



EmiratesGBC

مجلس الامارات للابنية الخضراء
Emirates Green Building Council

UAE Sustainability Built Environment Blueprint

ENDORISING MINISTRIES:



UNITED ARAB EMIRATES
MINISTRY OF ENERGY
& INFRASTRUCTURE




UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

In partnership with



RACE TO
RESILIENCE

RACE TO ZERO



“Future generations
will be living in a world
that is very different
from that to which
we are accustomed.
It is essential that we
prepare ourselves and
our children for that
new world”

THE LATE SHEIKH ZAYED BIN SULTAN AL NAHYAN
Founder of the United Arab Emirates

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Executive Summary

Executive Summary

The Third Update of Second Nationally Determined Contribution for the UAE submitted in 2023 to the UNFCCC states that the building sector was responsible for 27 per cent of greenhouse gas emissions in the UAE as of 2019. At the same time, the built environment represents an opportunity for emissions reductions of 56 per cent by 2030, making it a critical sector for the UAE to meet its net zero targets for 2050 under the Paris Agreement.

With the above in mind, and with the leadership of the Emirates Green Building Council (EGBC) and the UN Climate Change High-Level Champion, COP28, a Developers' Leaders Group UAE was formed. The aim of the group was to map challenges to and key enablers of unlocking greater climate action for the built environment. The UAE Sustainability Built Environment Blueprint report was crafted to summarise the key findings, which include policies and regulations, buildings materials and systems, access to green finance, data, and skills, in addition to insights on the upcoming policies and priority areas from the Ministry of Energy and Infrastructure.

The report further maps out the key opportunities for intervention related to each of the main enablers identified.

1. Policies and Regulations

While the UAE has a federal green building code and an emirate-by-emirate specific one, leading developers went beyond business as usual to build projects surpassing the specified guidelines. The following contributed to significant market upskilling and improved sustainability performance. Upon engagement with sector representatives, three key areas of intervention were highlighted under the umbrella of policies and regulations: building codes, energy-related policies, and building performance requirements.

2. Building Materials and Systems

Industry consultations, as part of this effort, also revealed that several developers have established internal green material specifications and system performance criteria that are implemented across their project portfolio, further confirming the commercial availability of greener and better performing materials and systems compared to existing building codes and business-as-usual practice. Furthermore, specific to this key factor, materials and systems specifications, building operations, and energy systems were identified as major areas of intervention that can uplift the status of buildings and materials in the local market.

3. Finance

According to the sector stakeholders surveyed, around 60 per cent have identified a lack of green finance as the biggest challenge to accessing suitable funding, while 47 per cent and 49 per cent have respectively highlighted that the criteria to qualify for green finance are too complex, or the application process is not clear. Following the engagement sessions that took place in the development of this report, the key factors identified to enhance the availability of green finance for the building sector include green finance standards, green finance data and risk return.

4. Data

Comprehensive, robust and accessible data has a key role to play in green transformation of the built environment by facilitating improved design and operation practices, and unlocking access to green finance. Data related to green buildings is available within the respective local authorities responsible for the permitting and verifications of buildings. This highlighted the importance of the benchmarking role organisations such as the EGBC can play in collaboration with governmental entities and municipalities to make the data readily available and accessible to the public and stakeholders.

5. Skills

As companies in the UAE move towards stronger climate action, it is essential to upskill the workforce, not just to understand the concept of green buildings but most importantly its technicalities. Stakeholders engaged in the working group identified skills for reporting, and decarbonisation pathways across the value chain as well as enhanced building operations management as key factors under the umbrella of skills.

Concluding this executive summary, the way forward will require a harmonisation of green building policy requirements as well as market enablers in the UAE. To this end, the Developers' Leaders Group will act as a stakeholder group to support the Ministry of Energy and Infrastructure leading on the enabling policies for climate transition in the built environment while also working together to deliver market signals that support the transition of the in line with the UAE's net zero climate targets by 2050.

Read on for the full report

The background of the page is a teal-colored image featuring a modern glass skyscraper on the left and a lower building with a grid-like facade on the right. At the bottom, there is a dense line of green trees. In the top right corner, there are four vertical bars of varying heights, transitioning from a darker teal to a lighter lime green.

Introduction

Introduction

The UAE signed the Paris Agreement in 2015 and, in 2021, was the first country in the Middle East to announce its target to be net zero by 2050. In 2023, the UAE also hosted the 28th Conference of the Parties (COP28) of the United Nations Framework Convention on Climate Change (UNFCCC).

This further expedited the development of green initiatives at a national and local level, building on existing efforts across key sectors of the economy including power, water, industry, buildings, transport, waste and agriculture.



INTRODUCTION

More than 30 federal, emirate and company level programmes are considered in the UAE Net Zero 2050 Strategic Initiative:

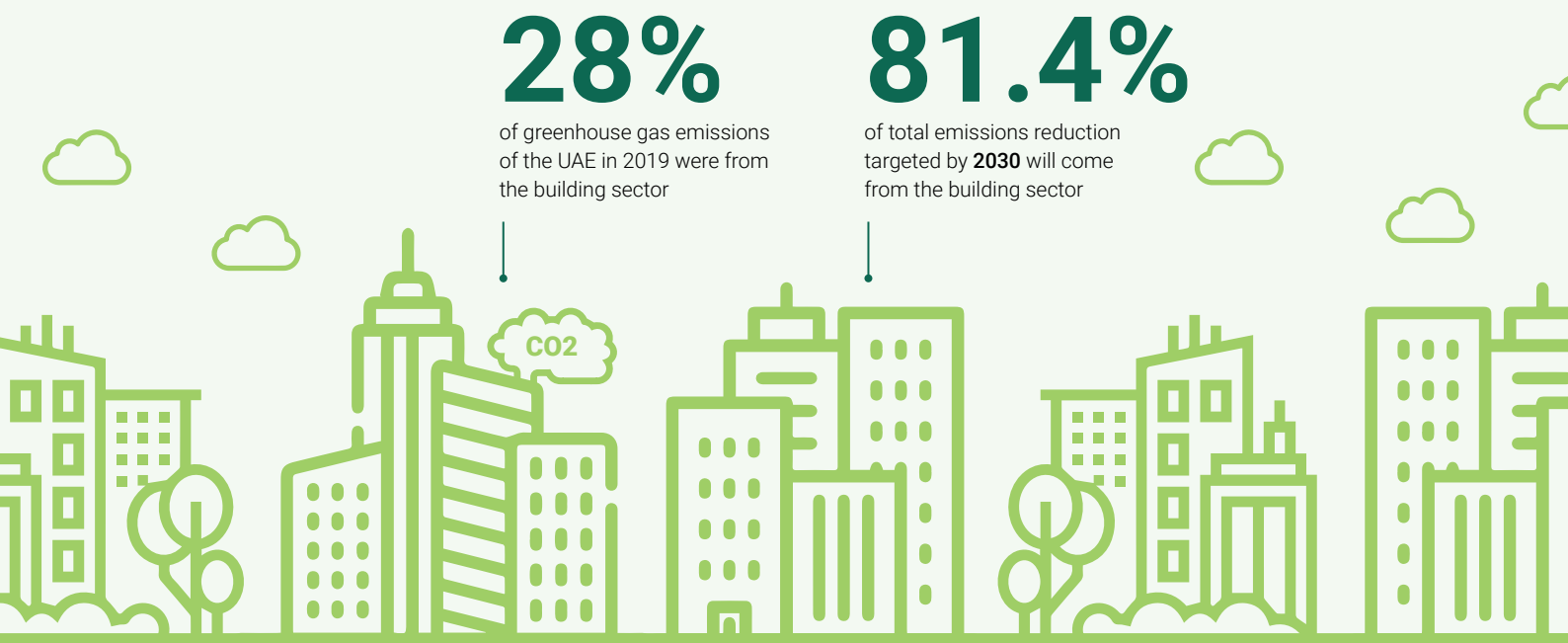
Power & Water	Industry	Transport	Buildings	Waste	Agriculture
'We the UAE 2031' Vision					
The UAE's First Long-Term Net Zero Strategy					
UAE Centennial 2071					
Abu Dhabi Environmental Vision 2030 (EAD)					
Dubai Carbon Abatement Strategy (DSCE)					National System for Sustainable Agriculture (MOCCAE)
RAK Energy Efficiency and Renewable Energy Strategy 2040 (RAK Municipality)					
Abu Dhabi Demand Side Management and Rationalization (DoE)				UAE Circular Economy Policy (MOCCAE)	UAE Food Security Strategy (MOCCAE)
Green Public Procurement for Energy & Water Efficiency (DSCE and RAK Municipality)				Dubai Waste Minimisation Strategy 2020 - 2041	Abu Dhabi Agriculture Plan (ADAFSA)
UAE Hydrogen Roadmap (MOEI)			Dubai Smart Strategy (Dubai Municipality)		
Dubai Clean Energy Plan 2050 (DSCE)	Dubai Demand Side Management Strategy (DSCE)			Dubai Integrated Waste Management Masterplan 2021 - 2041	
National Energy Strategy 2050 (MOEI)		Abu Dhabi Transport Mobility Management Strategy (ITC)			
Water and Agriculture Security Strategy (MOEI)	UAE Energy Efficiency Program (MOIAT)	Abu Dhabi Surface Transport Master Plan (ITC)			
UAE Industry, Transportation, Building and Agriculture (Energy and Water) DSM Program 2050 (MOEI)	Ops. Carbon Footprint Reduction (ADNOC)	Dubai Autonomous Transportation Strategy (RTA Dubai)			
Dubai Integrated Energy Strategy (DSCE)	EGA Optimization (EGA)	Dubai Green Mobility Initiative (DSCE)			
TAQA ESG Strategy	Arkan Cement Optimization (Arkan)	Etihad Rail National Railway Program (Etihad Rail)			
	Emirates Steel Optimization (Em. Steel)	Dubai Comprehensive Flexible Mobility Plan (RTA Dubai)			
	Sustainability Assessment f/ Manufacturing (MOIAT)				
	UAE Green Business Toolkit (MOCCAE)				
					Legend
					Federal Level
					Emirate Level
					Company Level

