

# 1st National Workshop on UI GreenMetric World University Rankings (NWGM 2020) for Universities in the United Arab Emirates

## Issues and Lessons Learned from Managing Water at University of Sharjah

Water Sustainability Circle Leaders

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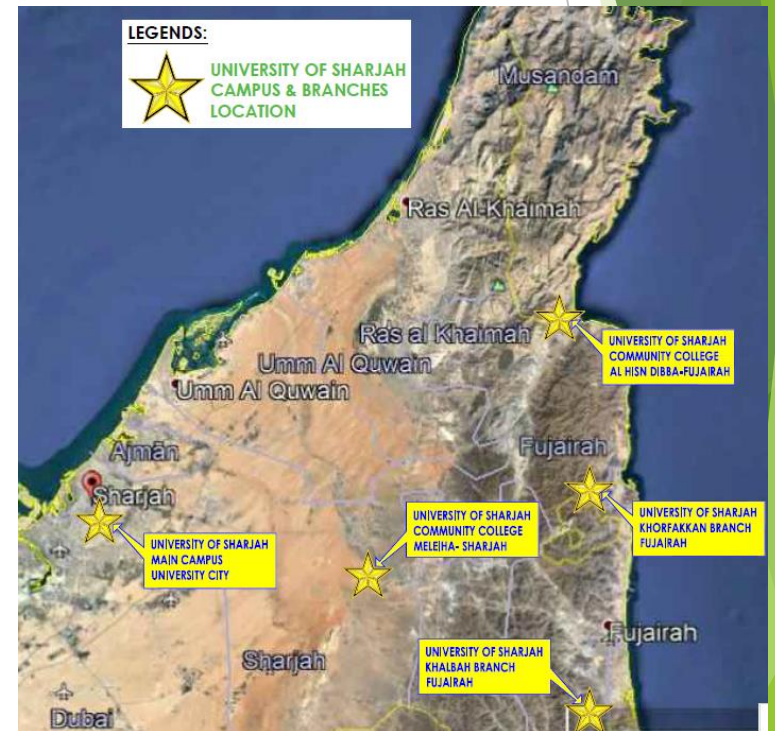
**September 16, 2020**

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# Introduction to UoS

- ▶ Established in 1997 by His Highness Sheikh Dr. Sultan Bin Mohammed Al Qassimi
- ▶ Largest university in the UAE
- ▶ Includes 14 colleges offering more than 85 various academic programs
- ▶ 14,000+ students and 610+ faculty
- ▶ 5 campuses across the Emirate of Sharjah



# Introduction to UoS

- Total area of the main Sharjah campus is 2.26 M-m<sup>2</sup>
- Planted vegetation over 1.5 M-m<sup>2</sup>



Map of University city

# Sustainability Office at UoS

## UOS sustainability policy

- ▶ One of the main goals of the University is to become a leading educational institution regarding sustainable development



## Sustainability office

- ▶ To achieve the sustainability goals, University of Sharjah Sustainability Office was established in October 2017



