Sustainable construction: Industry necessity Vs ESG requirements

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June 2025

REDCON in Brief

By Numbers

30+	50	200+	2,900
Years of experience	Running Projects	Projects Completed	Human Capital

Local Clients

Affiliated Companies

International Clients


Are Metal Buildings Protected Against Extreme Weather? – VOD Steel Buildings
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Our Projects

REDCON STEEL

Zanzibar Stadium

From Egypt to Tanzania

Our Projects

REDCON
STEEL

Fostat

Wajha Sustainability Journey

**Wajha is committed to innovation and sustainability,
leading in green construction
and complying to global regulations/ standards such as CBAM to enhance competitiveness and build a sustainable future."**

Innovation and Sustainability.

"Wajha integrates the latest technologies to reduce its carbon footprint and enhance resource efficiency, aiming to build a better environmental future.

Leadership in Green Building

We are pioneers in adopting green building principles and global standards to achieve environmental and operational efficiency.

Global Standards and New Horizons

Our commitment to European export standards such as CBAM enhances our competitiveness and affirms our leadership toward a sustainable industry.

🌿 : Wajha Journey Toward Sustainability (Tarsheed Certificate)

Wajha Commitment to Sustainability

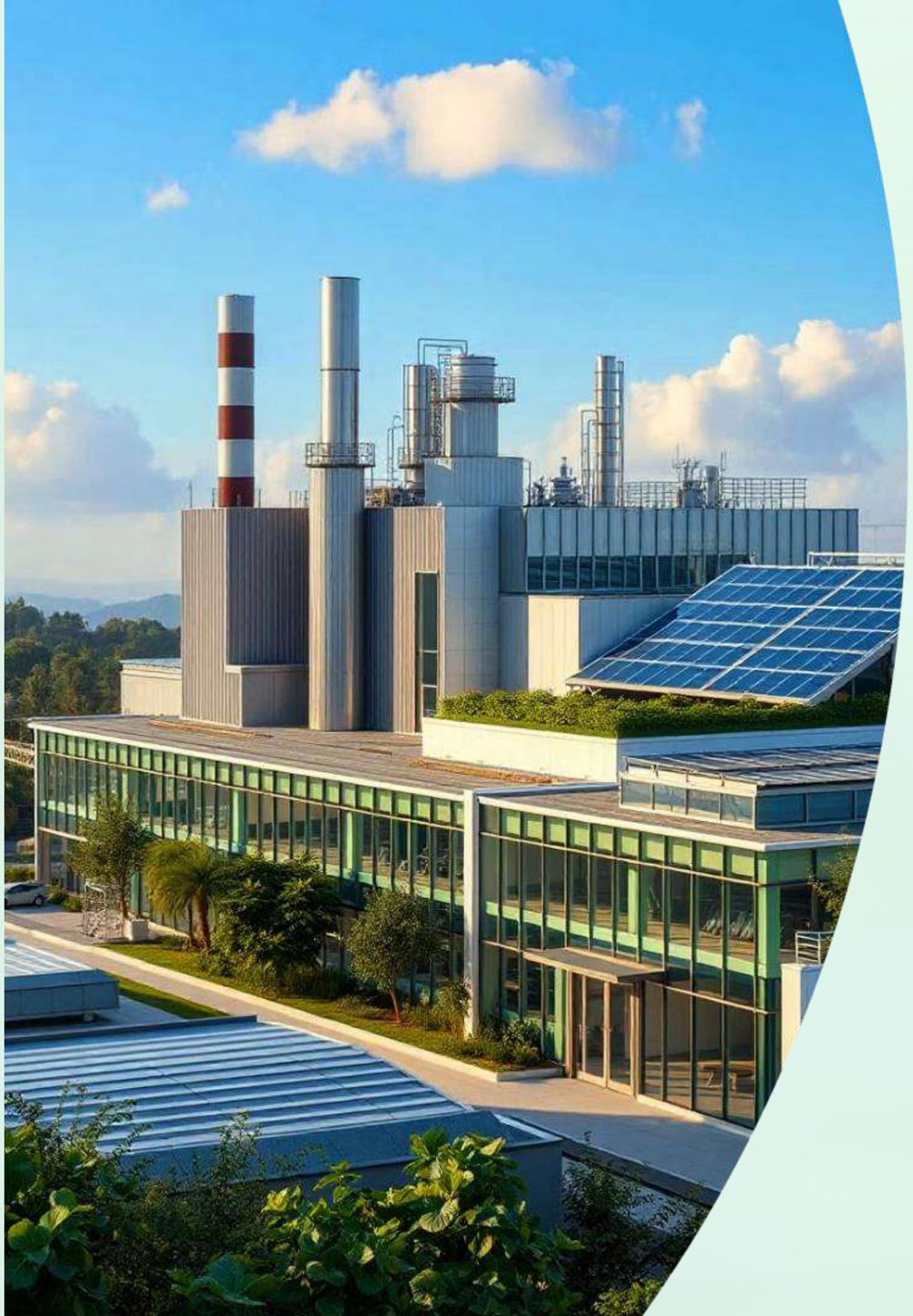
In June 2024, **Wajha for Façade Solutions** was awarded the **Gold "Tarsheed"**

Certificate by the **Egypt Green Building Council**, recognizing its efforts in:

- Reducing electricity consumption
- Enhancing water efficiency
- Lowering reliance on high-emission energy sources

🏆 This milestone reflects Wajha dedication to sustainability and alignment with global environmental standards.

🚢 By **2026**, Wajha will be fully prepared to **export architectural glass and low-E glass** to global markets in **full alignment with international environmental regulations**.



Sustainability in Building the New Glass Factory

sustainable vision, several environmentally friendly practices were implemented during the construction of the new glass factory’s Tempering Furnace section.

Tempering Furnace

This furnace is used in the production of **tempered glass**, which is stronger and more resistant to breakage compared to regular glass. It is commonly used in **architectural applications**, **automotive glass**, and **household appliances**.

Benefits of reducing electricity consumption in this section:

- Significant reduction in operational costs.
- Decreased carbon emissions resulting from energy use.
- Improved factory efficiency and enhanced environmental performance.
- Support for sustainability goals and compliance with international environmental standards such as **CBAM**.

As part of our commitment to sustainability and energy efficiency, the energy consumption of the furnace has been reduced from **1130 kW to 630 kW**, reflecting our ongoing efforts to minimize environmental impact and promote responsible energy use.

1

2

Every stage in the **design and preparation** of the factory reflects our dedication to **green building principles** and **reducing environmental impact**.

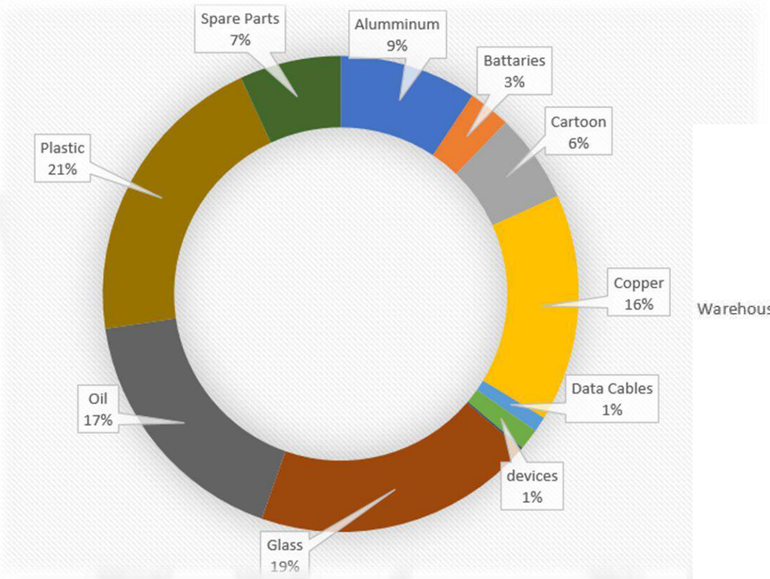
REDCON CONSTRUCTION

Sustainability

Environment

- Waste Management & Circular Economy

Tracking all types of waste making sure all types of waste sent for recycling and making value by internal and external recycle and reuse. **Creating value 51 M EGP from waste since last year**



CERTIFIED ISO 14001:2015 COMPANY

Air Quality Management Plan

Taking all the measures to ensure in door and outdoor air quality on site

- Carbon Footprint Tracking

Measuring emissions in all our construction sites

- Climate Resilience Strategy

Climate resilience policy in place and climate risk assessment is done to all sites every quarter.

Sustainable Procurement Policy

Policy in place with green vendor checklist for supplier assessment.

- Biodiversity Conservation Plan

Biodiversity Conservation Plan (BCP) is done in beginning of every new project.

Social

Focus: Human rights, labor ethics, community impact.

