



# SUSTAINABILITY REPORT 2023

**Al-Muthanna University**

## CONTENTS

<b>INTRODUCTION</b> .....	1
<b>AL-MUTHANNA UNIVERSITY IN BRIEF</b> .....	1
<b>OUR SUSTAINABILITY AIMS</b> .....	3
<b>OUR ACHIEVEMENTS</b> .....	3
<b>INFRASTRUCTURE</b> .....	3
<b>ENERGY</b> .....	5
<b>WASTE</b> .....	10
<b>WATER</b> .....	15
<b>TRANSPORTATION</b> .....	16
<b>EDUCATION</b> .....	18

## INTRODUCTION

This document is prepared to serve as a report of Al-Muthanna University's efforts regarding sustainability. Those efforts represent our accomplishments towards making our planet a better place to live in. This report can be used by any third party, such as professional and academic staff, students, local and international institutions, and local communities and governments, to get a good insight into our work in that regard.

This report focuses on Al-Muthanna University's sustainability performance for the previous year, from January to December 2023.

## AL-MUTHANNA UNIVERSITY IN BRIEF

Established as one of the Iraqi universities in 2007, Al-Muthanna University (MU) was first known as a part of Al-Qadissia University in 2003. In 2007, MU moved from its temporary premises at the Al-Qadissia University branch to the present, approximately 3.0 km from Al-Muthanna Governorate.

MU offers courses ranging from Natural Sciences, Applied Sciences, Medical and Health Sciences, and Pharmaceutical Sciences to Building Science and Technology, Social Sciences, Humanities, Agriculture Sciences, Economic and Management Sciences, and Education. These are available at undergraduate levels at its 12 academic colleges on the

main campus; 2 Colleges at the other Campus in Al-Muthanna City (approximately 4km from the main campus); and 1 at the Health Campus beside Euphrates river, Al-Muthanna City (approximately 1.5km from the main campus).

The postgraduate levels (MSc, PhD, Board in Medicine Science) are only in Natural Sciences, Humanities, Agriculture Sciences, Economics, and Management Sciences.

MU also has one research center for a wide range of specializations called Sawah Al-Badiah center. It also provides consultancy, testing, and advisory services to the industry under the ambit of the researcher, the University's commercial arm.

Since the beginning, MU has adopted the College system to ensure that its students are multi-disciplined from their exposure to other areas of study by other Colleges. It also encourages students to participate in extra-curricular activities, given the various clubs and societies available. In addition, as a Research-Intensive University recognized by the Ministry of Higher Education and Scientific Research in 2007, MU offers educational and research opportunities to students and staff.

### **Program Outline**

MU offers undergraduate and postgraduate programs that the following Colleges conduct:

#### **Main Campus**

1. College of Science
2. College of Basic Education
3. College of Humanities Education
4. College of Engineering
5. College of Physical Education and Sports Sciences
6. College of Educational Science Studies
7. College of Agriculture
8. College of Literature
9. College of Administration and Economics
10. College of Nursing
11. College Low
12. College of Pharmacy

### **Health Campus 1**

1. College of Medical Sciences

### **Health Campus 2**

1. College of Dental Sciences

### **Health Campus 3**

1. College Veterinary Medicine

## **OUR SUSTAINABILITY AIMS**

Al-Muthanna University has been taking some significant steps to provide a cleaner environment and more sustainable living conditions for our community. Those steps have been set to target several goals, which are briefly shown below:

- Constructing open spaces and green-covered areas has been a priority to get students and staff more space to enjoy their time away from buildings.
- Implementing various programs to encourage students and staff to reduce paper and plastic use on campus.
- Applying some procedures to recycle some of the university waste.
- Providing several solutions to achieve more sustainable transportation, which helps to reduce air pollution.
- Conducting research on sustainability and energy-related fields.

## **OUR ACHIEVEMENTS**

Al-Muthanna University has been successful in contributing to the goals as mentioned earlier. The following sections outline some of our achievements.

### **INFRASTRUCTURE**

There are 6 campus sites belong to Al-Muthanna University, namely University's Main-Campus, two Health Campuses, and two Agriculture Research Stations.

University Main-Campus is the main and largest campus site at 360 km<sup>2</sup>. It is conveniently located only a few kilometers from the city center of Samawah.

Health Campuses 1 and 2 site on 20 km<sup>2</sup> and 10 km<sup>2</sup>, respectively. They are also located near the city center of Sawamah. The distances from these sites to the Main Campus are 2.37 km for the first and 2 km for the second sites.

In addition, Agriculture Research Stations 1 and 2 are set in extensive greenery and near the river, which now extends to 112.5 km<sup>2</sup> and is located only a few kilometers from University Main-Campus.



The Main-Campus of Al-Muthanna University is located in the City of Samawah, a few kilometres from the city center. Samawah is a city in Iraq, 280 kilometers southeast of Baghdad. The city of Samawah is the modern capital of the Al Muthanna Governorate. The city is located midway between Baghdad and Basra. The total Campus area (m<sup>2</sup>): is 465,933.19 m<sup>2</sup>, with the total floor area, including the ground floor and other floors of Al-Muthanna University buildings, being 161,350 m<sup>2</sup>.