Legend

Federal Level
Emirate Level
Company Level

INTRODUCTION

Based on the Third Update of Second Nationally Determined Contribution for the UAE submitted in 2023 to the UNFCCC, the building sector represented 28 per cent of overall greenhouse gas emissions in the UAE in 2019. It will, however, deliver 81.4 per cent of the total emissions reduction targeted by the UAE for 2030.



This highlights the critical role of the sector in reaching the country's climate targets and emphasises the importance of identifying the different enablers required to unlock those targets.

Setting the Scene – Global Targets

During COP26, 45 world leaders launched the Breakthrough Agenda, in a bid to strengthen international collaboration for decarbonising high-emitting sectors including transport, power, hydrogen, steel, and agriculture.

At COP28, 28-plus countries, led by France and the Kingdom of Morocco, came together to launch a collective platform to accelerate action on buildings, focused on the goal that **"near-zero emission and resilient buildings are the new normal by 2030"**. This '[Buildings Breakthrough](#)' [1] will see countries collaborate to harmonise global standards, aggregate sectoral demand, enhance private financing, coordinate research and technology deployment, and bolster international capacity-building, with a special emphasis on strengthening building codes.

INTRODUCTION

To complement the Buildings Breakthrough, many businesses, cities and other non-party stakeholders are leading voluntary action to support the transformation of the sector by setting internal targets or aligning with existing global initiatives such as the [2030 Breakthrough](#) [2] as well as the Race to Zero Campaign, which requires a clear pathway to net zero by 2050 across all scopes of emission. These actions are essential for providing governments with the confidence to shape a supportive regulatory, policy and finance environment.

The [2030 Breakthrough](#) provides a near-term vision behind which these leaders are aligning. In the built environment this vision sets the goal that “all new projects completed from 2030 are net zero carbon in operation, with >40% reduction in embodied carbon”.

The [Race to Zero campaign](#) [3] is unifying this action. Since COP27 more than 70 built environment organisations – representing over USD 45 billion of combined revenue – have joined the Race to Zero, committing to cut their emissions to net zero by 2050 and contribute to halving emissions by 2030 across Scopes 1, 2 and 3. As of October, this included 20 per cent of major real estate asset managers and owners. Their commitment to cut emissions across scopes 1, 2 and 3 includes the embodied and operational emissions of the USD 1.4 trillion AuM.

Race to Zero members also include:



The 2030 Breakthrough sets the vision for “all new projects completed from 2030 are net zero carbon in operation, with >40% reduction in embodied carbon”

INTRODUCTION

[The Global Policy Principles for a Sustainable Built Environment](#) [4] is a set of guidelines developed by WorldGBC and other building councils from around the world and is aimed at governments and policymakers in the built environment. It encompasses seven pillars: Carbon, Resilience, Circularity, Water, Biodiversity, Health, and Equity and Access.

In a further COP28 breakthrough, The Global Cooling Pledge seeks to increase the global average efficiency rating of new AC equipment by 50 per cent by 2030 compared to 2022. The agreement has already been ratified by 63 countries including the UAE and will likely have a major impact on green building as energy regulators raise their MEPS (Minimum Energy Performance Standards) over the coming years.

Setting the Scene – Local Targets

The Third Update of Second Nationally Determined Contribution for the UAE adapts the year 2019 as a baseline for its national and sectoral reduction targets. It aims for a 43 million tonnes of carbon dioxide equivalent (MtCO₂e) reduction target by 2030, across seven sectoral targets, where the building sector represents the most significant area of improvement at 35 MtCO₂e, or 81.4 per cent of targeted emission reductions by 2030. **Key planned policy interventions include (Third Update of Second NDC for the UAE)**[5]:

Interventions for direct reduction in operational emissions:



Roll-out of building energy labels



Increase in rate of retrofitting



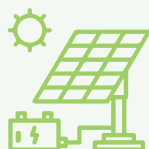
Accelerate the installation of solar thermal and efficient cooling systems (such as district cooling)



Pricing reform for residential, commercial and industrial power consumption



Encourage energy conservation



Introduce net and gross metering for distributed renewable energy

Intervention for addressing future emissions:



Revise existing building codes to increase the efficiency of new buildings

According to the International Energy Agency, buildings provide the opportunity to secure just over 42 per cent of the energy intensity improvements needed by 2030 to stay within the 1.5C target [6].

INTRODUCTION

The National Energy and Water Demand Side Management Programme 2050 was developed to target the most consuming sectors in the country (Built Environment, Transport, Agriculture, and Industry) aiming to reduce energy demand by 40 per cent and water demand by 50 per cent by 2050, which will support cost reduction, investment, and sustainability.