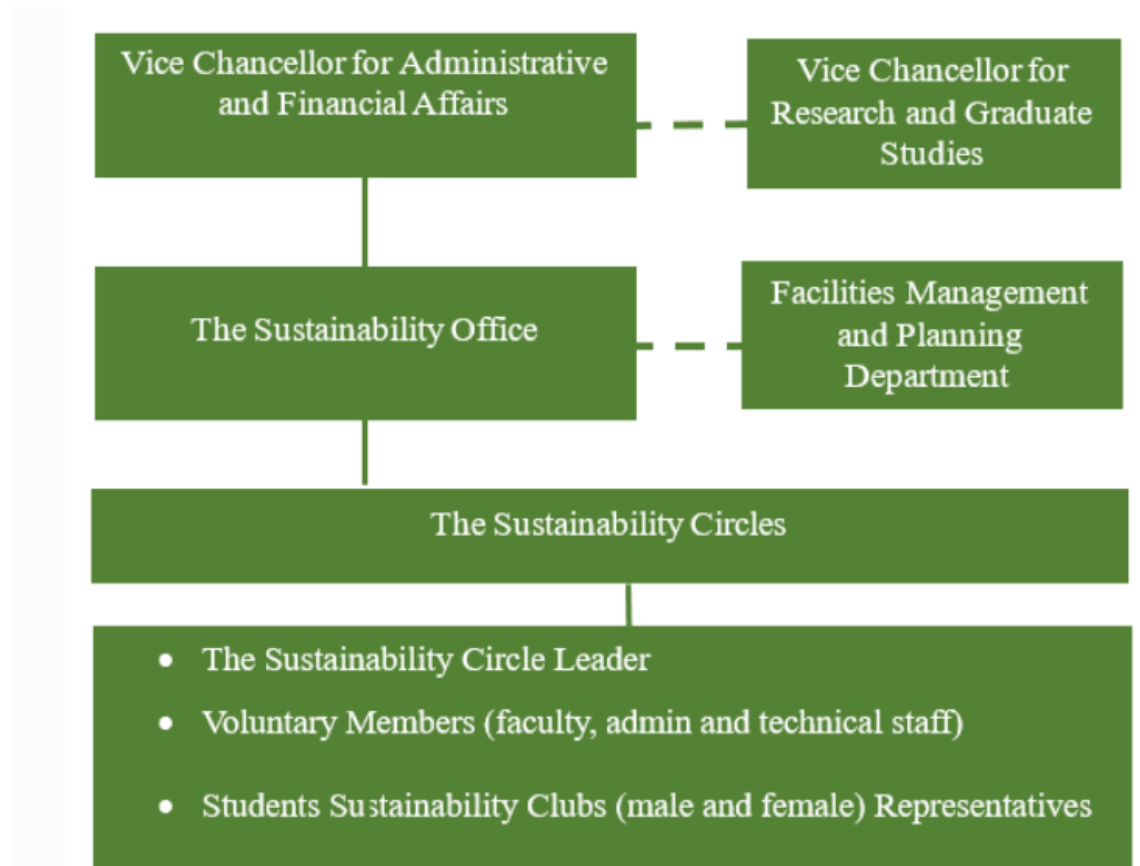
## Sustainability circle

- ▶ The Sustainability Office has setup 30 sustainability circles in various sustainability areas. Each sustainability circle is usually led by a faculty member or a specialist who has the knowledge, experience and enthusiasm in the respective area of sustainability.

# Sustainability Office at UoS

## ► *The Structure of Sustainability Office & Circles*

















- Sustainability Circles concept is built on the principle of the well-known notion of the *Quality Circle*, the main elements of the Quality Circle are available in the Sustainability Circle, (i.e., top management, steering committee, facilitator and coordinator, leader, members)




**Sustainability Office Structure**

# Sustainability Office at UoS

## SUSTAINABILITY CIRCLES

 <p>1. Agriculture.</p>	 <p>2. Energy and Climate Change</p>	 <p>3. Community Partnership</p>	 <p>4. Purchasing</p>
 <p>5. Landscape and Building Management</p>	 <p>6. Transportation</p>	 <p>7. Sustainability Studies.</p>	 <p>8. Continuous Improvement and Sustainability Excellence.</p>
 <p>9. Workplace Health, Safety and Wellbeing</p>	 <p>10. Linking Education and Farming "LEAF".</p>	 <p>11. Water Resources Management</p>	 <p>12. Waste Management</p>
 <p>13. Sustainable Curriculum</p>	 <p>14. Buildings Operation and Maintenance.</p>	 <p>15. Water Science and Technology</p>	 <p>16. Food and Dining</p>