According to the given formula, the ratio of open space to the total area is approximately 80.02%.



The total area on campus covered in forest vegetation is 90,197.92 m<sup>2</sup>, while the total area covered in planted vegetation is 50000 m<sup>2</sup>.



Many operation and maintenance activities have been done in almost all colleges of Al-Muthanna University. These activities could be outlined in repairing some buildings and maintaining cooling systems, classrooms, laboratories, gardens, etc.



In order to help our staff and students, who need special facilities, some breastfeeding rooms and accessible parking spaces have been made available across Al-Muthanna University.



To improve the security inside Al-Muthanna University, CCTV cameras have been installed to cover almost all main parts of the buildings and other spaces of the University. That is, CCTV cameras are installed:

- 1- At all entrances of the University.
- 2- At entrances of all buildings.
- 3- Inside and outside all buildings.
- 4- At car parks.
- 5- At green spaces.



In addition, several fire infrastructures are available at Al-Muthanna University. That includes fire extinguishers, hydrants and fire alarms.



Al-Muthanna University has its medical center. This center provides several health services for staff and students of Al-Muthanna University. These services include general health checks and treatments by general practitioners, dentistry checks and treatments by dentists, some blood tests, and x-ray examinations. The center also has some nurses for any related needs. In addition, it offers some essential medicines for patients. Furthermore, Al-Muthanna University, in collaboration with the health department in the region, has made it available for the university community (staff and students) to get vaccinated against covid at this medical center in order to overcome the pandemic.





Moreover, the agricultural research stations at Al-Muthanna University have some greenhouses that have been used to grow vegetables. They also have been producing eggs at these research stations. Therefore, staff and students at Al-Muthanna University can get some of these foods.



## ENERGY

It has been a priority to use energy-efficient applicants in all buildings of Al-Muthanna University. That has been a general practice in recent years at Al-Muthanna University for the purpose of energy saving and managing our energy usage sustainability. Therefore, the approximate use of energy-efficient applicants (particularly LED lamps and laptops) is around 75%.



It is also good to mention that there is a total area of smart buildings of 96650 m<sup>2</sup> across all campuses of Al-Muthanna University. In addition, the total Carbon footprint in 2023 equals 105 metric tons.

In addition, buildings at Al-Muthanna University have been designed and constructed to have natural daylighting and natural ventilation.



## WASTE

Al-Muthanna University has set several programs to encourage staff and students to recycle and reduce waste. Some of these programs are related to paper and plastic usage. Others are related to materials used in laboratories. In addition, some policies have been placed to promote using reusable plates and glasses to reduce the number of disposable materials across the University.



Furthermore, an agreement has been established between Al-Muthanna University and some people, who do charity activities, to collect used clothes and shoes and deliver them to those in need. As a result, a clothing collection bin has been installed, and an advertisement has been spread among staff and students to raise awareness and encourage them to donate some of their unwanted second-hand clothes.



Regarding the impact of our practices on the environment, authorities at Al-Muthanna University have been paying attention to the issue of paper and plastic usage and how it affects the environment. As a result, some programs have been established to reduce the use of paper and plastic on campus. Those programs help to decrease CO<sub>2</sub> emissions, which leads to a cleaner environment.

In general, more than three programs have been to help make our planet a better place to live in. Some programs are related to paper use, and others deal with plastic use.

For the first category programs, some instructions and guides have been established among campus offices, such as:

- 1) Think before you print and only print documents when it is absolutely necessary.
- 2) Double-sided printing.
- 3) E-meeting system (no paper is used for meetings details and announcements).
- 4) Re-use paper if possible (single-sided false printed paper to be used again).
- 5) Unsubscribe from unwanted mail.

Moreover, the following programs have been utilized to raise awareness about plastic use reduction at Al-Muthanna University:

- 1) Free water distribution (to reduce plastic bottle use).
- 2) Reusable cups for drinking.
- 3) Reusable plates for eating.





Organic waste bins are allocated inside and around all buildings of Al-Muthanna University. These kinds of wastes are treated in collaboration with a government department - the Municipality of Samawah City. First, these wastes are collected and carried out on campuses of Al-Muthanna University by garbage trucks. After that, they treat such wastes according to the collaboration deal with that government department.

Al-Muthanna University and the local government of the city of Sawamah have set up a deal regarding the treatment of the inorganic waste of all colleges of Al-Muthanna University. Consequently, inorganic waste is collected via special designed bins allocated inside and around all buildings of Al-Muthanna University. Then the government department sends garbage trucks to collect the waste. Finally, the same department does the treatment of those wastes.



Moreover, some scientific laboratories at some colleges of Al-Muthanna University produce some toxic waste. Some special bins are placed inside those laboratories to collect and store such wastes. Those containers are classified and labelled clearly so everyone can store every type of toxic waste in the right bin. Students and researchers at those laboratories are trained and instructed on storing such wastes by trained technicians. After that, documents are filled to comply with national regulations to prepare the wastes until they are picked up by the authorized Company and then treated by the same Company.