Buildings provide the opportunity to secure just over 42% of the energy intensity improvements needed by 2030 to stay within the 1.5C target

The UAE Built Environment Sustainability Blueprint: The Start of a Journey

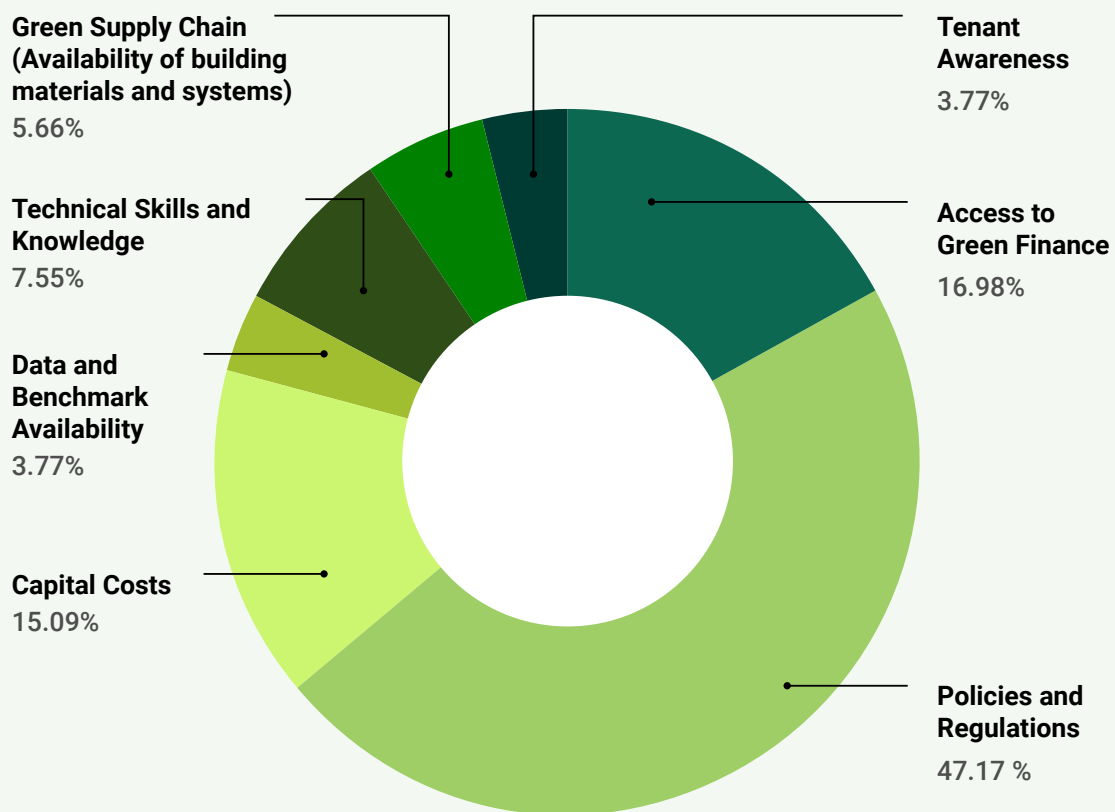
With the above in mind, H.E. Razan Al Mubarak, UN Climate Change High-Level Champion, COP28, whose mandate is to enhance ambition and strengthen the engagement of non-State actors in supporting Parties to deliver the goals of the Paris Agreement, engaged with the CEOs of the UAE's leading developers in a roundtable during a public engagement event in Dubai on 29 May 2023 to discuss key opportunities to enhance local efforts in the sector to decarbonise.

The roundtable highlighted a common desire for the leading businesses to raise ambition in decarbonising the built environment as well as shared challenges and the existence of many best practices already applied by different organisations in the UAE.

INTRODUCTION

This led to the creation of a working group comprising representatives from the leading organisations, the Climate Champions Team and led by the Emirates Green Building Council, to map the challenges faced by local developers and find the key enablers to unlocking greater climate action. The chart below summarises the findings of a survey conducted among over 75 representatives from the industry, revealing that Policies and Regulations are seen as the key enabler by non-state actors of the built environment.

Key factors for unlocking climate action in the UAE built environment as identified by leading industry representatives (percentage of respondees)



This effort falls within a bigger framework of ongoing consultations and business engagement led by the Ministry of Climate Change and Environment through the [National Dialogue for Climate Ambition](#) as well as the Ministry of Energy and Infrastructure's recent work and publication of "The Global ABCs Regional Roadmap for Buildings and Construction in the Arab Region" (April 2023).

Survey conducted among 75 key industry representatives, 2023

INTRODUCTION

This report will summarise the key findings of this working group, covering key opportunities across core dimensions of the building sector:

Area	Policy	Building Materials and Systems	Green Finance	Data	Skills
	Building codes	Materials sustainability specifications and market availability	Centrally endorsed sustainability standards for green building finance	Data on historical and existing building performance	Skills for building operation
Enablers	Energy policy	Systems performance specifications and market availability	Historical data on building sustainability performance	Data on building retrofits	Skills for reporting
	Building performance requirements		Risk return of green building finance		

The report will also highlight current efforts being undertaken by the leadership working group in collaboration with the UAE Government, as well as the next steps that need to be taken, in order to co-design and implement both the policy and market enablers identified under each of the areas listed above.



Policies and Regulations

01

Policies and Regulations: the UAE regulatory context

Current State

There are four key categories of regulation and building codes that impact the UAE building sector and these consist of national regulations, local regulations at an emirate level, as well as voluntary certification schemes. High-ambition building guidelines by leading developers have also contributed to advancing the performance of the sector over the past two decades and can be considered as a fourth category of sustainability building codes.

International green building certifications started gaining traction in the UAE in 2006 and were adopted in the UAE to advance sustainability for the built environment. According to the Emirates Green Building Council Market Brief, there were around 461 LEED certified projects as of December 2022. Other certifications are also used such as BREEAM, Green Key and others [7].







High-ambition building guidelines by leading developers have contributed to advancing the performance of the sector over the past two decades

POLICIES AND REGULATIONS: THE UAE REGULATORY CONTEXT

At a national level, the UAE Cabinet approved the “Green and Sustainable Building Standards” to be applied across the country in 2010 to be effective as of 2011 [8]. Also, a series of programmes for the built environment, most recently comprising the UAE DSM Energy and Water Programme 2050 was issued in 2021, and presents eight supporting initiatives for the transition of the sector.

UAE DSM Programmes, Ministry of Energy and Infrastructure, 2021

DSM Pillar	DSM Programmes		
 Agriculture	4.1 Water food nexus	4.4 Monitor consumption	
	4.2 Enhance water and crop productivity	4.5 Sustainable groundwater management	
	4.3 Use fit-for-purpose water	4.6 Study groundwater pricing	
 Built Environment	1.1 Building codes	1.4 Renewable energy	1.7 Facility management
	1.2 Building retrofits	1.5 Equipment standards	1.8 Non-revenue water [reporting]
	1.3 Efficient cooling	1.6 Efficient irrigation	
 Industry	3.1 Top 50		3.2 Electric motors
 Transport	2.1 Public transport		2.3 Green mobility
	2.2 Freight transport		2.4 Fuel standards
Governance		Policies	
Funds and resources	Awareness outreach		Performance management