Anti-Harassment & Anti-Retaliation Policy	Anti-Discrimination Policy
Diversity & Inclusion Policy	Social Responsibility Policy
CSR Campaigns	Child Labor Remediation Policy
HSE Policies (Workers' health/safety)	Stakeholder Action Plan

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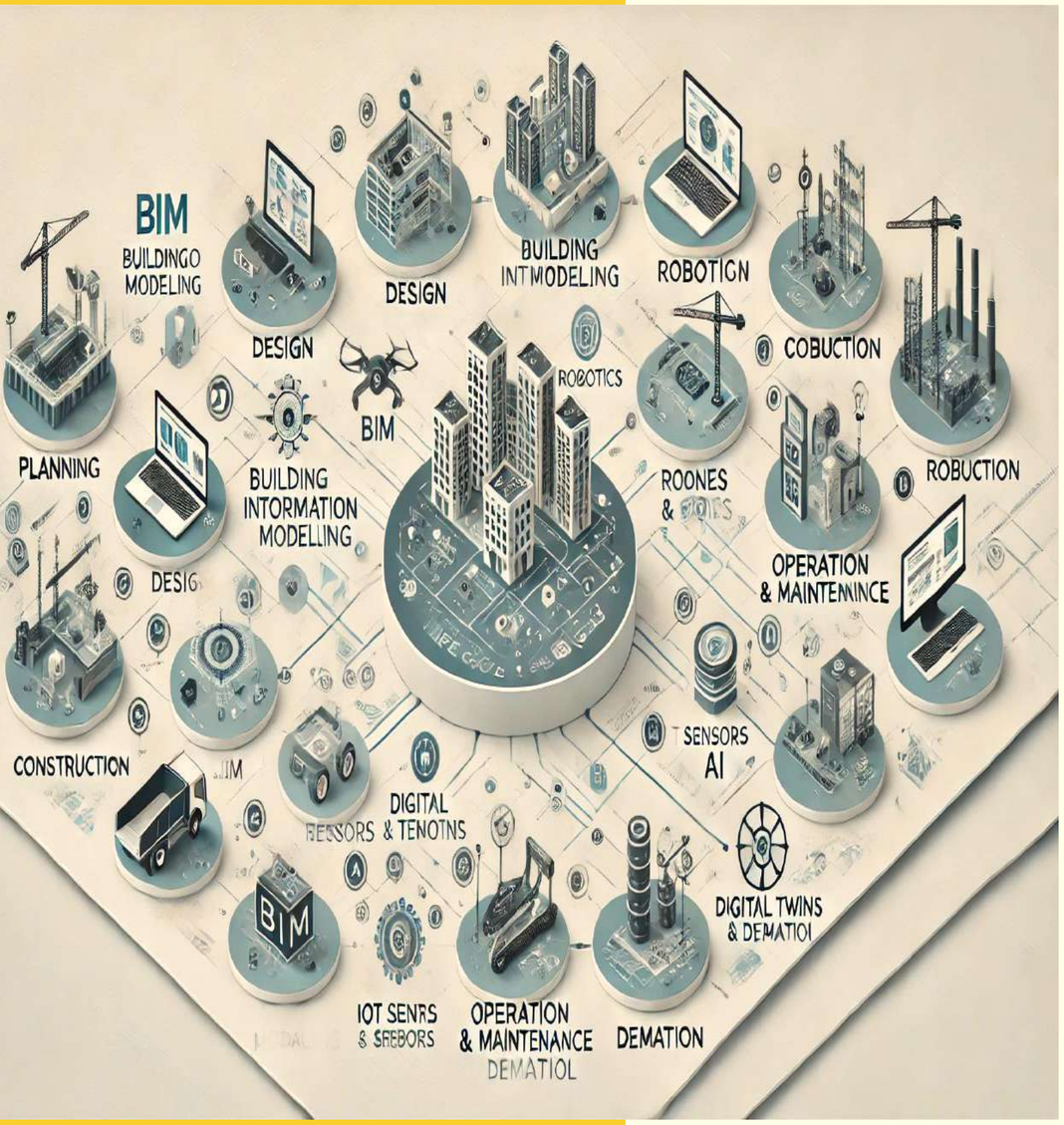
redcon PROPERTIES

1. Introduction & Context

- The construction sector, while essential to economic development, faces serious challenges. It remains one of the most traditional and least digitized industries. Meanwhile, ESG (Environmental, Social, and Governance) goals are pushing sectors to rethink their operations.

- Construction must digitalize not just to be efficient, but also to survive in an ESG-driven world.

- “Construction accounts for nearly 40% of global CO_2 emissions.” – UN Environment ProgrammeVisual.



2. Defining Digitalization in Construction

Digitalization in construction refers to the adoption of digital technologies across the project lifecycle—from planning and design, to execution and operations—to improve efficiency, accuracy, and sustainability.
It includes:

- **Building Information Modeling (BIM)**
- **Artificial Intelligence (AI)**
- **Internet of Things (IoT)**
- **Cloud collaboration tools**
- **Drones, AR/VR, robotics**

Why Digitalization in Construction is Important?

✅ **1. Reduces Waste & Errors**

→ BIM helps detect clashes before construction begins.

✅ **2. Improves Productivity**

→ Real-time data reduces delays and boosts team coordination.

✅ **3. Enhances Safety**

→ IoT sensors and wearables help prevent accidents.

✅ **4. Supports ESG & Sustainability**

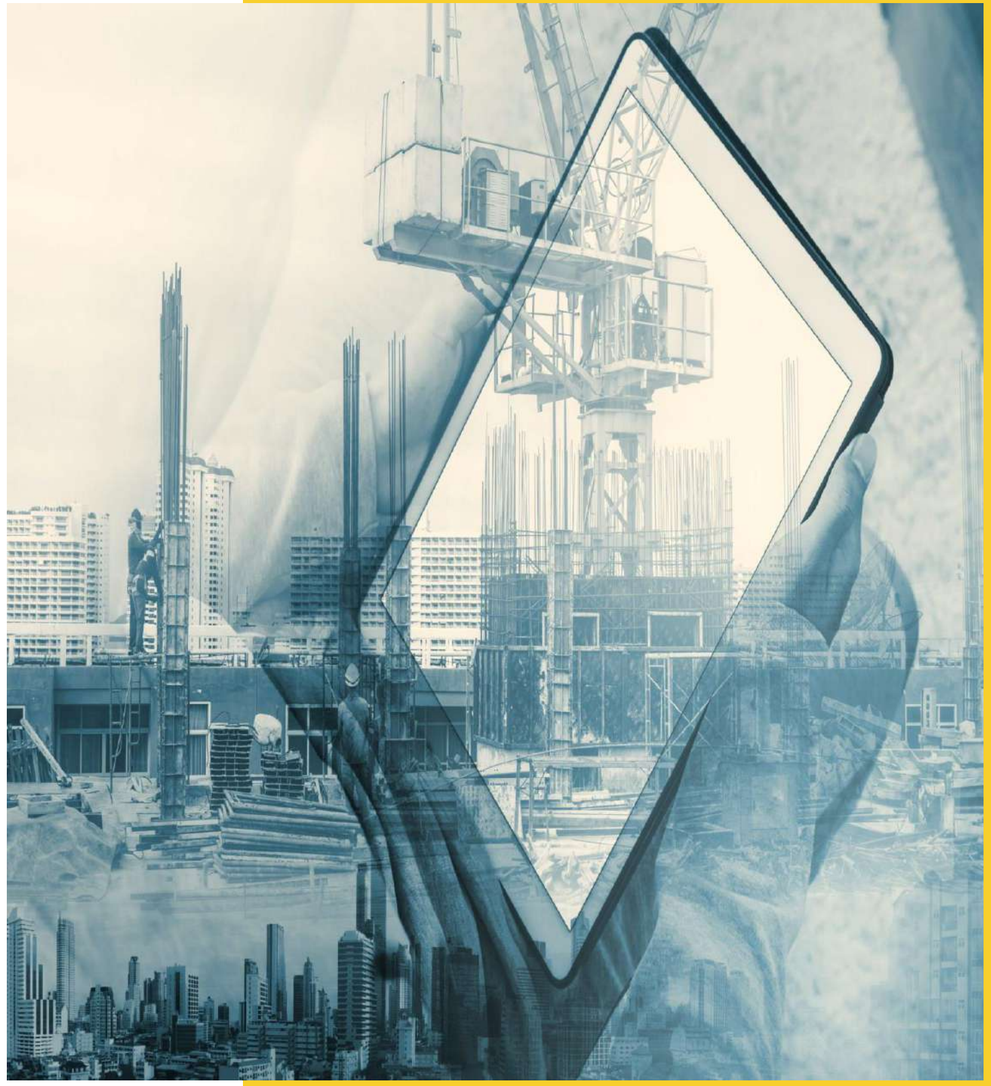
→ Data-driven decisions optimize resource use and reduce carbon footprint.

✅ **5. Strengthens Decision-Making**

→ AI-driven analytics enable proactive risk management.

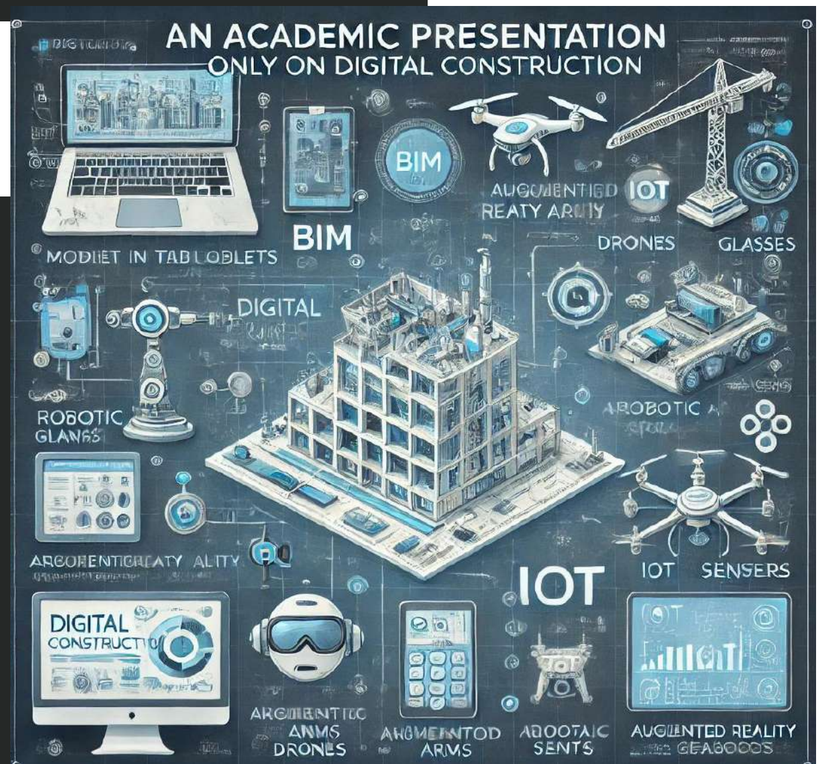
✅ **6. Attracts Investment**

→ Digitally mature companies are more likely to meet ESG standards, appealing to global investors.



