverage of solar installations at our communities to installing smart equipment like variable frequency drives for demand control ventilation, we are constantly looking for ways to make our properties self-sustaining and energy efficient. Further, feasibility studies are underway across several Emaar communities for adoption of solar installations. This includes Golf Towers in the Greens community with an estimated ROI of 8-9 years.

Awards

**FM Middle East Awards:
Technology Implementation of the
Year: Data-Driven Energy Centered
Maintenance | Emaar Facilities
Management**

Greening our energy use[#]

Solar panel installation with a total capacity of 3.16 MW
Springs Souk, Arabian Ranches Souk, Gold and Diamond Park and Community Centres

Springs Souk

44% Reduction in total energy consumption
AED 711,551
↑ 16.41% Cost saving in AED/year

Arabian Ranches 1 Retail Centre

27% Reduction in total energy consumption
AED 489,847
↑ 42.93% Cost saving in AED/year

Gold & Diamond Park

44% Reduction in total energy consumption
AED 879,296
↑ 87.23% Cost saving in AED/year

We are extensively using energy-efficient fixtures to reduce our energy consumption. Replacement of conventional lights with LED lights at the Dubai Aquarium & Underwater Zoo is expected to save over 55 MWh of energy per year, equivalent to 22.22 MT of CO₂. The installation of demand control ventilation at Dubai Creek Residences that varies supply air fan speeds through sensor-based monitoring of CO₂ levels has led to 22% overall energy savings.

All our new developments will be EV-ready, with adequate charging facilities for electric vehicles. In our existing communities, more than 52 EV chargers have been installed across malls and residential assets.

To identify further Energy Conservation Measures (ECMs), we carried out an energy management inspection and audit at one of our communities. Several ECMs were identified with an annual savings potential of 17.60% which are currently being implemented.

Impact made

↑ 24%

3.16 MW

Total renewable energy capacity*

4.95 GWh

Renewable energy production*

2,002 MTCO₂eq

GHG equivalent avoided*

* In UAE

#The renewable energy portfolio is for properties in UAE.



Waste management

Our waste management initiatives aim to reduce waste production, minimise waste sent to landfills, and ultimately reduce greenhouse gas emissions. We take construction and operational waste into account and have invested in reducing waste generation and increasing source separation. Across our communities, hospitality and retail businesses, a number of waste management initiatives are currently underway, each of which is tailored to specific waste characteristics and employs the most efficient conservation strategies.

204,240 MT

Total waste generated*

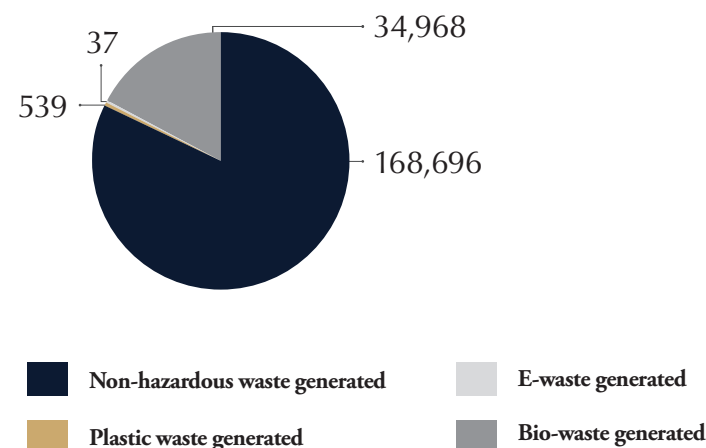
34%

Waste segregation rate*

The waste segregation rate in India in 2022 was 100%, while it was 57% in Turkey.

*In UAE

Waste generated by type (UAE) (MT)



Replacing single-use plastic with wooden cutlery

Reel Cinemas at Dubai Mall has initiated the recyclable cutlery initiative by replacing plastic cutlery with wooden cutlery at food outlets. This initiative has allowed Reel Cinemas to eliminate all single-use plastics. Additionally, non-recyclable waste generated at the source has been reduced. Wooden utensils are biodegradable and leave a much smaller carbon footprint than their plastic counterparts.



Use of recycled cooking oil to produce biofuels

The used cooking oil generated at Reel Cinemas F&B outlets was earlier thrown away. Now an estimated 2,419 imperial gallons of cooking oil are being recycled annually to produce biofuels.

100%

Reduction of single-use plastic in Reel Cinema-Dubai Mall food outlets

JOIN THE GREENER SIDE. RECYCLE.

BE RESPONSIBLE AND SORT YOUR WASTE TO ENSURE BETTER REUSE AND RECYCLING.

RECYCLABLE
Paper
Plastic bottles, bags
Glass and aluminium containers

NON-RECYCLABLE
Waxed paper, styrofoam, diapers
Metal, crystal and ceramics
Textiles and inflammable substances

WHAT HAPPENS TO YOUR RECYCLED WASTE?