POLICIES AND REGULATIONS: THE UAE REGULATORY CONTEXT

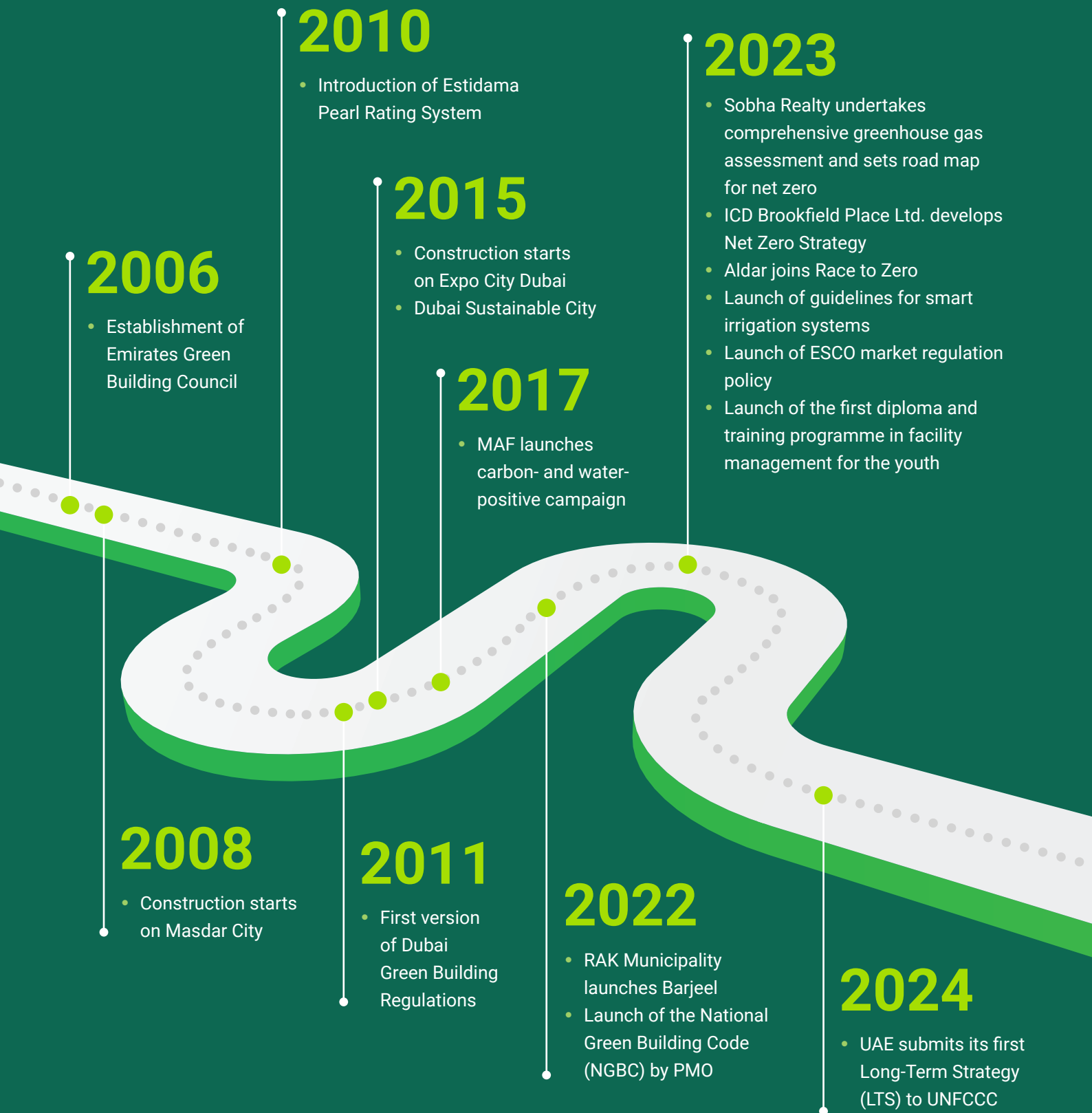
On local regulations, Abu Dhabi first mandated the Estidama Pearl Rating System in 2010, while Dubai also mandated the first version of the Dubai Green Building Regulations in 2011 for public sector buildings, followed by mandatory green building regulations for all buildings updated in 2016, and again in 2023. Ras Al Khaimah launched the Barjeel Green Building Code in 2019. As of December 2022, there were 41.43msqm of Estidama certified spaces, 6,549,328sqm under LEED, and 662,871sqm that follow the Barjeel Certification system (covering 1,875 projects). With this, the UAE was ranked 14th globally for highest national concentration of sustainable buildings in the world.

In addition to emirate-based building codes, the UAE has more than 40 free zones which follow their own regulations. Trakhees and Masdar free zones have both adopted green building regulations. Trakhees regulations, launched by the Environment, Health and Safety (EHS) Department of Trakhees, which is the regulatory arm of Dubai World-Ports, Customs and Free Zone corporation (PCFC), was one of the first green building regulations in the UAE, where, as of December 2022, there were 75 projects following the Trakhees in-house certification path and 76 projects following the GBCI (Green Business Certification Inc) path.

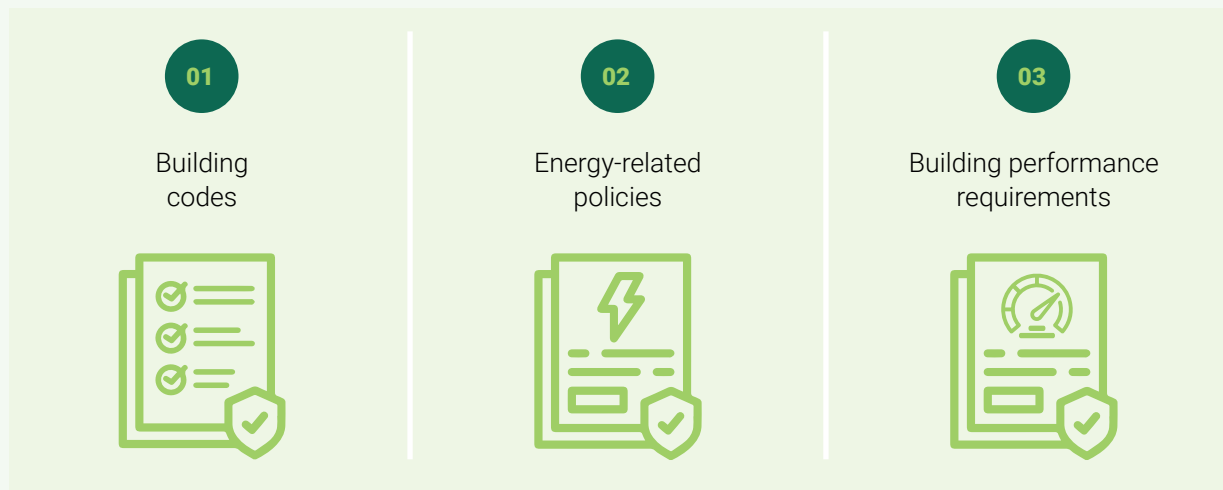


Finally, several leading developers and building industry players have adopted beyond-business-as-usual building and construction standards throughout the past decade and a half which have contributed to significant market upskilling and improved sustainability performance. These include Masdar City, Expo City Dubai, The Sustainable City, Majid Al Futtaim, ICD Brookfield Place Ltd., and Aldar, who have, most recently, committed to net zero by 2050.

Key milestones in the UAE built environment



Upon engagement with the sector representatives, three key areas of intervention were highlighted under the umbrella of policies and regulations:



The specific challenges and opportunities related to each are covered below.

Building Codes

The survey revealed that 75 per cent of respondents believed the most important policy enabler consisted of updating building codes to reflect greater market readiness and 73 per cent highlighted the need for greater standardisation of building codes between the different emirates.

1. Update of Local Building Standards

While the UAE saw significant steps in introducing mandatory sustainability requirements into the local building market over the past 14 years with Estidama, Saafat (Dubai Green Building Regulations) and Barjeel, local codes remain based on older international standards such as ASHRAE 2007 and 2009.

As such, there is a key opportunity to enhance mandatory building code requirements to reference updated standards and reflect market readiness, focusing on a tiered approach that includes more ambitious requirements for voluntary rating. The Air Conditioning, Heating and Refrigerant Institute estimates that this could yield up to 45 per cent increased efficiency in mechanical, electrical and plumbing building systems.

CASE STUDY



Client: Masdar City

Project: Masdar City Square

Intervention: Masdar City Square comprises seven single and multi-tenant office buildings with a gross floor area of 48,000m². Work began on Masdar City Square early in 2022, with the development being constructed to LEED Platinum green building certification standards, WELL Gold standards for human health and wellbeing in the built environment, and 4 Pearl PBRs Estidama standards for the development of sustainable buildings.

Impact: The Masdar City Square HQ at the centre of the project integrates solar panels into an architectural shading system over the entrance of the building and is on target to achieve Zero Energy certification by the International Living Future Institute.

Each of the other six buildings will have an energy reduction of over 55%, with the project demonstrating that net zero buildings can be commercially viable.



2. Harmonisation of national and local building codes

At the moment, the various local building codes present differing specifications and varying coverage of building systems. This includes differences in specifications of envelope performance, air conditioning and cooling equipment, in terms of green materials. While some building codes include materials, envelopes, systems and waste, others focus primarily on envelope and building systems.

There is an opportunity to set unified building codes with minimum performance requirements at a national level

Energy Policy

Coming after building codes and building performance, supporting policies for distributed energy were highlighted by 56 per cent of the survey respondents as a key enabler required to transition the sector.

1. Enhanced regulations for decentralised renewable energy

All developers highlighted the current limitations relating to decentralised renewable energy whereby certain emirates don't have specific regulations incentivising roof-mounted or built-in solar power, while others, such as Dubai, do have such programmes (Shams Programme) but have defined limits to the maximum capacity that can be installed.