3. Traditional vs Digital Construction

- 2D paper-based drawings.
- Manual inspection.
- Gantt charts manually updated.
- Emails, site memos.
- Reactive



- Project Design.
- Site Monitoring.
- Scheduling.
- Communication.
- Decision-Making.

Why the Shift is Urgent

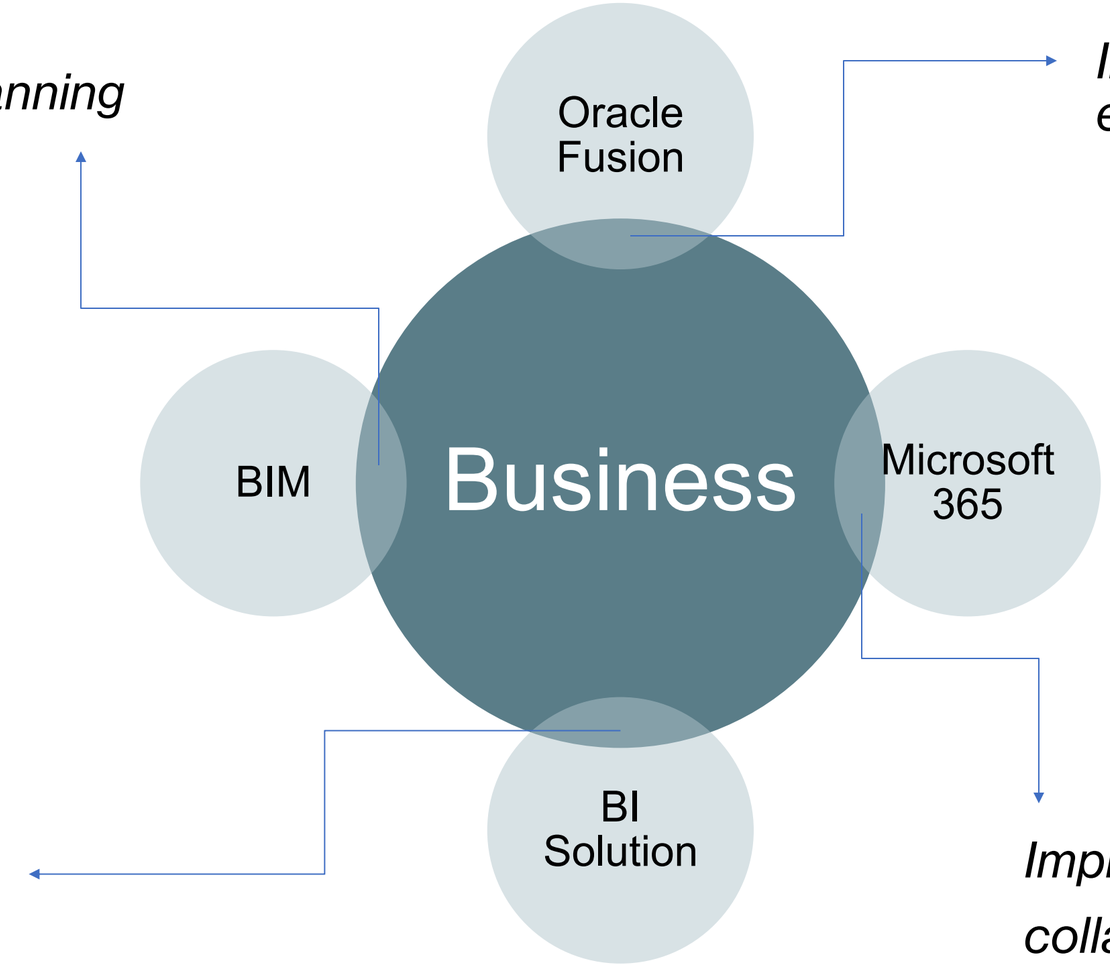
- Over 70% of large construction projects are delivered late
- Average cost overruns = 28%
- Digital tools reduce errors, rework, and material waste
- Pressure from investors to show ESG performance
- Regulatory and environmental expectations rising

VALUES OF TECHNOLOGY ON construction BUSINESS

New product and service development opportunities

Enhance the accuracy of planning and cost management

Higher rate of customer satisfaction



Increased automation and efficiency

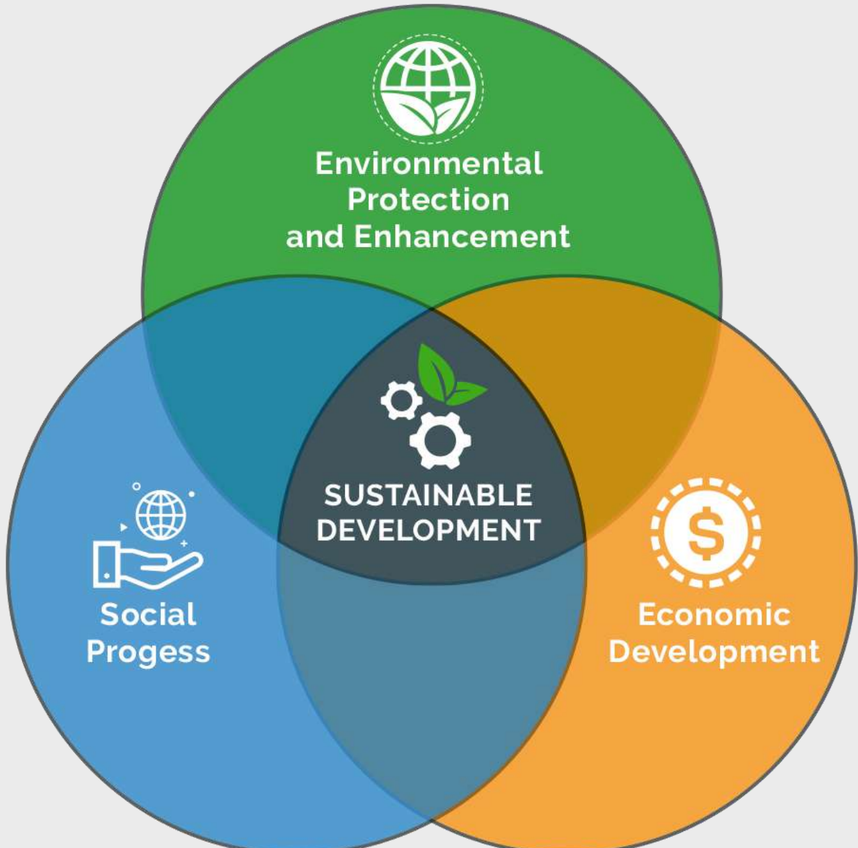
Enhanced data analysis and decision-making

Improved communication and collaboration

What is Sustainability?

Sustainability is a **concept** that encompasses the principles of:

- Environmental Technology leads to **increase efficiency** and **reduces the impact on the environment**.
- According to **worldwide records**, the **construction** industry **responsible 25-40% of the total energy emissions**, **30% of raw materials**, contributes to **30-40% of the global greenhouse gas emissions**, and **30- 40% of the solid waste**
- As by **2030**, all contractors will be **required** to operate **using sustainable approaches** to achieve domestic and global climate obligations as well as meet the market requirements



Redcon Properties Sustainability Commitment

Golden Gate contributes to **Nine of the Seventeenth United Nations sustainable development goals.**

We at Redcon Properties have a strong commitment and effective participation in all sustainable activities that serve our community. We are a founding member of the **Egyptian Green Building Council** and an Active member in **UN GLOBAL COMBACT**

EGYPT GBC
EGYPT GREEN BUILDING COUNCIL

UN GLOBAL COMPACT
United Nations Global Compact

Consequences of ignoring Sustainability?

We may suffer the following consequences:

- More landfills popping up everywhere
- More Fauna & Flora going extinct due to deforestation and pollution
- Harsher weather (drier and hotter summers, colder and harsher winters, more tropical storms) Floods as in....
- Rising sea levels
- Worsening living conditions for lower-income communities, as there is more trash, worse air...etc.
- Declining soil quality, and likely the reduced nutritional quality of our food
- Fewer green spaces to enjoy in cities and across the world.
- An increase in respiratory diseases and other epidemics.

4. ESG Goals & the Construction Industry.

Construction companies are now evaluated based on ESG performance.

Digitalization supports ESG goals in the following ways:

Environmental

- Lower carbon emissions through sustainable building materials and energy-efficient design
- Implement renewable energy solutions such as solar panels and green roofing
- Improve resource efficiency by minimizing waste and water consumption

Social

- Enhance labor safety through digital monitoring and wearables
- Promote inclusivity and fair labor practices on construction sites
- Strengthen community engagement through socially responsible projects

Governance

- Foster transparency via digital documentation and ESG performance reporting
- Ensure compliance with environmental laws, building codes, and certification schemes
- Promote ethical procurement and anti-corruption standards in project delivery

5. Green Buildings vs Traditional Buildings

Green buildings are designed to minimize environmental impact while enhancing energy efficiency, water conservation, and indoor environmental quality.