- 1 You dispose off your recyclable waste into the recycling station.
- 2 The recyclable waste is collected from the recycling stations.
- 3 It is taken to a sorting facility, compacted and then stored.
- 4 Each material is now ready to be recycled.

Note: Recycling stations are located in the parking areas of your building. Contact your concierge for more details.

RECYCLING TIPS

- Rinse your jars, bottles and cans clean and dry.
- Avoid throwing cardboard/paper covered in oil.
- Shake plastic bags to clean off residue.
- Avoid recycling items that are heavily soiled.

EMAAR | COMMUNITY MANAGEMENT

COLLECT MY GREEN WASTE

LET'S REDUCE WASTE AND INCREASE OUR RECYCLING!

Recycling campaign: Collect My Junk, Collect My Green Waste

At Emaar Communities, we have implemented a recycling awareness campaign that makes residents aware of ways and means of waste reduction, reuse and recycling and encourages them to practice responsible waste management.

Posters and brochures were distributed via email blasts and posted on community bulletin boards and gatehouses as part of the campaign. As part of the drive, the green waste generated by households in horizontal communities is being collected at no additional cost. With this campaign, we took another step towards building a circular economy at Emaar.



Water management

Efficient water management is a priority for Emaar as our properties use more than 802 Mn gallons of water each year. We carefully monitor water usage and costs. The measures include sub-metering to limit use and leak detection. Sub-metering allows tenants to see their water usage, which helps them save.

667.81 Mn Imperial Gallons

Total water consumption

Water conservation measures

Water conservation decreases the diversion of freshwater from the ecosystem, and saves the energy required for its extraction, treatment and transportation. Several measures are underway including the use of efficient fixtures, smart landscaping, improved irrigation processes, and water-efficient cleaning equipment.

Smart irrigation for landscaping has been introduced at a number of our communities. Smart irrigation technology uses weather data or soil moisture data to determine the irrigation need of plants and avoids unnecessary watering. Further, treated Sewage Effluent (TSE) water from the Dubai Municipality is being used for landscaping purposes. Currently, such techniques are in use at our Arabian Ranches I, II, Reem, Emirates Living, Dubai Hills Estate, Polo Homes, Downtown Dubai, Dubai Marina and Dubai Creek Harbour communities. It is estimated that through this initiative 6% water savings will be achieved.

Low-volume aerators have been installed in the showerheads at swimming pool amenities. More than 2,000 such aerators have been installed across Emaar communities.

Wastewater recycling

The Dubai Aquarium & Underwater Zoo has implemented a wastewater recycling project. Water used at the aquarium exhibits is usually discarded periodically to maintain the cleanliness and health of aquatic animals. In this initiative, the wastewater is being recycled using a mobile backwash recovery and reused in the aquarium. This has helped in reducing environmental impact, also eliminating the need to transport water, and avoiding the need for handling and disposal of large quantities of wastewater. Over 80% of used water is being recycled and reused in the aquariums and the project has a forecasted ROI of 1.60 years.

8 Mn gallons/year

Cumulative impact of our water conservation activities in Dubai

80%

Wastewater recycled and reused in the Dubai Aquarium & Underwater Zoo





Sustainable operations

We are actively working to integrate greener, more environmentally-friendly construction practices into both our current offerings and future projects. Our Building Design Standards and Guidelines ensure sustainable design in new constructions and renovations. Our energy, water, and sustainable design practices decrease our environmental impact, utility rates, and operational expenses through durable and long-lasting products.

In order to enhance the sustainability standards followed for our buildings and communities, Emaar Community Management is targeting green building certifications. We are targeting LEED certification for our marquee buildings and are conducting pre-feasibility studies for this. We have LEED-certified projects in our overall portfolio (in India and Turkey). We are also conducting LEED gap analysis and feasibility studies for our upcoming projects, as a precursor.

Our international projects have received the LEED Gold Green Building certification



Emaar Digihomes Sector 62 Gurgaon
4 star GRIHA Certification

Key features:

- + Adopted recycling of various materials such as steel scrap, wooden scrap
- + Sewage water treatment and re-use for gardening, and curing purposes (zero discharge projects)
- + Topsoil conservation (to retain soil fertility)



Emaar Square Shopping Mall, Turkey
LEED Gold Green Building certification

Key features:

- + The utilisation of local and recycled raw materials
- + Low-carbon emitting materials
- + Energy-efficient lighting systems
- + Energy-efficient HVAC systems



Emaar Square North Tower, Turkey
LEED Gold Green Building certification

Key features:

- + Energy-efficient design
- + Water use reduction
- + Sustainable site selection and development
- + Use of responsible materials
- + Waste management
- + Enhanced indoor environmental quality

Harnessing technology for sustainability

Emaar Egypt has adopted multiple technology-driven sustainable practices across its portfolio to optimise operations and reduce negative impact.

Coastal solutions: Emaar Egypt designed a method for utilising nourishment plans and protection structures in Marassi Bay to prevent shoreline erosion and fortify upland development. With the significant change in wave movements, such construction can help stabilise the shoreline. The construction is expected to get completed in 2024.