There is therefore an opportunity to introduce policy which further supports and incentivises the installation of decentralised renewable energy at a national level. This will be further enhanced by the existing plans to introduce supporting regulations for gross and net metering as noted in the Third Update of the Second NDC. Industry also highlighted sub-metering and wheeling as enablers to increase the share of decentralised renewable energy, which would also strengthen the regulatory environment for distributed solar power.

There is an opportunity to introduce policy which further supports and incentivises the installation of decentralised renewable energy at a national level

2. Access to local renewable energy certificate and power purchasing agreements

A second challenge identified related to decentralised renewable energy and the current inability to buy local renewable energy certificates or power purchasing agreements.

Renewable technologies, including solar PV, wind, and waste-to-energy, are economically viable in the UAE, competing with gas at low prices. This supports an accelerated shift to renewables, surpassing current targets, making a 25 per cent renewable power share by 2030 more cost effective.

Enabling access to local renewable energy certificates or power purchasing agreements would lead to an upscaled and diversified local energy market which would allow greater investment from the private sector into the transition of the electricity supply.

Building Performance Requirements

Finally, 62 per cent of the respondents to the industry survey highlighted regulation relating to the retrofitting and performance of existing buildings as a critical enabler required to support the net zero transition.

1. Minimum requirements for retrofits

While there are local targets for building retrofits in the emirates of Abu Dhabi, Dubai and Ras Al Khaimah, the incentives and regulations encouraging retrofits differ from one emirate to another.

There is therefore an opportunity to establish nationwide building retrofitting requirements and guidelines supported by local incentives, taking into consideration a building-by-building baseline approach, ensuring maximised energy efficiency.

Dubai Supreme Council of Energy has, for example, established a building retrofitting programme with the target of retrofitting 30,000 buildings by 2030 and has to date retrofitted 8,000 buildings. Lessons learnt and efficiency improvements from these projects can support establishing a baseline to inform national retrofit targets and performance criteria.

EmiratesGBC has also issued the Green Building Retrofit Guidelines which provide an organised collection of economically viable methods that will equip existing building owners in the UAE with the necessary tools to achieve sustainable and comfortable buildings. The guidelines help develop technical capacities and skills among industry professionals, building owners, operators and end users.

To address this there are several opportunities that can be implemented at a regulatory level. These include:

- **Establish performance-monitoring requirements and incentives** and link them to rental index, registration fees and mortgage where banks do not support mortgage unless energy performance is being monitored.
- **Introduce tools such as energy performance certificates** that can be included in rental contracts or as part of the asset annual review, along with Display Energy Certificates (DECs).
- **Develop infrastructure for examining the retrofitting performance of buildings.**
ESCOs can play a huge role by taking part in the framework that should involve auditing, monitoring and reporting of building retrofit plans.
- **Enact monitoring and regulatory protocols to oversee carbon emissions originating from buildings and equipment** by utilising internationally recognised carbon emissions measuring standards for buildings and equipment to measure both embedded and operational carbon.
- **Introduce equipment certification programmes** to ensure that equipment and materials sold are market compliant.

There is an opportunity to establish nationwide building retrofitting requirements and guidelines supported by local incentives

CASE STUDY



Developer: Aldar Properties

Project: Accelerating building retrofit

Intervention: Three recent projects recently undertaken by Aldar demonstrate the value of prioritising retrofit within its portfolio as well as the return on investment.

Impact of Project 1: Aldar invested AED65m to launch an energy retrofit project on 54 assets across its portfolio and targeted a 22% reduction on energy consumption. The project is expected to save 23k tCO₂ and yield a guaranteed AED17.7m savings per year.

Impact of Project 2: Aldar financed an additional AED25m to add 13 residential communities and targeted 18% reduction on energy consumption. The project is expected to save 20k tCO₂ of emissions and deliver a guaranteed AED12.2m savings per year.

Impact of Project 3: Aldar invested an additional AED49m on nine assets, targeting a 20% reduction on energy consumption. The project is expected to save 12k tCO₂ of emissions and deliver a guaranteed AED9.6m savings per year.





Building Materials and Systems

02

Building Materials and Systems

Current State

When discussing building materials and systems, there are two key aspects to consider: operational emissions to power and cool and heat buildings (28 per cent of energy-related global emissions) as well as embodied carbon emissions (11 per cent of energy-related global emissions) [9]. Environmental Product Declarations (EPDs) are the materials' "nutrition label", which show their impact on the environment.

At a local level, while the Dubai Municipality Manual of Green Building Materials and Testing Facilities does not directly share building materials' EPDs, there is a sizeable library of green materials and their local suppliers, revealing the readiness of the local building market



to adopt these materials and use them. Industry consultations as part of this effort also revealed that several developers have established internal green material specifications and system performance criteria that are then implemented across their project portfolio, further confirming commercial availability of greener and better performing materials and systems compared to existing building codes and business-as-usual practice.

This section will explore three main enablers related to building materials and systems, which include materials and systems specifications, building operations and the power factor.

Materials and Systems

Today, **building materials and systems specifications are not reflecting market availability and readiness** of more sustainable materials and systems. Reasons mentioned through the industry survey and consultations include higher premium of better performing materials as well as general **lack of awareness** on the performance of these materials.

In addition to updating building codes to reflect commercially available green materials and building systems, it is important to develop publicly available benchmarks of the performance of existing buildings and systems to ensure that designers and developers adjust their specifications accordingly and avoid overdesign, especially with regard to cooling, electricity and water demand.

This includes the need to **correct the power factor**. Often, the power factor is less than 0.9 and it hence does not measure power consumption correctly. The power factor can be increased to 1, resulting in a more optimal use of the power supplied to the building.

It is important to develop publicly available benchmarks of the performance of existing buildings and systems

CASE STUDY

**AD PORTS GROUP**

Developer: AD Ports Group

Project: Shamal Admin Building

Intervention: As part of its decarbonisation efforts, the Shamal Admin Building, a 8,100 sqm facility in Khalifa Port Abu Dhabi, was designed as a sustainable, energy-efficient facility that aims for Estidama 3-Pearl and Edge-Zero certification through its positive energy status.

Impact: The facility will result in 100% energy savings and 7% energy generation surplus through a 37% energy reduction by design (773 MWhr/year), and 70% supplied by solar PV generation (1,303 MWhr/year):

- 370kW rooftop solar PV system
- 535kW solar PV carport system

The building consumes around 40% less energy than baseline facilities, and is 3-Pearl Estidama and Edge Zero certified, using an improved building envelope and building systems, including a 44% reduction in lighting power densities and a 59% reduction in water consumption.

The building also utilises recycled materials and high-GGBS concrete, resulting in around 20% lower embodied carbon and 240 tCO₂e savings per year, with a 5% cost impact and a 12-year payback period. It also diverts 80% of its operational waste from landfills.



CASE STUDY



Client: Masdar City

Project: Key Building Environmental Design Requirements

Intervention: Masdar City applies key building environmental design requirements which set minimum performance criteria across its portfolio including assets developed by third parties. These requirements are based on LEED Platinum, WELL Gold, 4 Pearl PBRS Estidama, and LEED Zero.

Impact: These criteria include requirements such as achieving at least 40% reduction from ASHRAE 90.1 2007 for energy consumption, and a target of 550 KGC02e/m² for self-developed projects' embodied carbon. Furthermore, buildings must follow a minimum of 3 Pearls Estidama Pearl Building Rating System.

Masdar City now has a considerable portfolio of assets of LEED and Net Zero Buildings, built and under construction. Currently, there are 21 LEED Platinum buildings, 13 LEED Platinum buildings under construction, and one mosque on track to receive LEED Platinum rating.

Additionally, Masdar City recently announced the region's first net zero energy mosque. This will take its net zero energy portfolio to five buildings: two completed, two under construction, and this mosque, which will commence construction in 2024.



