



مؤتمر عجمان  
الدولي السادس للبيئة  
Ajman 6<sup>th</sup> International  
Environment Conference



# UAE Energy & Water Demand Side Management Program 2050

TOWARDS >>>>

# 2071

SHAPING THE

# FUTURE

FOR ENVIRONMENTAL

# SUSTAINABILITY

Public - عامة





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**AIEC2022**

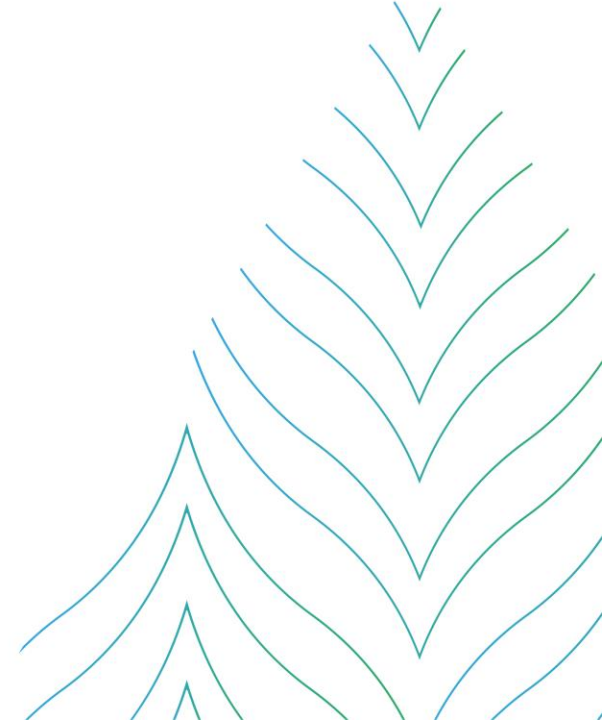
Ajman 6<sup>th</sup> International Environment Conference on  
TOWARDS 2071 SHAPING THE FUTURE FOR ENVIRONMENTAL SUSTAINABILITY

UNITED ARAB EMIRATES  
MINISTRY OF ENERGY & INFRASTRUCTURE



الإمارات العربية المتحدة  
وزارة الطاقة والبنية التحتية

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**DSM and Productivity Department**





## UAE is leading by example towards sustainable development with the National Energy Strategy 2050

Our Leadership has set an ambitious target to ensure sustainable and prosperous nation

## UAE Water Security Strategy 2036 includes supply and demand side targets

Our Leadership has set clear direction to secure our water resources for generations to come



### Supply side

**50%** Clean Energy in Capacity Mix by 2050

### Demand side

**40%** Final Energy Demand reduction vs. BaU by 2050

UAE DSM 2050 Program

The first program of the National Water Security Strategy focuses on water demand-side management for municipal and agricultural uses

#### Proposed National DSM Targets and Initiatives

Reduce municipal water consumption per capita by more than 19% from 2016 levels

Full Report: Stages 1 to 6  
UAE Water Security Strategy Study 2036

January 2017 – Dubai, United Arab Emirates

### DSM Targets

- ✓ 19% Reduction in municipal demand
- ✓ 18% Reduction in Agriculture demand
- ✓ <10% Unaccounted for Water



# Guiding principles for the UAE DSM Program to drive successful implementation



UAE DSM Program captured and incorporated all ongoing DSM efforts across the Emirates



UAE DSM Program builds on existing governance structures within each Emirate



Regarding Progress Monitoring:

- MOEI will only monitor total annual savings KPIs under the four pillars (Agriculture, Built Environment, Industry and Transport)
- Each Emirate will have complete authority and flexibility to achieve target savings through any combination of DSM Programs.
- Emirates to submit savings contribution breakdown per program. Variance in Program Savings are accepted as long as total annual savings are achieved
- Reporting KPIs shall be done via SMART digital platform which is customizable to allow reporting entities to select applicable programs, and incorporate future changes