 <p>17. Creative Initiatives.</p>	 <p>18. Awareness.</p>	 <p>19. Community Health.</p>	 <p>20. Animal Welfare.</p>
 <p>21. People with Disabilities</p>	 <p>22. Male Students Sustainability Activities</p>	 <p>23. Female Students Sustainability Activities</p>	 <p>24. Male Students Sport Activities.</p>
 <p>25. Female Students Sport Activities.</p>	 <p>26. The Sustainable Garden.</p>	 <p>27. Sustainability Projects Implementation.</p>	 <p>28. Green Policy.</p>
 <p>29. Arabic Editing and Publications.</p>	 <p>30. English Editing and Publications.</p>		

# Sustainability in Water

## ▶ Water usage

- *Potable (desalinated water)*
  - Hygiene purpose: drinking, cleaning, & washing etc.
- *Non-potable (treated waste water + untreated groundwater)*
  - Agriculture needs of vast green spaces

## ▶ Stakeholders

- *Sharjah Electricity and Water Authority (SEWA)*
- *University City Services*
- *University of Sharjah*



# Water Challenges and Solutions

## ▶ Main Challenges

- ▶ *High-water demand due to climate conditions*
- ▶ *Inability to develop rainwater harvesting due to arid climate and soil conditions*
- ▶ *Expensive water (desalinated water) production*
- ▶ *Keeping the water for its intended use*

## ▶ Solutions

- ▶ *Use of technology and innovation (maintenance and initiatives)*
  - ▶ *Potable water use*
  - ▶ *Irrigation water use*
  - ▶ *Water quality safeguard*
- ▶ *Reuse of grey water*
- ▶ *Recycle treated wastewater*
- ▶ *Awareness campaigns, initiatives and education*

# Water Challenges and Solutions

- ▶ Use of technology and innovation (potable)
  - Water efficient nozzles
  - Automatic taps
  - Auto/Dual WCs

Summary of water-efficient devices installed in the University during 2018-2020

	Replaced	% Replaced
Water-efficient nozzles	877	71.59
Automatic taps	241	19.67
Automatic/dual WCs	108	9.88
Overall	1226	52.89

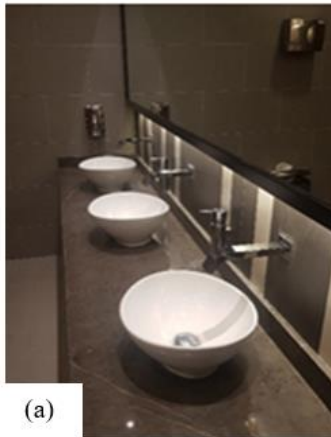
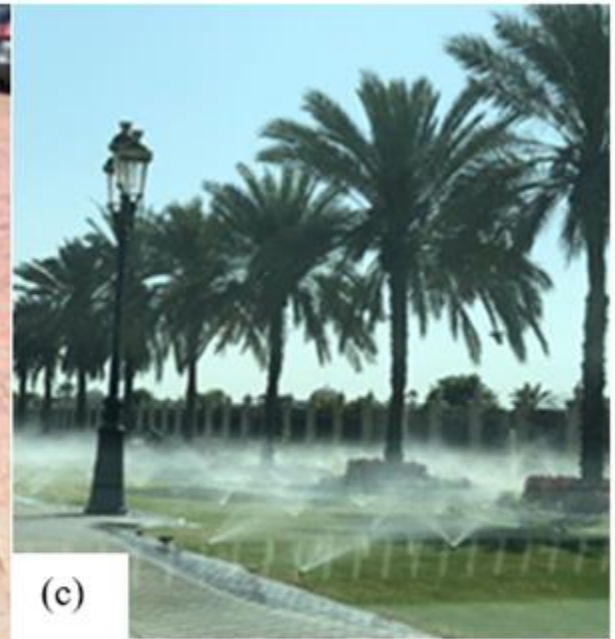


Figure 2: (a & b) Faucet aerators: Automatic & low flow nozzle faucets installed in all academic buildings including on-campus mosques and (c) Smart water meter to manage water usage

# Water Challenges and Solutions

- ▶ Use of technology and innovation (irrigation)
  - Treated wastewater for irrigation of green spaces using
    - Drip irrigation system
    - Sprinkler irrigation system