There is also an opportunity to create a market shift through a demand-led approach whereby both public and private sector developers adopt internal specifications beyond business as usual.

Another enabler identified was to establish a database of green materials or apply labelling schemes such as environmental product declarations. This could be undertaken by non-government organisations with the support of the private sector or could be an effort undertaken by a public government. Previous successful examples of similar efforts include Masdar's Future Build portal and the Estidama Villa Product Database by the Estidama Programme.

Building Operations and Maintenance

Related to building systems, there is also the need to ensure optimal building operations and preventive maintenance. ESCOs and Super ESCOs can act as third-party verifiers to ensure optimal building operations.

They have the skillset to identify and execute these opportunities, enabling a diversified approach to retrofitting for both individuals owning small buildings, as well as companies with large developments.

Facilities management companies can also provide similar services provided that they have the in-house capabilities. The provision of preventive maintenance could be encouraged by presenting the value of preventive maintenance with building owners and asset managers contracting and integrating this into contract and service agreements.



There is an opportunity to create a market shift through a demand-led approach

CASE STUDY



Developer: Expo City Dubai

Project: RISE Guidelines for Sustainable Operations

Intervention: Expo City Dubai (ECD) is committed to setting a strong example in sustainability by embracing the circular economy and ensuring a sustainable supply chain. The ECD 'RISE Guidelines for Sustainable Operations' is a handbook that facilitates incorporation of sustainable practices into the procurement of products and services at city scale. An embodiment of ECD's sustainability ethos, RISE stands for Respect for the Workforce, Impact on Communities, Safety for All and Environmental Stewardship.

Impact: The guidelines build on Expo 2020's sustainability triumphs, fostering a culture of continuous improvement. They also align with ECD's commitment to decarbonisation and the UAE's Net Zero 2050 initiative, paving the way for a greener world. Compliance with RISE guidelines carries the following impact:

- Enhanced Reputation: Suppliers can take pride in being part of sustainable operations.
- Meeting Visitor Demand: Addresses the growing social and environmental responsibility demand.
- Market Expansion: Contributes to the growth of ethical and sustainable products and services.
- International Recognition: Alignment with global sustainability standards and eco-labels.

More at: <https://www.expocitydubai.com/en/sustainability/>



The background features a dark green grid with a light green line graph showing an upward trend. At the top, there are four vertical green bars of varying heights. In the bottom left corner, there is a small bar chart with green bars of different heights. The text 'Access to Green Finance' is written in a large, white, sans-serif font, and the number '03' is written in a large, light green, sans-serif font below it.

Access to Green Finance

03

Access to Green Finance

Current State

The key concept behind green finance is to create a sustainable and resilient economy that can address climate change challenges and promote the transition to a low-carbon economy. Green finance encompasses green mortgages, green loans, green credit cards, green banks, and green bonds. Globally, the Green Loan Principles (GLP) have been developed by an experienced group of representatives from leading financial institutions active in the green loan market, to promote the development and integrity of the green loan product.

In 2021, HSBC was the first bank in the UAE to issue green finance to customers looking into purchasing homes that are sustainable within standards set by the bank. Of the local banks in the UAE, First Abu Dhabi Bank and Ras Al Khaimah Bank also issue green mortgages. Towards the end of 2022, six UAE banks collectively channelled AED 190 billion (equivalent to USD 51.8bn) into green financing initiatives, as reported by members of the UAE Banks Federation (UBF) [10]. These banks encompass First Abu Dhabi Bank, Abu Dhabi Commercial Bank, Emirates NBD, Dubai Islamic Bank, Mashreq, and Abu Dhabi Islamic Bank.



Towards the end of 2022, six UAE banks collectively channelled AED 190 billion (equivalent to USD 51.8 billion) into green financing initiatives and six UAE banks became 'green banks' ahead of COP28

The increased interest in and availability of green finance by the banking sector presents an opportunity for the building sector to access wider options for financing. To do so, developers would have to work on decarbonising their asset portfolio and delivering more sustainable buildings.

On the other hand, the majority of the carbon footprint of banks sits in the scope 3 emissions under the portfolios and activities of the clients they finance. With an increasing number of UAE banks committed to reaching net zero, this will require them to work more closely with their client base to support them in their decarbonisation so that the banks themselves are able to meet their net zero target by 2050.

UAE authorities have actively promoted the issuance of green debt. Recently, the Securities and Commodities Authority (SCA) announced that companies issuing green or sustainability-linked bonds or *sukuk* would be exempt from listing fees on the local market for the current year. Notably, in May 2023, First Abu Dhabi Bank, the largest lender in the country, raised USD 600 million through green bonds, while a subsidiary of Abu Dhabi's leading developer, Aldar, issued USD 500 million in green *sukuk*, and the private Emirati retail conglomerate Majid Al Futtaim sold USD 500 million in green *sukuk* [11].

According to stakeholders, around 60 per cent have identified the lack of green finance as the biggest challenge to accessing funds, while 47 per cent and 49 per cent have respectively highlighted that the criteria to qualify for green finance are too complex or the application process is not clear. Following the engagement sessions that took place as part of the development of this report, the key factors identified to enhance the availability of green finance for the building sector include: green finance standards, green finance data, and risk return.



Green Finance Standards

Following feedback from a dedicated workshop with the finance sector, one of the main challenges identified consisted of a lack of common standards for sustainable buildings.

Harmonisation of sustainability standards across the UAE: Today, some projects follow international green building codes (such as LEED and BREEAM) while others follow local ones. This makes it difficult for banks to provide green finance against local ratings as it places the burden of setting the definition of a green building on them.

Industry can support by providing a technical comparison between both local and international green building guidelines. This will help create a unified understanding of what are common sustainability measures for building projects in the UAE that all banks can refer to.

Having endorsement by the **federal government of defined standards for green buildings** will further provide reassurance and a common standard for financial institutions against which they can provide green finance options.

There is merit in defining whether these targets are based on an existing international or local building rating schemes or whether there are set key performance indicators that can be used instead, such as energy performance criteria.

By providing a green building guidelines technical comparison, industry can help create a unified understanding of common sustainability measures for building projects in the UAE that all banks can refer to

CASE STUDY



Bank: HSBC

Project: The Sustainable City

Intervention: HSBC leads the way in sustainable finance by offering green mortgages. This supports The Sustainable City project by offering favourable financing options for properties that meet high environmental standards.

Impact:

- Energy-efficient housing designed for minimal environmental footprint
- Vegetable production within biodomes for sustainable food supply
- Solar-powered car parks equipped with electric vehicle chargers

- A surrounding buffer zone of 2,500 trees to enhance biodiversity and improve air quality

Cost impact:

- Customers benefit from a 0.15% discount on financing rates
- Waiver of the arrangement fees

For more:

- <https://www.thesustainablecity.ae/>
- <https://www.thenationalnews.com/business/money/hsbc-rolls-out-the-uae-s-first-green-mortgages-1.1219329>



Green Finance Data

One of the challenges highlighted by banks with regard to providing green finance included the availability of historical data.

Historical data can help assess the impact of green finance and will therefore encourage banks to provide loans against set performance criteria that are either expected or conditional on the finance granted.

Banks can request this data directly or can work with building sector non-governmental organisations. NGOs such as Emirates Green Building Council (EGBC) have a history of benchmarking reports: these reports can become mainstream and can expand to include categories needed by banks to ease their green finance process [12].

Risk Return

Finally, **risk return** was identified as another area hindering greater availability of green finance in the market.

Sustainable buildings are sometimes more expensive and green loans are not necessarily cheaper. There is today a challenge in monetising sustainable performance and this also applies to building retrofits, which are risky and complex in nature.

In addition to having better quality benchmarking data on the performance of sustainable buildings, as mentioned earlier, regulators can also play an active role. Federal Government can help develop a building energy performance or efficiency registry to better help banks factor in climate risk across the building and construction sector. This will in turn help banks develop a more climate risk-informed, risk-weighted asset register and properly allocate credit in line with a net zero transitioning client base.