# DSM Programs developed for four pillars covering total demand for both Energy and Water

DSM Pillar	DSM Programs		
<b>Agriculture</b> 	4.1 Water Food Nexus		4.4 Monitor consumption
	4.2 Enhance water & crop Productivity		4.5 Sustainable groundwater Management
	4.3 Use fit for purpose water		4.6 Study Groundwater pricing
<b>Built Environment</b> 	1.1 Building Codes	1.4 Renewable Energy	1.7 Tariff Scheme
	1.2 Building Retrofits	1.5 Equipment Standards	1.8 Facility Management
	1.3 Efficient Cooling	1.6 Efficient Irrigation	Non-Revenue Water (Reporting)
<b>Industry</b> 	3.1 Top 50		3.2 Electric Motors
<b>Transport</b> 	2.1 Public transport		2.3 Green mobility
	2.2 Freight transport		2.4 Fuel Standards
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #4a6984; color: white; padding: 5px;">Governance</div> <div style="background-color: #4a6984; color: white; padding: 5px;">Policies</div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 5px;"> <div style="background-color: #4a6984; color: white; padding: 5px;">Funds and Resources</div> <div style="background-color: #4a6984; color: white; padding: 5px;">Awareness Outreach</div> <div style="background-color: #4a6984; color: white; padding: 5px;">Performance Management</div> </div>			

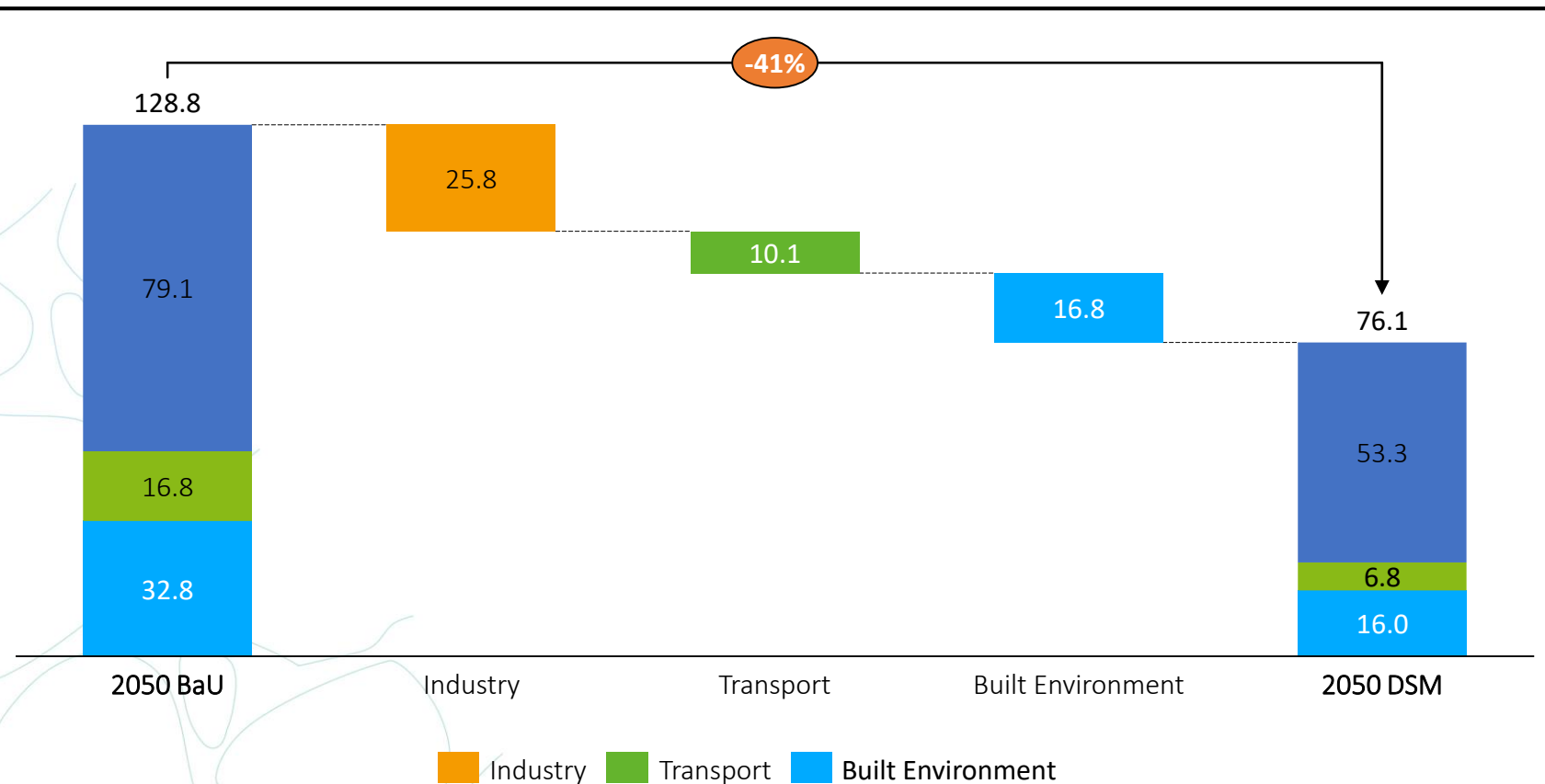
## DSM Savings and enablers





# Total 2050 DSM Energy savings across all pillars achieve the announced 40% objectives of the UAE Leadership

Total 2050 DSM Energy savings<sup>1</sup> (mtoe)