Unlike traditional buildings that rely on conventional construction methods and materials, green buildings adopt modern strategies such as renewable energy systems, sustainable materials, and smart building technologies.

Traditional buildings tend to consume more energy, produce more waste, and often result in higher operational costs due to inefficient lighting, HVAC, and insulation.

In contrast, green buildings offer:

- Lower energy and water consumption
- Better indoor air quality
- Use of eco-friendly and recyclable materials
- Reduced environmental footprint
- Long-term cost savings

6. Global Trends in Sustainable Construction.

- Europe: EU mandates nearly-zero energy buildings (NZEB)
- USA: LEED certifications are increasing annually
- Asia: Smart cities in China, Singapore, India
- MENA: UAE & Saudi Arabia leading green codes
- Africa: Egypt, Kenya, South Africa adopting rating systems

7. Green Construction in Egypt

Egypt Vision 2030 promotes sustainability in housing & urban development

NAC (New Administrative Capital): smart infrastructure & energy optimization

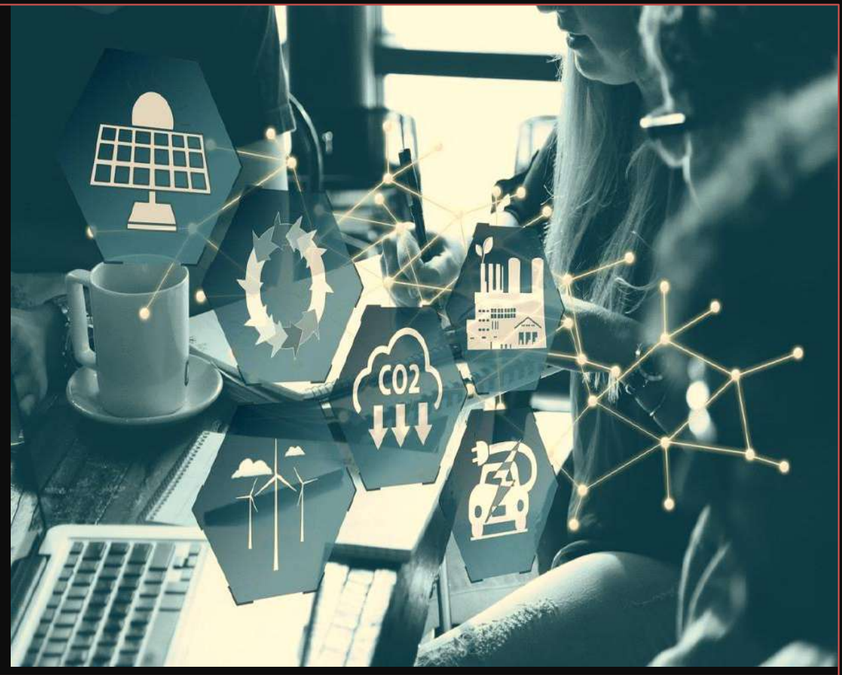
Alamein City: eco-urban planning, smart mobility

Egypt Green Building Council initiatives

IFC reports: green construction could save Egypt $2.7 billion in energy by 2030

8. Role of Technology in Supporting ESG & Sustainability

- BIM: Enables accurate environmental simulations
- IoT Sensors: Real-time monitoring of energy, water use
- AI: Suggests optimal designs to reduce environmental impact
- Drones & AR/VR: Monitor compliance with sustainability goals
- Digital Twins: Simulate building lifecycle performance



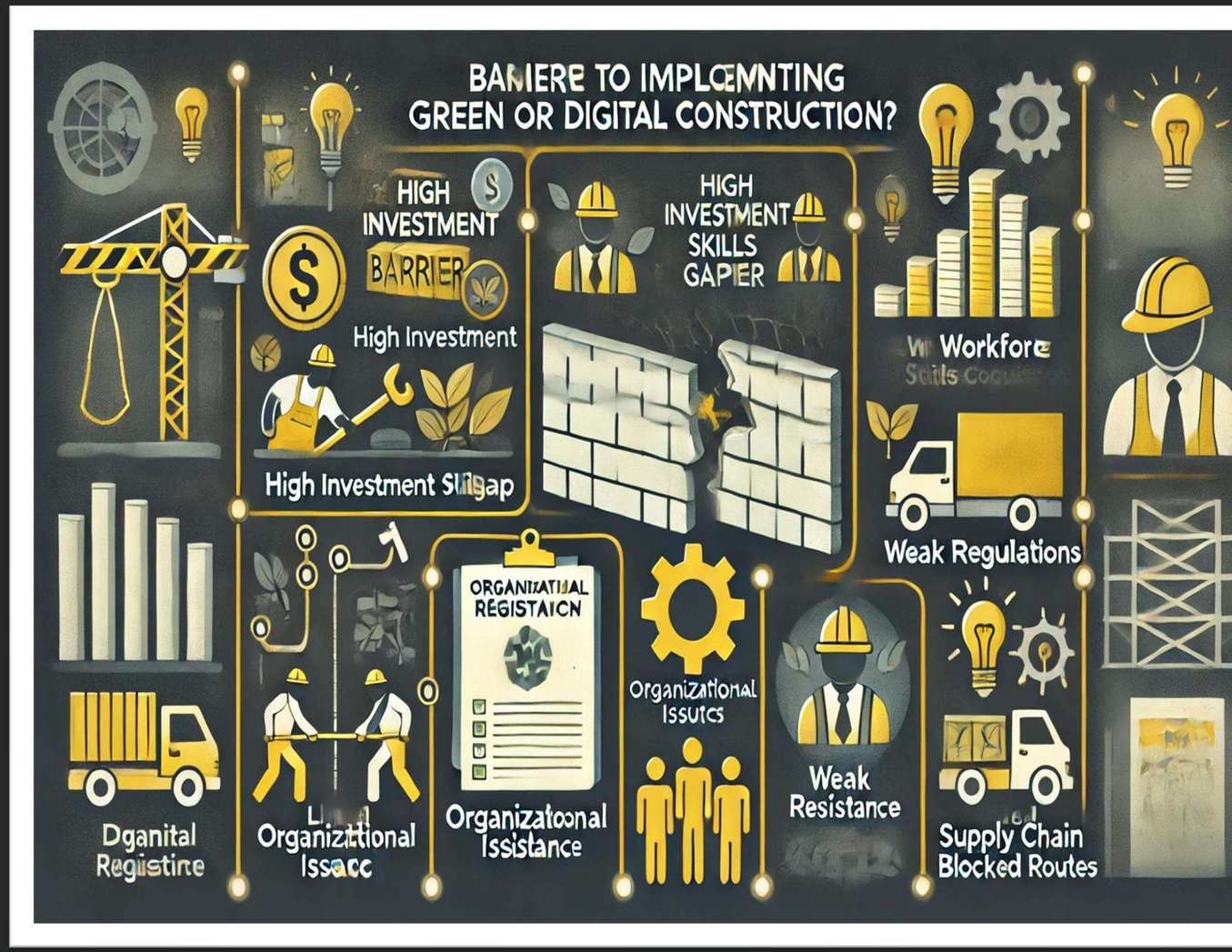
9. Benefits of Digital + Green Integration

- **Reduces long-term costs (OPEX)**
- **Enhances project predictability and ROI**
- **Increases building asset value**
- **Strengthens ESG reporting and compliance**
- **Opens access to green finance and sustainability grants**

10. Barriers & Implementation Challenges

Key Barriers:

- **High initial investment costs**
- **Technical skill gaps in workforce**
- **Lack of regulatory enforcement**
- **Resistance to organizational change**
- **Limited access to sustainable materials in some regions**



11. Recommendations & Future Outlook

Recommendations:

- **Encourage public-private partnerships for green projects**
- **Offer financial incentives for digital/green adoption**
- **Upskill construction professionals in digital tools**
- **Integrate ESG reporting into project KPIs**
- **Strengthen codes and enforce sustainable construction laws**