Use of Drip (a & b) Sprinkler (c) irrigation systems at the University

# Water Challenges and Solutions

- Use of technology and innovation (irrigation)



UoS Sustainability Map

# Water Challenges and Solutions

- ▶ Use of technology and innovation
- ▶ Water quality safeguard
  - Tank Cleaning
  - Maintenance throughout the water supply
  - Water quality monitoring

**BEFORE**



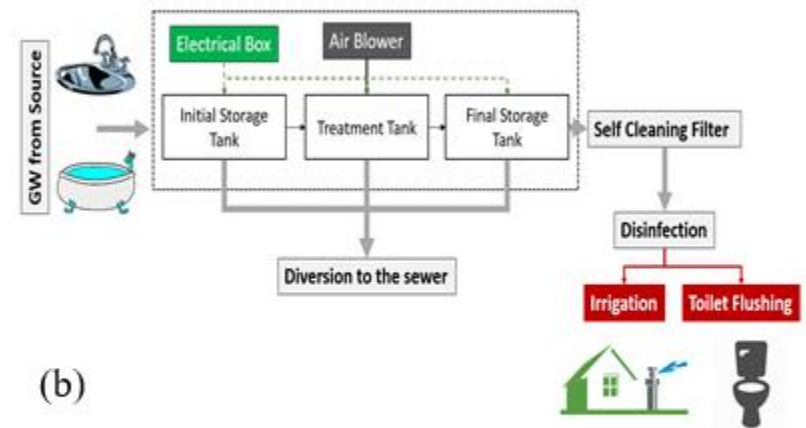
**AFTER**



Water quality preservation to conserve water for its intended use  
(Photo source: University of Sharjah)

# Water Challenges and Solution

- ▶ Reuse of grey water
  - ▶ To encourage multi use of water, UoS is implementing grey water recycling for toilet flushing



(a) Tanks of the greywater recycling system in the student dormitory, and (b) flow chart of the installed greywater recycling system (source: [4])

# Water Challenges and Solution

- ▶ Recycle treated wastewater
  - ▶ Wastewater is treated as resource rather than waste product
  - ▶ Wastewater generated in University city is treated in a nearby treatment plant and reused to irrigate green spaces



(a)



(b)

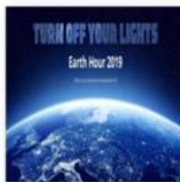
(a) University City Wastewater Treatment Plant layout, and (b) primary clarifier of the treatment plant

# Water Challenges and Solution

## ► Awareness campaign, initiatives, and education

### ❑ *Selected events/initiatives during 2018-2020*

- The Sustainability Awareness Year 2020
- World Water Day and Earth Hour, 25 March 2019
- Wastewater Treatment and Reuse in Sharjah UAE, 2019
- Sustainable Garden Workshop
- Waterless Carwash Service in the Campus and so on





# Water Challenges and Solution

- ▶ Awareness campaign, initiatives, and education
- *Sustainability in educational programs during 2018-2020*
  - ▶ 127 sustainability-related courses
  - ▶ 550 sustainability-related research papers
  - ▶ New graduate programs (MSc in Environmental Health & MSc in Environmental Science and Engineering)
  - ▶ Existing undergraduate programs (BS Env Health Sciences, BS Civil and Env. Engineering)



# Summary and Concluding Remarks

- For achieving the University's vision and mission of being world-class teaching, learning and research institution, the University of Sharjah receives *unparalleled support of higher administration* to carry its operations
- To strengthen the University commitment in relation to sustainability goals and sustainable development, the *roles of Sustainability Office and Sustainability Circles have been vital*
- To achieve sustainability in water, the University adopted *unconventional approaches* due to its geographical location and climate condition.
- The water conservation programs and management initiatives have been *successful*

World Ranking  
**294**

WR Ranking  
**35**

Country Ranking  
**1**

WR Ranking  
**1**



***Thank You***