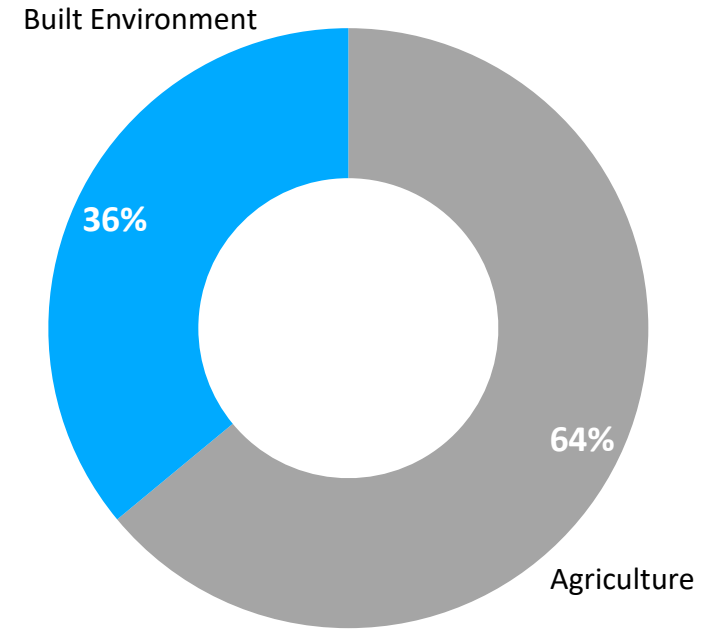
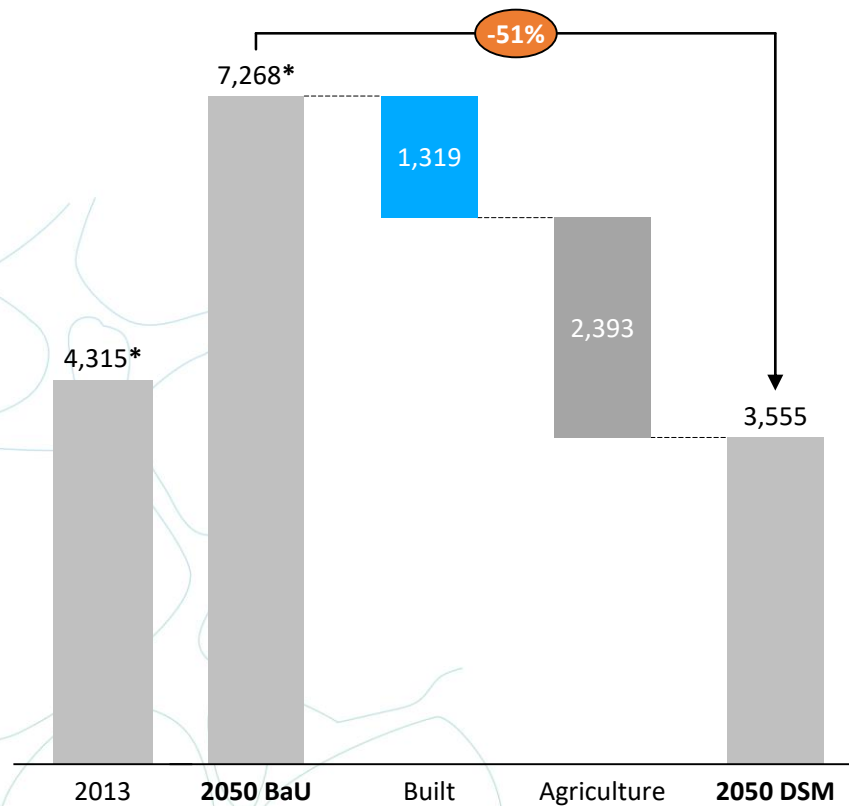
Source: Project team analysis