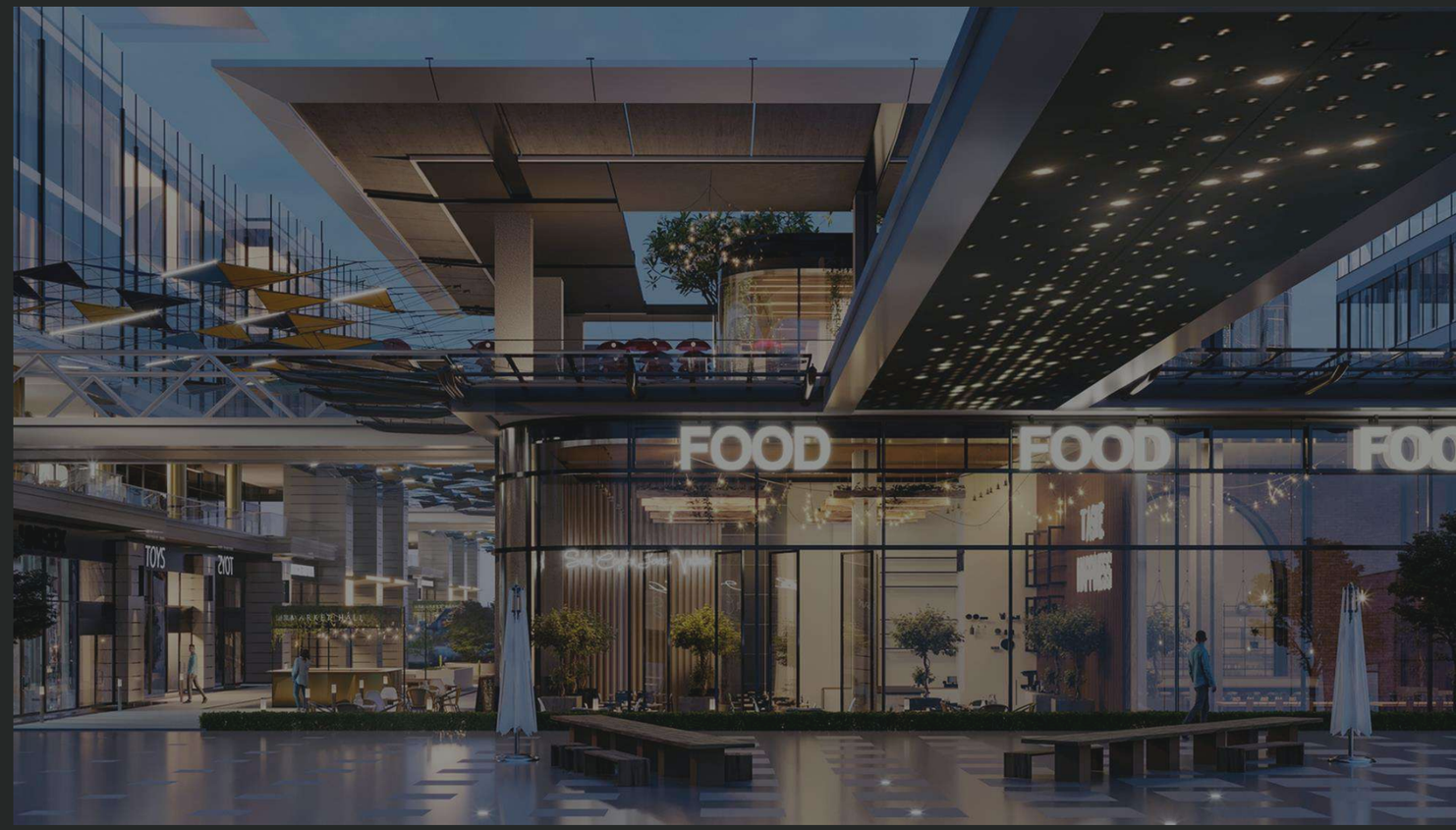
12. Case Study: Smart + Green Project

Golden Gate– Cairo

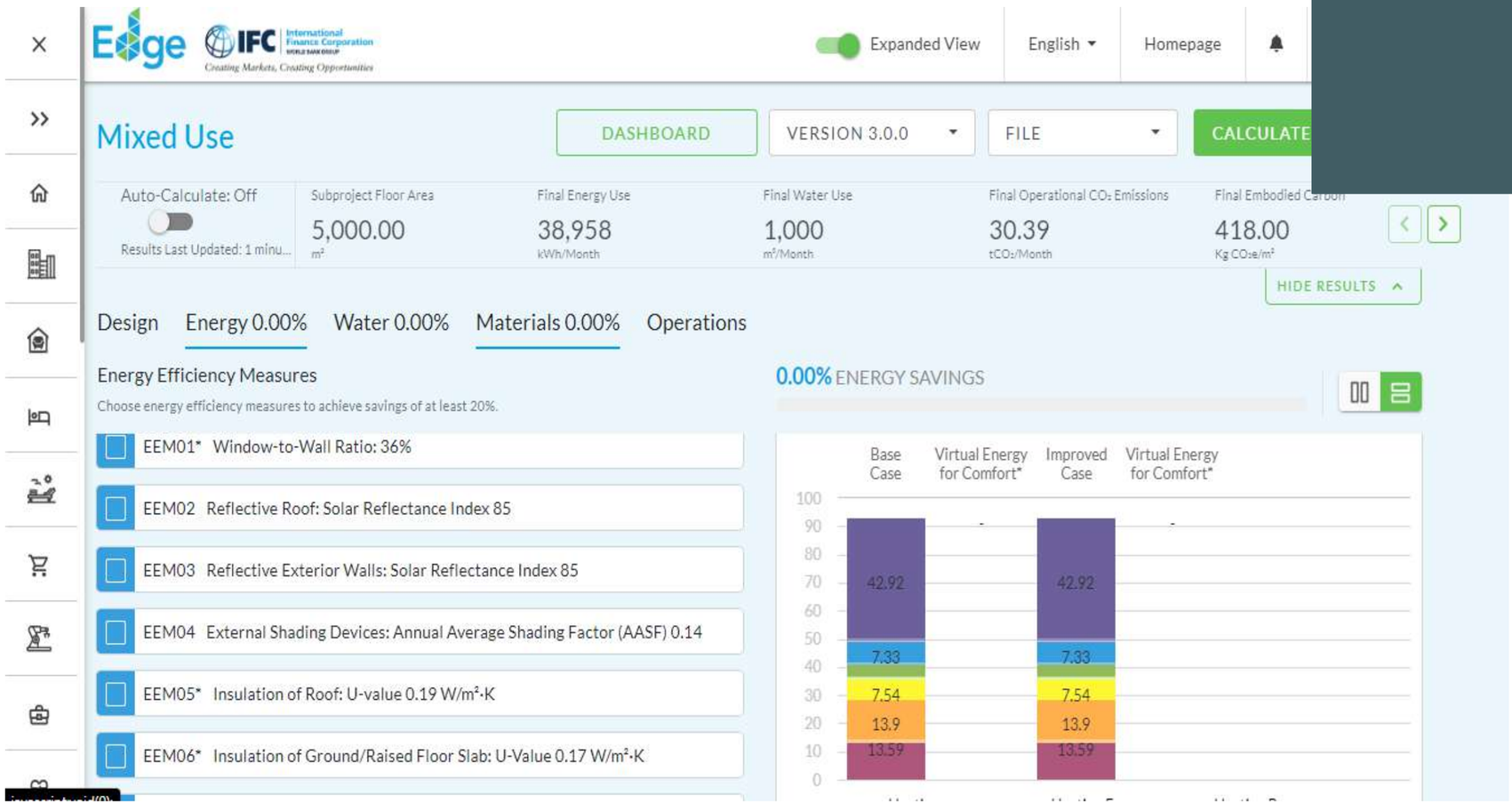
- BIM integrated from design to operation
- Smart HVAC and lighting (AI-managed)
- Solar panels and rainwater harvesting
- Achieved IFC EDGE certification

Results:

- 54% energy saving
- 44% water saving
- 40% less embodied carbon
- Improved tenant satisfaction



Energy Tab


Edge
IFC International Finance Corporation
Creating Markets, Creating Opportunities
Expanded View
English
Homepage
Mixed Use
DASHBOARD
VERSION 3.0.0
FILE
CALCULATE
Auto-Calculate: Off
Results Last Updated: 1 minu...
Subproject Floor Area
5,000.00
m²
Final Energy Use
38,958
kWh/Month
Final Water Use
1,000
m³/Month
Final Operational CO₂ Emissions
30.39
tCO₂/Month
Final Embodied Carbon
418.00
Kg CO₂e/m²
HIDE RESULTS
Design
Energy 0.00%
Water 0.00%
Materials 0.00%
Operations
Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.
EEM01* Window-to-Wall Ratio: 36%
EEM02 Reflective Roof: Solar Reflectance Index 85
EEM03 Reflective Exterior Walls: Solar Reflectance Index 85
EEM04 External Shading Devices: Annual Average Shading Factor (AASF) 0.14
EEM05* Insulation of Roof: U-value 0.19 W/m²·K
EEM06* Insulation of Ground/Raised Floor Slab: U-Value 0.17 W/m²·K
0.00% ENERGY SAVINGS
Base Case
Virtual Energy for Comfort*
Improved Case
Virtual Energy for Comfort*
100
90
80
70
60
50
40
30
20
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0
42.92
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42.92
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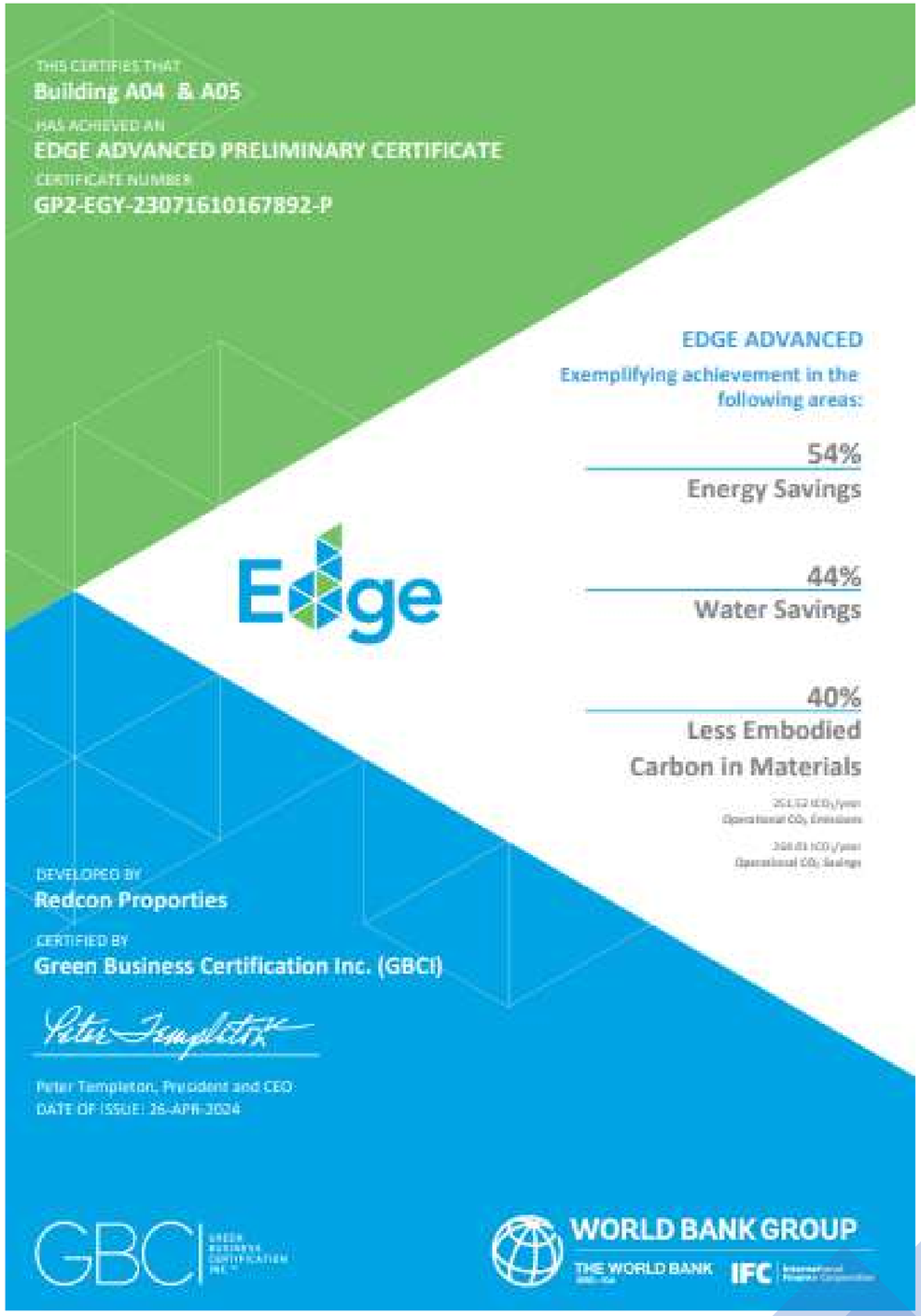