Electrical solutions: The Belle Vie community's Scada system – which is a set of software applications that gather data in real-time from remote locations and accordingly control equipment – controls dry and wet utilities to optimise facility management. This method saves energy and prolongs component life.

In another initiative that targets adding to the growth of the EV ecosystem, car charging stations have been installed in Uptown Cairo and Mivida. For our upcoming Belle Vie and Cairo Gate projects, provisions are being made for their installation.

Mechanical solutions: Ongoing and future hotel construction projects will include interventions to conserve water, energy and to minimise pollution. Among them, photocell flow sensors for public washrooms, PICV valves for FCUs, AHUs, heat exchangers, and ecology units for kitchen exhaust air filtration are under implementation.

Design solutions: To reduce material usage in pipes and stormwater generated on-site, roofs at Belle Vie, Cairo Gate, Soul and Marassi are designed to release rainwater to gardens. This also reduces the volume of water used for irrigation.



Sustainable district cooling

We provide high-quality cooling using sustainable, energy-efficient engineering solutions. Our district cooling arm, Emaar District Cooling (EDC) focuses on energy efficiency, carbon reduction, and sustainable equipment procurement. EDC works with the objective of creating a sustainable energy landscape in the UAE and reducing carbon emissions. It is the region's leading district cooling provider in terms of energy efficiency achievement.

The innovative approach taken by EDC includes:

- + The utilisation of seawater as a coolant in the Emaar Beachfront district cooling plant. This substantially decreases our water consumption carbon footprint.
- + Installation of thermal storage in respective District Cooling Plants to optimise energy and water consumption rates.
- + Construction of a Treated Sewage Effluent Reverse Osmosis (TSE RO) plant in lieu of individual RO plants in Downtown District Cooling scheme.
- + Employing sophisticated water treatment technologies to monitor, control, and minimise corrosion, scaling and bio-fouling in chilled water systems, and to reduce the risk of Legionnaires' disease-causing bacteria. The high summer temperatures increase the likelihood of such bacteria occurring, and EDC takes a proactive approach through 24x7 automated chemical treatment system to ensure the safety and health of our users.

788.24 Mn TRh

Total District Cooling Energy Consumption in the UAE

District cooling that balances green concerns with performance needs

Temperatures within Dubai's glittering built environment are constantly controlled, adding to the charm of the coastal desert city. A lot of high technology goes into maintaining these ambient temperatures. Centralised cooling plants produce chilled water which acts as a heat reducer and is distributed to consumers through a closed piping circuit, or reticulation system. This centralised production and distribution of cooling energy is called District Cooling (DC). Modern, more environment-friendly DC standards prefer using deep seawater as a coolant as it is colder than surface water and can be easily released into the sea after use. Accordingly freshwater use is completely avoided.

Emaar's properties across Dubai and UAE extensively use district cooling. We own and run Emaar District Cooling (EDC), as a limited liability company providing innovative cooling solutions across key projects in the UAE and Bahrain. Headquartered in Dubai, EDC owns/manages five cooling plants with a combined capacity of 114,800 MT of refrigeration as on 2022, serving both in-house projects and external ones. EDC's services cover design, construction, commissioning, operation, management and maintenance of complete end-to-end DC plants (DCPs).



87,800 MTCO₂eq savings in 2022

Equals

18,932
gasoline powered
cars driven over one year

Equals carbon sequestered by

1,452,839
saplings over a decade

Emaar Beachfront DC plant makes innovative use of seawater intake and outfall system

Conventional DC systems use potable and treated sewage effluent water for cooling purposes. EDC's Emaar Beachfront DCP utilises seawater, substantially reducing the water consumption carbon footprint to almost zero. The design of the seawater system and location of the intake and outfall pipes have been done by specialised marine consultants and EDC engineers, with simulation based on Cormix Modelling to address environmental concerns. Further, Emaar has installed state-of-the-art chlorine dioxide generators to control aquatic growth in the pipes, ensuring that only non-toxic chemicals get released that do not endanger the ecology. Monitoring is done through SCADA in-built systems, with digital memory, artificial intelligence and machine learning capabilities, enabling optimal control and performance. The entire system functioning has been approved by the Dubai Municipality coastal department.

The Beachfront DCP is housed in the basement of a residential tower and does not require a separate plot, thus saving space. While designing the system aspects like safe noise levels, anti-corrosive safeguards, isolation chambers and check valves were integrated to safeguard against discomfort caused by constant vibration from operations, the risk of leaks and seawater flooding, respectively. Operational since mid-2021, the plant is highly efficient in handling high-load capacities and has been recognised for its innovative technology use.

For DCPs, efficiency and reliability are the most critical parameters. Scale economies, that emerge from serving many customers, help to keep down costs. But remaining operationally efficient is as important as operations are typically highly energy-intensive. Any improvement in efficiencies thus results in huge savings in running costs. EDC has been a consistent high performer on both these criteria and has received numerous awards, the most recent being District Cooling Utility Provider award, 2022, at CPI's Climate Control Awards.