As the built environment sector is traditionally identified as a hard-to-abate and harder-to-transition sector, the credit risk associated with these sectors can be higher.

Federal government can also support liquidity of green finance by lowering the cost of lending, based on defined sustainability performance criteria (refer to section above).

CASE STUDY



Developer: Majid Al Futtaim

Project: Sustainable Financing

Intervention: Since 2019, Majid Al Futtaim, the leading shopping mall, hotels, communities, retail and leisure pioneer across the Middle East, Africa and Asia, has raised USD 4.45 bn through two Green Sukuks, two Sustainability-Linked Loans, and a Green Hybrid Bond to scale up its ESG impact and investment, positively influencing defined sustainability performance targets aimed at decreasing emissions across its operations, augmenting green building certifications in its portfolio, and improving gender balance among senior management.

Impact: Annual performance against these targets undergoes external, independent verification for clarity and compliance. In 2022, the business surpassed its Scope 1 and 2 emissions targets, recording 151.6 kgCO₂e/managed m² compared to a target of 173 kgCO₂e/managed m². With 54 green-certified

assets producing 51 million kWh of renewable energy and boasting the world's first LEED Platinum certified hotel portfolio, Majid Al Futtaim has solidified its position as a premier provider of sustainable real estate in the region.

More at: <https://www.majidalfuttaim.com/en/who-we-are/sustainability-and-esg/reports>



Mall of the Emirates, the world's largest operational mall to receive LEED Platinum certification for existing buildings



Data

04

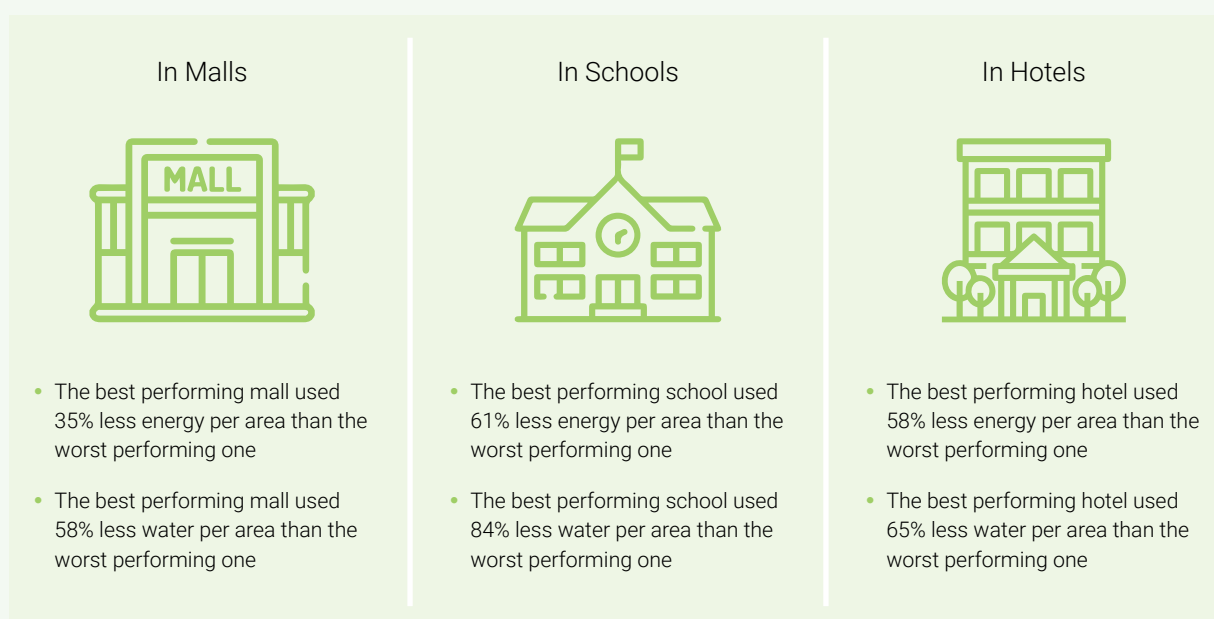
Data

Current State

Data on green buildings in the UAE is available with the respective local authorities overseeing the permitting and verification of buildings including the Department of Municipalities and Transport in Abu Dhabi for Estidama, Dubai Municipality for Saafat and Ras Al Khaimah Municipality for Barjeel Green Building System. This also applies to building retrofits, with Dubai holding the largest number of buildings retrofitted within an emirate, and Dubai Supreme Council of Energy being the entity overseeing it.

Organisations such as the Emirates Green Building Council (EGBC) work with governmental entities and municipalities to make the data easily accessible to the public and readily available to stakeholders to aid in raising awareness of and promoting green building practices. In efforts to bring data to the forefront, EGBC has issued several sequels of the [UAE Market Brief](#) report. The EGBC has also worked on benchmarking the energy and water status of different building typologies in the UAE, in 2016 and 2019, through its [Benchmarking Report](#).

The Benchmarking Report found that:



Understanding issues related to the fourth key factor in the Blueprint, data, there was one main pain point, performance data.

Performance Data

As highlighted above, data availability presents a challenge on multiple fronts including specifying improved building materials and systems, and unlocking green finance. Stakeholders also highlighted the lack of data on the trade-off between embodied carbon and energy efficiency.

In order to address this, there is an opportunity to perform benchmarking for building performance per building typology. This is an area on which EGBC is currently working, and is in the process of developing benchmarking for select building typologies. Moreover, there is an opportunity to work with local authorities (such as the power supply entities as well as the regulators providing the permits) to share the existing performance evaluation of new buildings as well as retrofit projects. Utility providers could provide energy information and the energy utilisation index of buildings, similar to Dubai Electricity and Water Authority's current practice of providing benchmarking to users of their consumption patterns compared to those of peers.

There is an opportunity to perform benchmarking for building performance per building typology

Energy efficiency certificates can also be applied, whether on a voluntary or mandatory basis, through the relevant electricity or land authorities. In turn, the energy efficiency certificates can be linked to green finance options or other incentives.

Learning from ICD Brookfield Place (case study below), developers and asset managers can introduce within the lease agreements clauses related to the building's environmental sustainability policies, procedures and initiatives, whereby tenants are actively engaged in participating and providing the required data related to their carbon-emitting activities as well as in implementing measures to reduce their overall carbon footprint.

CASE STUDY



ICD BROOKFIELD PLACE

Developer: ICD Brookfield Place Ltd.

Building: ICD Brookfield Place

Intervention: Environmental sustainability is an integral part of the building design, development, and operation phases.

Design focused on achieving LEED Platinum certification, and future-proofing the building. This involved equipping common areas and leasable spaces with utilities sub-metering connected to a centralised platform, enabling monitoring and reporting.

Tenant fitout guidelines outlined minimum environmental requirements, such as adhering to construction waste segregation practices and equipment specifications.

During the operational phase, the building has implemented decarbonisation strategies, such as energy optimisation, water conservation, and waste management, while promoting environmental initiatives and campaigns among tenants.

The building has committed to achieving net zero carbon by 2030, and utilises a cloud-based platform to manage carbon emissions data quality and reporting integrity.

Impact:

- Electromechanical systems design and sequence of operations resulted in energy reduction of 30%.
- Fresh air has been increased by 30% above

the minimum ASHRAE requirements to maintain the highest possible IAQ.

- Washrooms use 48% less water than the industry baseline.
- Planting low-water demand plant species has cut down irrigation water by 60% and 100% of irrigation water is from recycled air conditioning condensation.



The background is a detailed architectural floor plan of a building, overlaid with a dark teal color. The plan shows various rooms including 'Bedroom 3', 'Bathroom 3', 'Dressing', and several 'Balcony' areas. Dimensions and grid lines are visible throughout the drawing. A large, light green compass is positioned diagonally across the center-right of the image, and a black pen lies horizontally in the lower right quadrant. At the top of the image, there are four vertical light green bars of varying heights. The word 'Skills' is written in a large, white, sans-serif font on the left side, and the number '05' is written in a large, light green, sans-serif font below it.