THIS CERTIFIES THAT
Building A04 & A05
HAS ACHIEVED AN
EDGE ADVANCED PRELIMINARY CERTIFICATE
CERTIFICATE NUMBER
GP2-EGY-23071610167892-P
EDGE ADVANCED
Exemplifying achievement in the following areas:
54%
Energy Savings
44%
Water Savings
40%
Less Embodied Carbon in Materials
Edge
DEVELOPED BY
Redcon Properties
CERTIFIED BY
Green Business Certification Inc. (GBCI)
Peter Templeton, President and CEO
DATE OF ISSUE: 26-APR-2024
GBCI
WORLD BANK GROUP
THE WORLD BANK
IFC

ACHIEVMENTS IN NUMBERS

+17%

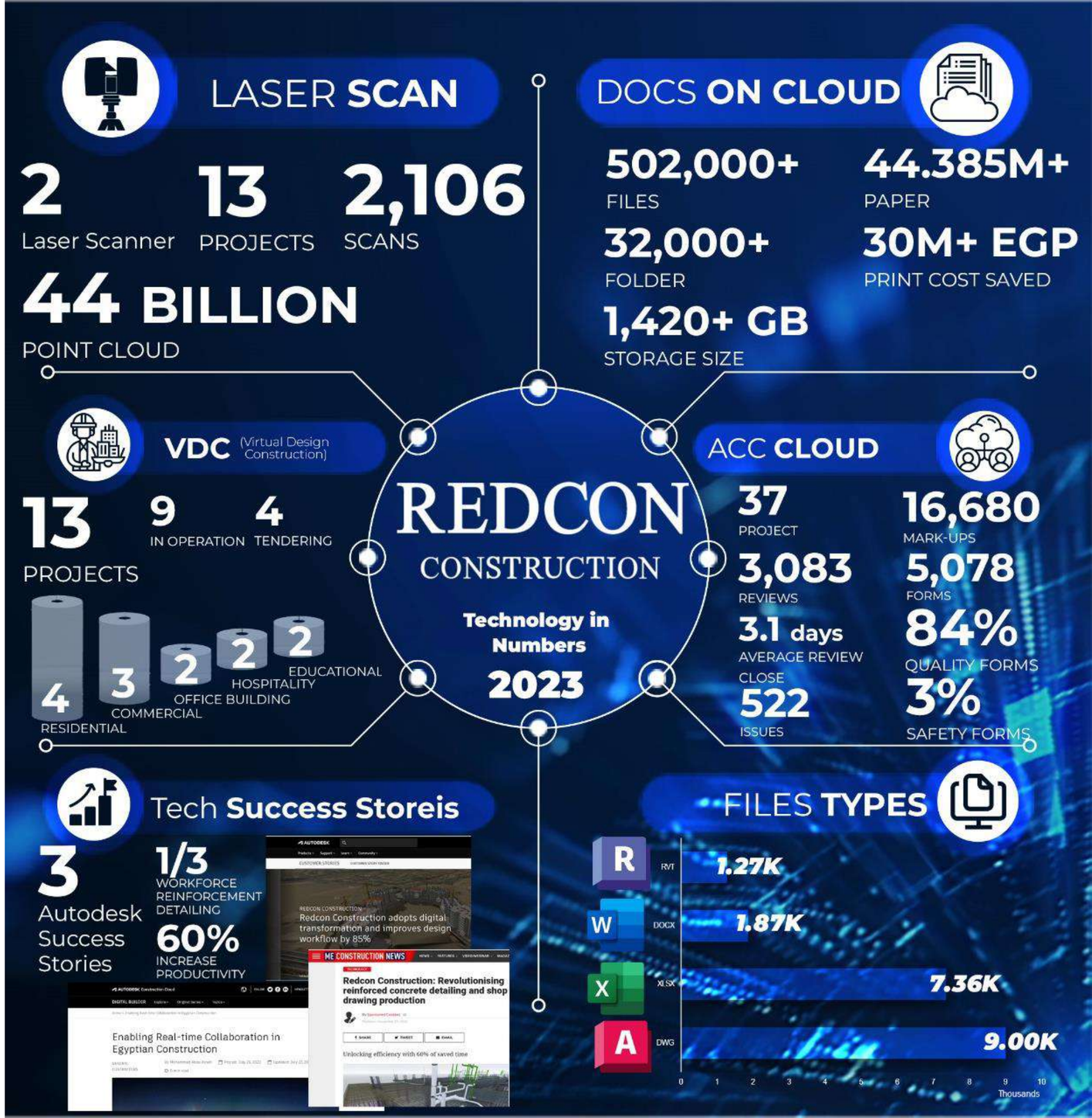
Better procurement performance

+49%

Faster procurement cycles and lead time

+53%

More spend under management



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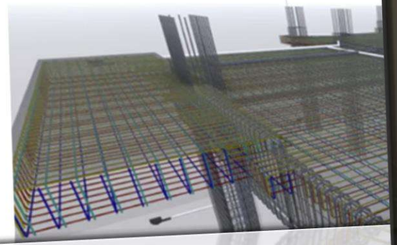
Unlocking efficiency wit



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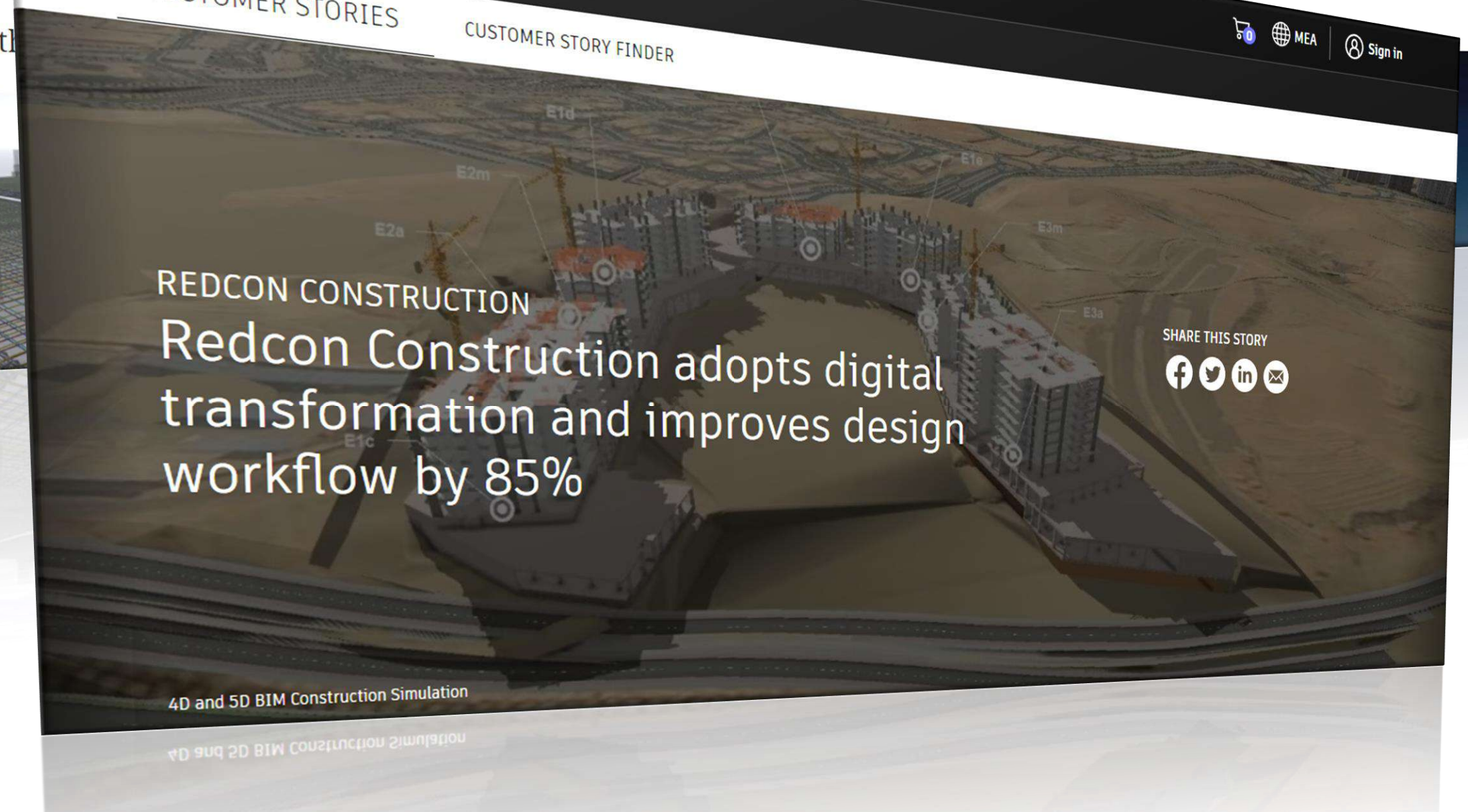