# UAE DSM Program will reduce water demand by ~50% compared to business as usual by the year 2050

Program savings | Water (Mm3)

% Contribution of each pillar to savings



Source: Project team analysis

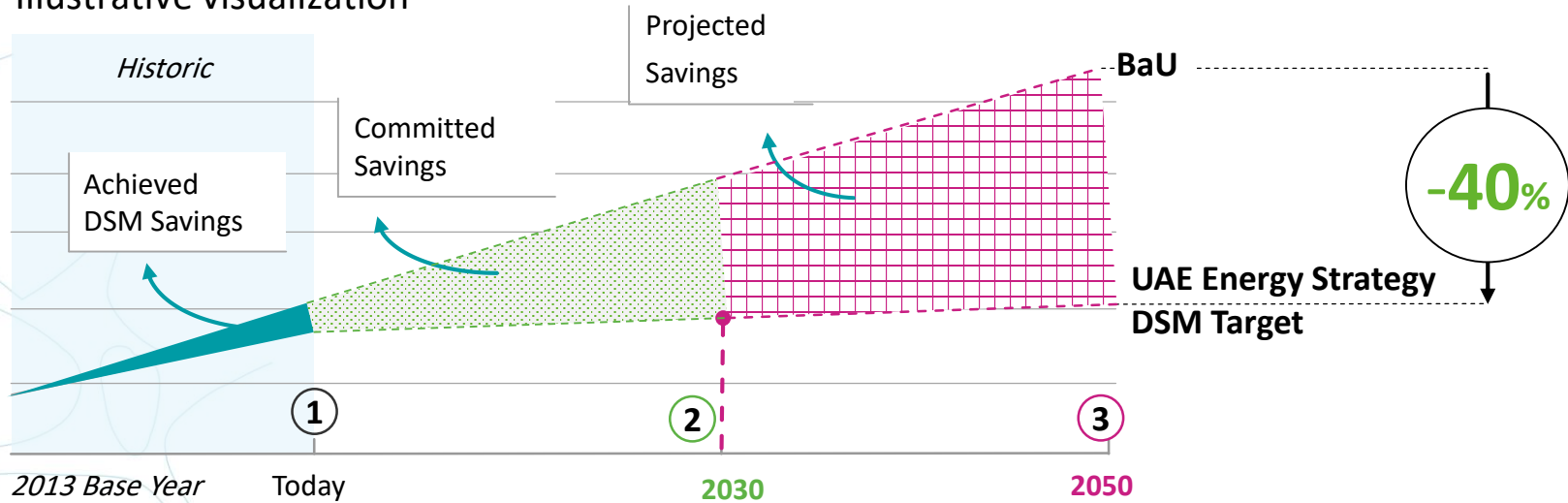
\* Total amounts of Desalination and Groundwater Consumption (excluding Recycled Water)



# Emirates commit to 2030 targets to align with ongoing efforts, and set them on path to achieve 2050 target

## Impact of DSM measures on Total Final Demand

Illustrative visualization



**1 Achieved Savings**  
from ongoing DSM Programs across the Emirates. Base year 2013 as defined by the UAE Energy Strategy 2050

**2 Medium Term Targets:** Are committed target savings up to year 2030. Savings here have been aligned with ongoing Emirate DSM Strategies  
✓ *Targets for 2030 are committed and will be tracked annually*

**3 Long Term Outlook:** Projected Savings identified to reach 40% DSM target by 2050. These annual targets will be revisited during future strategy revisions before they are committed.





# Cost benefits assessment shows net positive savings impact from all four DSM pillars

## CBA per DSM Pillar (Billion AED)

DSM Pillar	Savings	Costs	Net
1. Agriculture	17.0	1.3	15.7
2. Built Environment	292.3	153.5	138.8
3. Industry	81.2	74.0	7.2
4. Transport	253.4	188.8	64.6
<b>Total</b>	<b>643.9</b>	<b>417.6</b>	<b>226.3</b>

A discount rate of 6% was used to estimate the present value of costs and savings

CBA Period: 2013-2050

CBA per DSM pillar can be found on the following pages:

- Agriculture: P. 75
- Built Environment: P. 124
- Industry: P. 219
- Transport: P. 252