Skills

05

Skills

Current State

Companies in the UAE are moving towards stronger action on climate issues. But to move faster and further there is a need to upskill the workforce. The concept of green buildings is not new, however, the technicalities of the movement are. According to a report by PwC, specifically tailored for the Middle East, the newness of ESG (Environmental, Social and Corporate Governance) left educational and vocational institutes unprepared [13]. Locating experts in net zero accounting or risk management is a challenging task, and this scarcity isn't limited to the Middle East; on a worldwide scale, over three-quarters of financial professionals express a shortage of sustainability-related skills. In addition to reporting, the industry stakeholder engagement highlighted skills for building maintenance as well as lack of guidance on decarbonisation pathways as two areas requiring additional support in order to deliver on the transition to a net zero and resilient building sector.



Skills for Reporting

Skills required for reporting are currently not mainstream, especially among facilities managers, while metering practices currently do not provide the required type or quality of data for effective reporting.

There is therefore a need to introduce **guidelines for reporting supported by a training programme** rollout.

It is particularly important to **upskill maintenance and facility managers and service providers** to enable them to give appropriate advice on building performance and retrofitting, as well as minimum requirements for preventive maintenance. This can be further facilitated by the use of automated monitoring and reporting technologies for building performance and optimisation.

CASE STUDY



Developer: Majid Al Futtaim

Project: Upskilling for Collective Success

Majid Al Futtaim has a responsibility to educate and upskill its workforce, partners and supply chain to best deliver on global sustainability commitments. The business extends its sustainability approach to mitigate and adapt to regional climate risks and, as such, has dedicated a Sustainable Business Commitment to 'Provide sustainability training to employees and suppliers throughout the value chain'. 85% of its procurement teams have been trained on sustainable procurement, more than 50% of frontliners on its sustainability strategy and 95% on role-specific training, 300,000 training hours on health and safety, and 100+ tenants on various tenant engagement and efficiency

programmes. Building on the trainings the company delivered to all tier 1 suppliers for Majid Al Futtaim – Properties, 'train the trainer' sessions were completed to ensure smooth roll-out across countries and its remaining Operating Companies. Other programmes include trainings on green building certifications, sustainable supply chain, financial wellness, climate risk, health and safety, employment conditions and diversity and inclusion.

More at:

https://www.majidalfuttaim.com/docs/default-source/reports/maf_esg_report_2022.pdf?sfvrsn=26aa8b7d_11



CASE STUDY



Developer: Expo City Dubai

Project: A human-centric approach to the design and operation of the city

Intervention: Expo City Dubai employees, tenants and visitors are provided with training to advance their knowledge and understanding of sustainability through various partnerships such as with the United Nations Global Compact, World Green Building Council and Emirates Green Building Council, and by living and working in buildings and masterplans that comply with the highest Green Certification standards such as LEED by the USGBC, WELL HSR by IWBI and BREEAM Infrastructure by BRE. These partnerships focus on achieving the 17 Sustainable Development Goals (SDGs) and addressing current environmental issues.

Impact: Expo City expands on the legacy of Expo 2020 Dubai by continuing its vision of a sustainable future that exists in harmony

with nature. It aims to serve as a blueprint for sustainable urban living and engage the public on social and environmental issues by creating a people-centric community that prioritises human health and well-being through advanced technology and innovative design. The city features smart living environments, micro-mobility solutions, and autonomous vehicle routes to make life easier and more sustainable.

For more information:

- <https://www.expocitydubai.com/en/sustainability/>



Decarbonisation Pathways

There is today no decarbonisation pathway for buildings that has been approved by the Science Based Targets Initiative which is used as the reference for industry decarbonisation pathways.

It is, however, also an opportunity for the UAE and regional stakeholders to define a suitable local, science-informed pathway to decarbonisation with clear KPIs (EUI as a start).

In the UAE, the Ministry of Energy and Infrastructure is the anchor organisation for supporting the establishment of minimum energy intensity requirements (EUIs) for different building typologies, as a starting point.

There is an opportunity for the UAE and regional stakeholders to define a suitable local, science-informed pathway to decarbonisation with clear KPIs



Way forward

06


Way forward

Launching the First Movers' Coalition

This working group will then develop market criteria to be voluntarily adopted to drive the sector transition. Capitalising on COP28, the Emirates Green Building Council together with the Climate Champions, under Her Excellency Razan Al Mubarak's leadership, convened the CEOs of the UAE Built Environment Sustainability Blueprint in order to celebrate the achievement made in the formation of this "First Movers' Coalition" and in order to discuss the next steps together with leadership from the Ministry of Climate Change and Environment and the Ministry of Energy and Infrastructure. Both Ministries welcomed the Developers' Leaders Forum and considered it to be a powerful knowledge-bank to consult and lean on in the development of policies for the sector, including those mentioned below.

Upcoming Policy Enablers

Many of the enablers identified by the private sector are already covered by the existing portfolio of initiatives and policies being developed by the government. More specifically, the Built Environment DSM Programmes target a reduction of 51 per cent in energy and 40 per cent in water by 2050 compared to BaU scenario by implementing the below initiatives:

	Building codes	Renewable energy	Facility management
	Building retrofits	Equipment standards	
	Efficient cooling	Efficient irrigation	
			Non-revenue water [reporting]

Since March 2021, when His Highness Sheikh Mohammed bin Rashid Al Maktoum approved the National Programme, the Ministry started working on various projects, policies and regulations, which include the following:

1. Green Building Code

The National Green Building Regulation (NGBR) [14] mandates minimum energy and water standards for new buildings, aiming to ensure the implementation of sustainability measures without imposing limitations. Developed collaboratively through the National Green Code Committee, representing entities in each emirate, the regulation aligns with existing codes, and legislative authorities in each emirate must adopt and demonstrate compliance with the NGBR in their construction projects. The Building Codes programme is estimated to contribute to the total built environment energy savings by 18 per cent in 2030 and 40 per cent in 2050, improve air quality in construction projects by 95 per cent and recycling of construction waste by 50 per cent.

2. Building Retrofit Programme

The Programme aims to reduce energy and water consumption in government buildings by retrofitting the buildings that consume the most energy and water through the shared savings mechanism and the method of partnership between the public and private sectors (PPP). The Programme will cover 422 government buildings to reduce a minimum of 20 per cent in energy and water consumption compared to the average consumption of the last three years. The Programme aims to reduce electricity consumption in the built environment by 7 per cent equal to 7 TWh and water consumption by 196 Mm³ by 2030.

3. Policy Regulating Local Energy Market

The policy provides guidelines for the contractual framework amongst energy stakeholders and the various contracting mechanisms to consolidate the mechanisms of doing business, financing, and partnerships between the public and private sectors. This will encourage energy service providers and private sector companies to invest in government projects, with the goal of reducing energy and water consumption, carbon footprint, and operational costs in buildings. The policy has set objectives for the next five years including reducing water use by 23 per cent, cutting down operational costs by 20 per cent in federal buildings, contributing to clean energy by 5 per cent, promoting the sustainability of buildings by an approximate 5-10 per cent, and raising awareness of energy and water conservation and the importance of behavioural change. In the long term, the policy is projected to decrease the demand for energy in the building sector by 51 per cent by 2050, contributing to the UAE's sustainable development.

The way forward therefore consists of two key areas of focus

- 1 First, supporting the Ministry of Energy and Infrastructure in the development of the policies mentioned above.
- 2 Second, continue the work with the Developers' Leaders Forum to identify market enablers the developers can help unlock through a demand-led approach.

Harmonisation of green building policy requirements as well as market enablers in the UAE can support a more homogenous and expedited transition of the market, both from a skillset perspective as well as a supply chain perspective.

This in turn can support the adoption of wider GCC level minimum building performance criteria in order to unlock greater economies of scale for green manufacturing, enhanced skills of local labour and contractors across the region.

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