Targeted Savings

As Golden Gate thrives to be a sustainable community, we aim to achieve the following energy targets on our buildings:

1. Energy Savings Up to 40%
2. Water Savings Up to 25%
3. Embodied Energy in Materials Savings Up to 20%
4. Total CO2 Savings 15,000 tCO2/Year
5. Waste Reduction Up to 70%
6. Renewable Energy Usage 12%

What We Offer to Our Clients in Green Architecture Aspects

Water

- Water efficient fixtures to reduce potable water consumption
- Using recycled water for irrigation and flushing
- Using native resilient plants to reduce water requirements.

Materials

- Reduce the heat island effect by using outdoor paving tiles with high solar reflectivity
- Solid waste management plan
- Enhancing sustainability by selecting materials with recycled content i.e. Green Concrete, terrazzo,.

Energy Efficiency

- Low-E glass
- Maximize daylighting in the buildings
- Shading elements
- Double wall with insulation.
- Roof tiles with high solar reflectivity and insulation.
- Application of Energy efficiency Management Systems
- Install LED lighting fixtures
- Install on-site renewable energy systems

Pollution Reduction

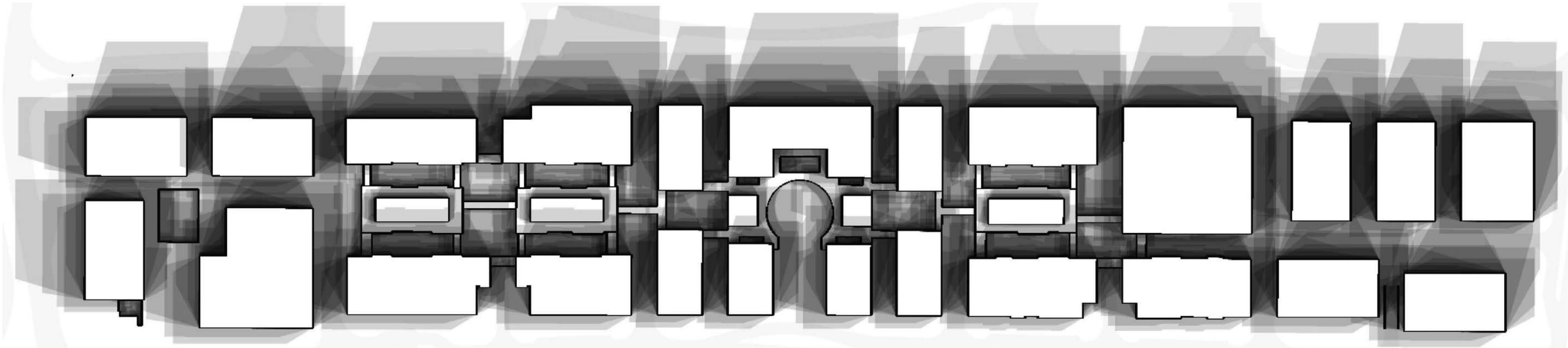
- Reduction of emission by Provide internal sustainable transportation facilities and access to the nearest public transportation station.
- Reduce parking slots search time by AI & IOT
- Waste Management during Construction and operation through pollution prevention plan

01 Starting from Planning of Golden Gate

The orientation is 30 degrees North-West

Which provides the greatest amount of natural shading

That greatly reduce the consumption of energy



SEASONS

02 Green Transportations

1. The site is accessible by the Monorail
2. Our project is a walkable community
3. Electrical cars along the site

4. Provide Electrical fast charging stations to encourage use of electric cars
5. Internal GPS/parking slot locator system, that will reduce the time taken to reach parking slots.