# Implementation governance framework designed to embed Program ownership with Emirates

## DSM Performance management

### Policy Maker:

**Executive Committee for National Energy KPIs**  
(Ministerial Decree 1/9, 2016)

DSM Steering  
Committee

### Coordination

#### MOEI DSM Coordinating Team:

- Monitor implementation
- Compile data
- Escalate issues

### MOEI DSM Team



Data collection platform

### Implementation

#### Four Working Teams:

#### Tasks:

- Implement Programs
- Report to MOEI

**Built Environment  
Working Team**



Program Owners

**Industry  
Working Team**



Program Owners

**Agriculture  
Working Team**



Program Owners

**Transport  
Working Team**



Program Owners

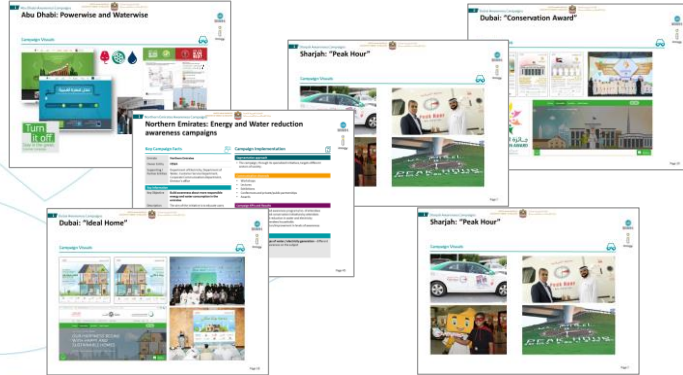


# Benchmarking and survey reports indicate potential for improvement to current national-level Awareness efforts

According to our analysis of collected awareness initiative data and survey findings..

...Current initiatives and current awareness levels of the public are still below the level where visible impact is achieved

## Samples of collected Awareness Initiatives:

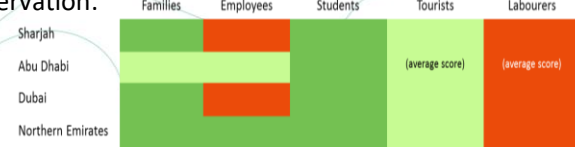


## Awareness maturity mapping:

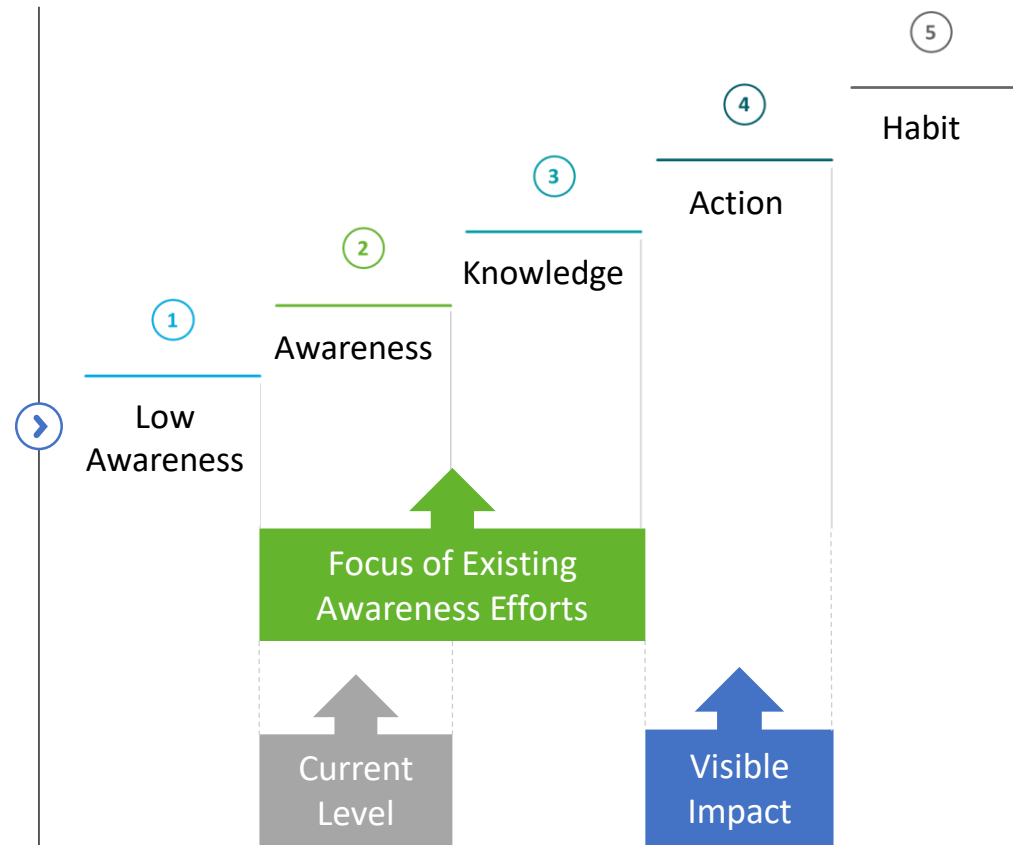
### Energy conservation:



### Water conservation:



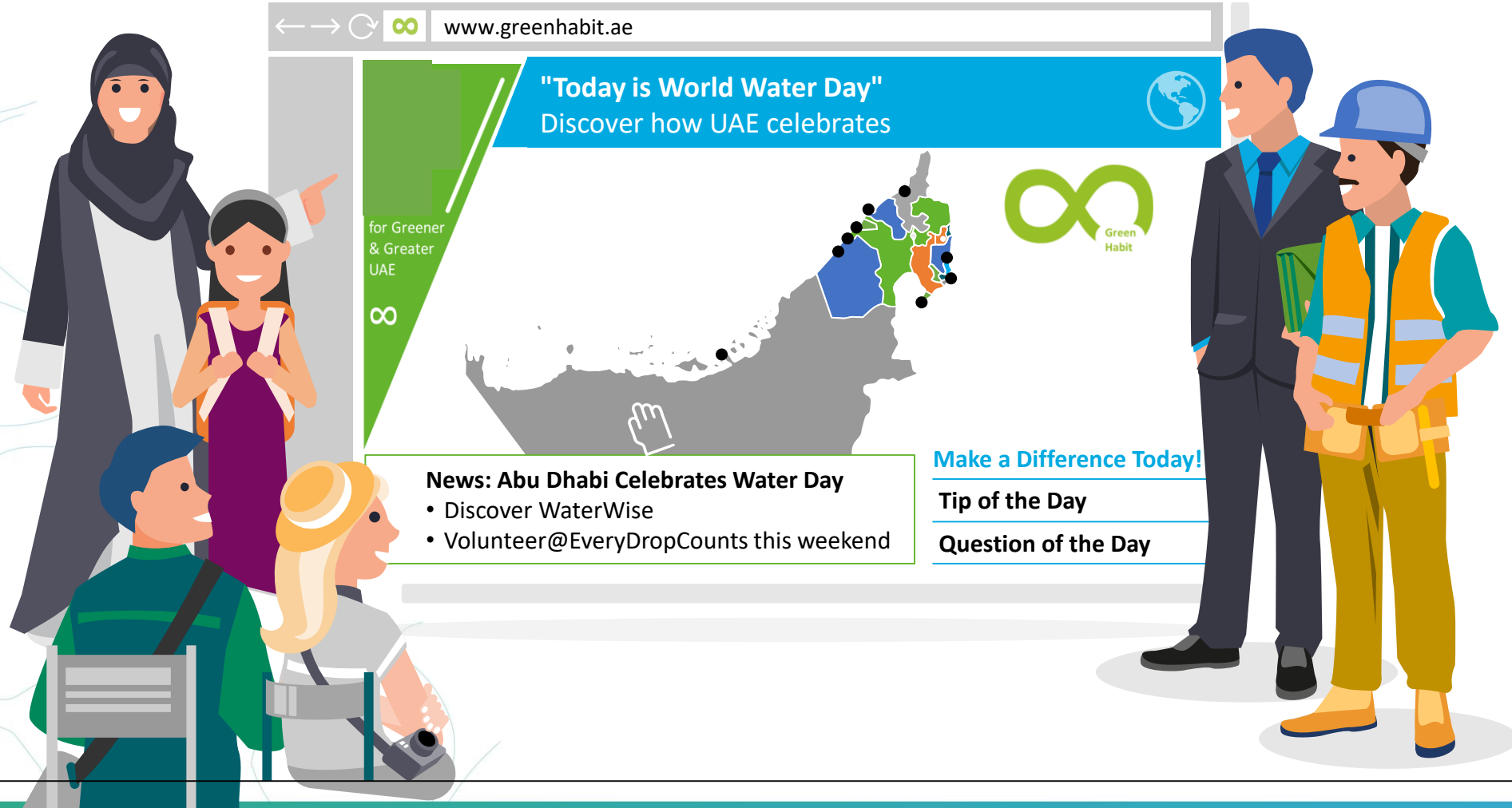
Low Awareness    Awareness    Knowledge    Action    Habit





# Save to Sustain is user-friendly and up-to-date, with the latest energy and water saving content and tools







ILLUSTRATIVE





# Several initiatives are proposed for each public category

Lookup table by category:

Category	Initiative
<b>Students (Children)</b> 	Save to sustain for a Greener UAE; Fight the Energy Monsters; Switch Off & Take Off; Green Irrigation; Yes We Can!; Which EV is for ME?
<b>Families</b> 	Save to sustain for a Greener UAE; Healthy Home; Fight the Energy Monsters; Switch Off & Take Off; Green Irrigation; Yes We Can!; Which EV is for ME?; Sun-Tastic; Your Footprint
<b>Employees</b> 	Save to sustain for a Greener UAE; Yes We Can!; Which EV is for ME?; Green Health; Green Office Awards
<b>Tourists</b> 	Save to sustain for a Greener UAE; Yes We Can!; Green UAE; Drive Electric UAE
<b>Laborers</b> 	Save to sustain for a Greener UAE; The Green Team Competition
<b>Other category</b> 	Save to sustain for a Greener UAE; Efficient Farmer



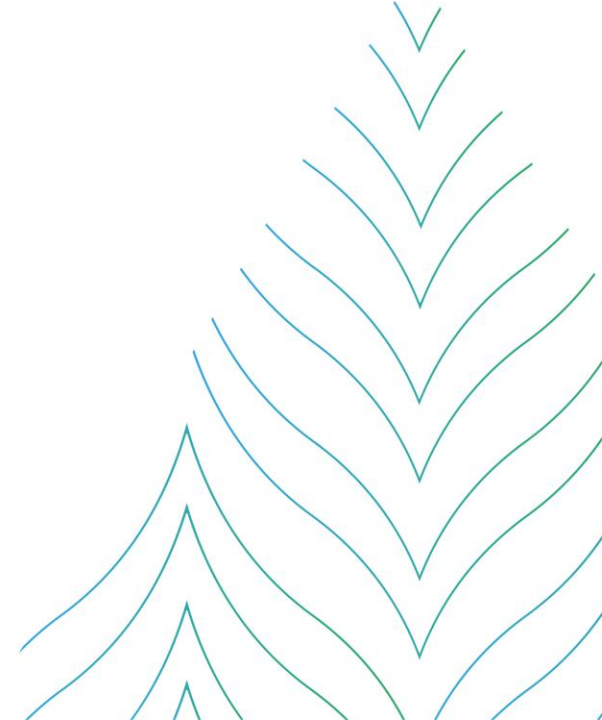
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## National Green Building Code (NGBR)





## About NGBR

The national green building regulation is designed to fulfill the mandatory, minimum energy and water standards for the new buildings in the United Arab Emirates.

The purpose of the NGBR is to ensure, but not to limit, the implementation of the minimum sustainability measures in the new buildings across UAE.

The regulation is flexible to firstly, to ensure adherence of the existing regulations and codes to the minimum standard while not contradicting or limiting any higher standards intended by the responsible entities and Secondly, to act as a mandatory guidance to entities who are about to start implementing the efficiency measures.





# Aims and Targets

- To set minimum design requirements for all emirates.
- Enhance built environment across the UAE to preserve our resources (energy, water, waste, material) with minimum environmental impact.
- Periodically update the Green Building Codes and Regulations with alignment across Emirates (and Free Zones).
- Encourages buildings to be designed with optimal efficiency in mind from the start.
- To encourage adoption of energy and water equipment as per specification form efficiency standards by relevant authority.
- Improve quality of life and happiness.

%50



Raising awareness level

%50



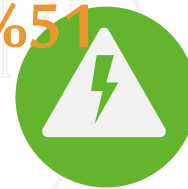
Recycling of construction waste in the building sector

%40



Reducing water demand in the building sector

%51



Reducing energy demand in the building sector

%95



Improving air quality in construction projects





# Standards and specifications included in the regulation

## Introduction and general procedures

- Regulation Objectives
- Competent authority and jurisdiction
- Compliance with current regulations building
- classification Scope of application
- Application procedures in the design and construction stages

## Green Building Regulations and Regulations

- Energy Efficiency
- water use efficiency
- renewable resources
- materials resources

THANK YOU

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