03 Facades Solutions

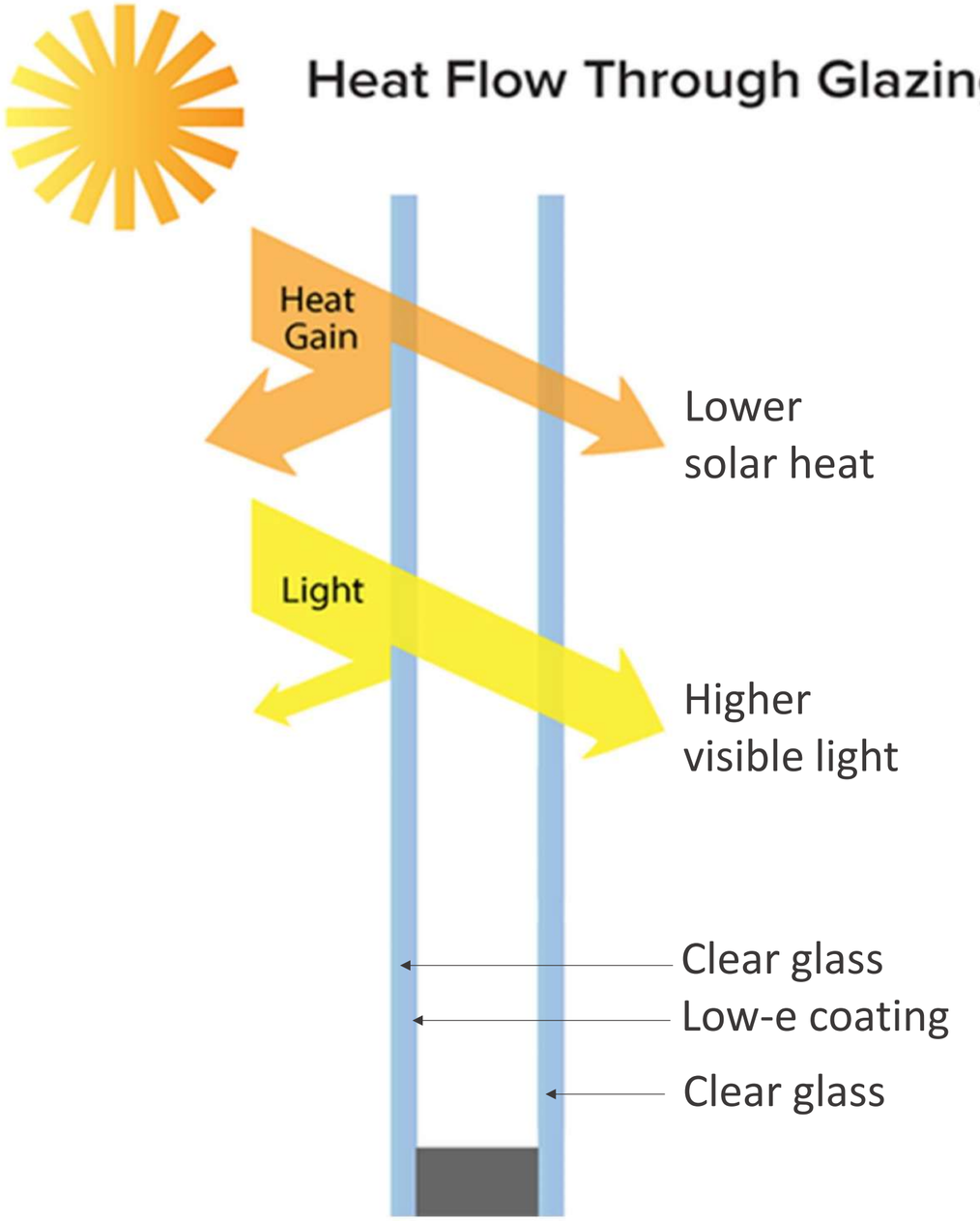
High-performance double glazing

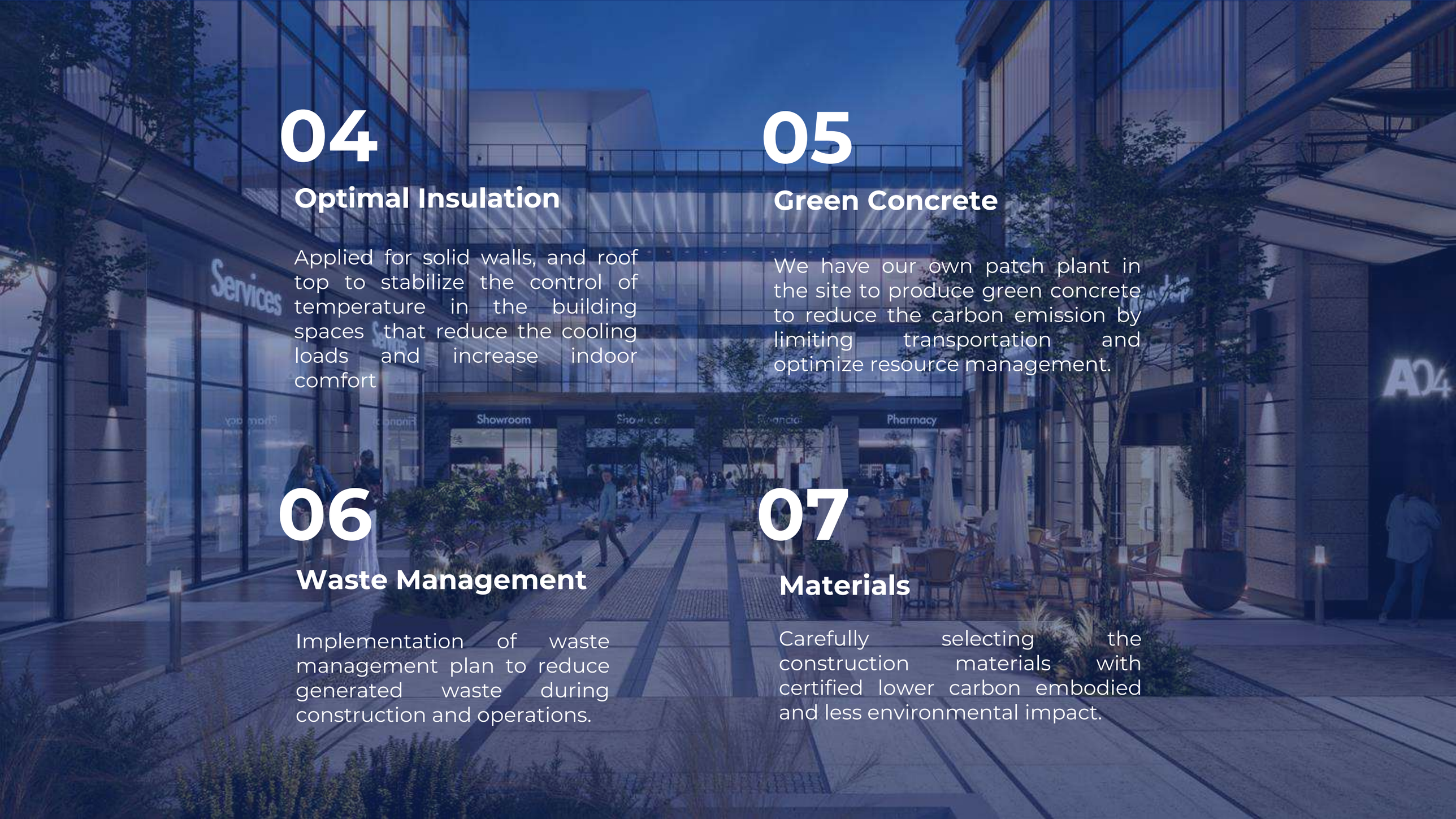
Increase savings in the cooling energy consumption as a result of reducing heat transfer

Sound Insulation

To help focus and productivity

Heat Flow Through Glazing





04

Optimal Insulation

Applied for solid walls, and roof top to stabilize the control of temperature in the building spaces that reduce the cooling loads and increase indoor comfort

05

Green Concrete

We have our own patch plant in the site to produce green concrete to reduce the carbon emission by limiting transportation and optimize resource management.

06

Waste Management

Implementation of waste management plan to reduce generated waste during construction and operations.

07

Materials

Carefully selecting the construction materials with certified lower carbon embodied and less environmental impact.

08 Daylight

Using full height facades that contribute to providing maximum natural light that improves productivity in the workplace

1. Natural Light Improves Mental Health

2. Natural Light Improves Physical Health

3. Daylight Helps You Sleep Better At Night

4. Daylight increases Productivity

5. Saves Money

09

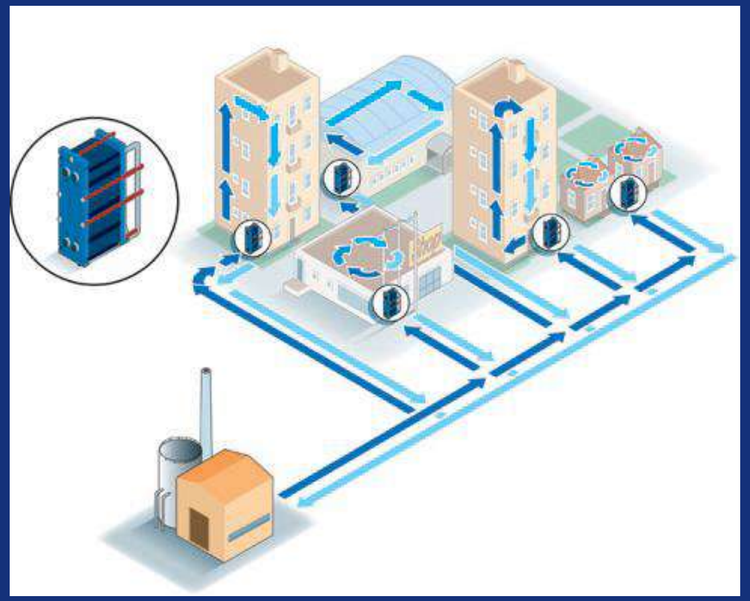
The Effective Use Of Water

Grey water after treatment are used for irrigation purposes, and the use of water efficient systems, which will directly reduce water consumption effectively.

10

Energy Efficiency and Technology

we will have a control room from where we will be able to control all the water, electricity, and AC in the entire project.



11

District Cooling

Central air conditioning system with magnetic bearing the top-notch in industry. This will result in energy reduction and saving resources in maintenance operation.

12

Renewable Energy

Applying solar panels on rooftops, which is used to illuminate basements during the day, to save a large percentage of electricity consumption.

13

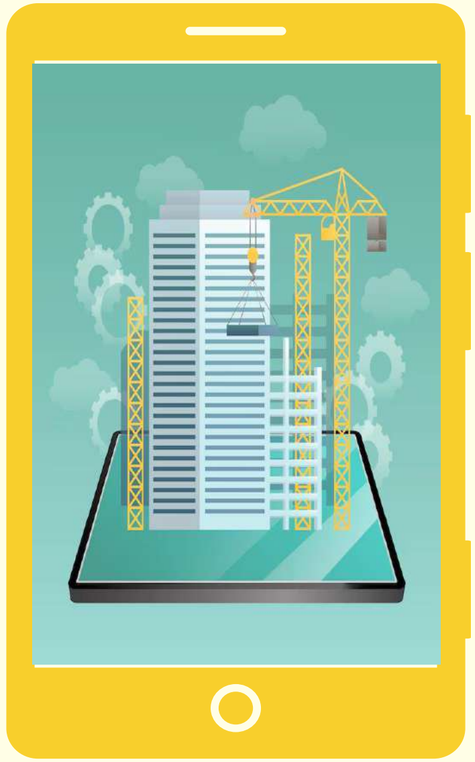
Sustainable Artwork

Art is a major mean that people use to express themselves , our goal is to benefit from our waste construction material and reuse them to produce meaningful artwork pieces, to not only inspire our tenants but also provide our visitors with an artistic experience.

We recently contacted interested aspiring artists and are still looking for more talents.

Associated Extra Costs For Some items

Item	Non-sustainable choice	Sustainable Choice	requirements	Non-sustainable cost	Sustainable cost	Extra Cost
HVAC Chillers	EGP 26,600/ton (Water-Cooled Absorption Chillers)	EGP 38,000/ton (Magnetic Bearing Centrifugal Chillers)	1500 tons of refrigeration	EGP 39.9 Million	EGP 57 Million	EGP 17.1 Million
Additional Electrical Requirements due to using Magnetic bearing chillers						EGP 10 Million
Curtain Wall Glass	EGP 418/m2	EGP 665/m2	15,300 m2	EGP 7 Million	EGP 10.2 Million	EGP 3.8 Million
Additional works in curtain sections due to using Low E					EGP 1.5 Million	EGP 1.5 Million
Grey Water System	-	-	-	-	EGP 5 Million	EGP 5 Million
Additional civil works for GWS					EGP 1.5 Million	EGP 1.5 Million
PV Solar Cells	-			-	EGP 10 Million	EGP 10 Million
Addition Civil , Arch & MEP for PV Solar Cells					EGP 3 Million	EGP 3 Million
Roof Green Areas and Moisture protection	-	1000 LE/m2	10,000 m2	-	EGP 10 Million	EGP 10 Million
Electric vehicles fast charging stations	-	50,000 per unit	280	-	EGP 14 Million	EGP 14 Million
Thermal Insulation for Walls					EGP 5 Million	EGP 5 Million
Manage and control waste during construction and operation					EGP 3 Million	EGP 3 Million
Installing Energy Management System (EMS)					EGP 10 Million	EGP 10 Million
Additional Shading canopies and louvers					EGP 20 Million	EGP 20 Million
Total Amount added due to using sustainable materials						EGP 114 million approx.
Total Amount added due to using sustainable materials for the Whole Project						EGP 570 million approx.



Let’s build smarter, greener, and more responsibly.

UN GLOBAL COMPACT

AFRICA BUSINESS LEADERS COALITION

Edge
Excellence In Design For Greater Efficiencies

Thanks