## WATER

To use water efficiently, all buildings of Al-Muthanna University have a separate sewerage system. Rainwater is thus collected from the buildings' roofs, parking areas, etc. It is then discharged into the local ponds and canals around the buildings. This collected rainwater is then used for toilet flushing and watering the plants inside the building.



A program has been discussed at Al-Muthanna University to increase the usage of water-efficient appliances. In fact, some new hand-washing taps have been installed in bathrooms across the University. These new taps help to reduce water usage by reducing the running amount of water.



## TRANSPORTATION

Several solutions to achieve more sustainable transportation have been provided to staff and students. Those solutions help to reduce air pollution by reducing the number of vehicles on campus. As a result, the total number of vehicles divided by the total campus population is 0.019, and the ratio of the parking area to the total campus area is 0.027.



The University provides several buses. They transport staff and students for free through the campuses of Al-Muthanna University. In addition, these buses are used for transportation between campuses, from campuses to students' residents, and from campuses to some local areas of Samawah City to drive staff from and to their homes.

By setting up some policies, Al-Muthanna University has reduced the parking area on campus by about 10%-30%. Some of those policies aimed at not-allowing students' cars and taxis to enter campuses. Other policies have helped to encourage staff to use University's vehicles (e.g. free buses and mini-buses, car sharing) instead of their private cars. In addition, priority has been given to create gardens and other open spaces over car parking areas.

Al-Muthanna University has taken several significant steps to reduce the number of private vehicles entering the campuses. Some of those initiatives are shown below:

1. A few buses have been provided by the University to be used for free.

2. Pedestrian paths were built around and through campuses to encourage people to walk instead of using vehicles.
3. Some cars (saloons and mini-buses) have been employed to transport employees from their homes to the University, which has helped to reduce the number of private cars entering the University and raise awareness of car-sharing benefits.
4. Al-Muthanna University has set a policy to prevent students from bringing their vehicles inside campuses. This policy has prevented so many private vehicles from entering campuses.



In addition, great efforts have been made at Al-Muthanna University to design and build pedestrian paths across campuses to separate them from roads where vehicles are going. These pedestrian paths are located around and between buildings, so people can walk safely without being warned about the ongoing vehicles. In short, pedestrian paths are available everywhere across Al-Muthanna University's campuses. Furthermore, some features have been added to increase the efficiency of these paths and make them more convenient. Firstly, 220 streetlamps have been installed for night walks. Solar panels power these lamps, which are friendly to the environment and run automatically. In addition, some of these paths have been provided with disabled-friendly features. Lastly, guide signs have been located through those paths so people can know where to go easily.



## EDUCATION

Recently, sustainability has been given great attention in teaching and researching activities across Al-Muthanna University. Consequently, sustainability-related topics have been embedded into several courses taught across our colleges. Therefore, the average annum last 3 years of research fund dedicated to sustainability = 17121.33 USD.

In addition, several articles have been published by Al-Muthanna University's scholars on various environmental and sustainability topics during the past three years. Below are some of those publications:

- Łysiak, Grzegorz, Ryszard Kulig, and Jawad Kadhim Al Aridhee. "Toward New Value-Added Products Made from Anaerobic Digestate: Part 1—Study on the Effect of Moisture Content on the Densification of Solid Digestate." *Sustainability* 15.5 (2023): 4548.
- Alyaseri, Isam, Jianpeng Zhou, Azadeh Bloorchian-Verschuyt, and Susan Morgan. "Impact of green infrastructures for stormwater volume reduction in combined sewers: A statistical approach for handling field data from paired sites containing rain gardens and planter boxes." *Journal of Sustainable Water in the Built Environment* 9, no. 3 (2023): 05023003.
- Alridha, Zainab, Zahraa A. Khudhair, and Othman Hameed Zinkaah. "Linking the construction industry to the sustainable development goals: A review." In *AIP Conference Proceedings*, vol. 2806, no. 1. AIP Publishing, 2023.
- Huseien, Ghasan Fahim, Ziyad Kubba, Akram M. Mhaya, Noshaba Hassan Malik, and Jahangir Mirza. "Impact resistance enhancement of sustainable geopolymer composites using high volume tile ceramic wastes." *Journal of Composites Science* 7, no. 2 (2023): 73.
- *Sustainable stormwater management using rain gardens in urban areas. IOP conference series: Earth and environmental science; 2021.*
- *Treatment of al-muthanna petroleum refinery wastewater by electrocoagulation using a tubular batch electrochemical reactor. IOP conference series: Earth and environmental science; 2021*

- *Evaluation of dryness conditions in babylon governorate using the standardized precipitation index (SPI) and the normalized difference water index (NDWI). IOP conference series: Earth and environmental science; 2021.*
- *Lead removal from simulated wastewater using magnetite as adsorbent with box-behken design. IOP conference series: Earth and environmental science; 2021*
- *Abdel-Wahed, Talaat, et al. "The impact of cement kiln dust and cement on cold mix asphalt characteristics at different climate." Sustainability 14.7 (2022): 4173.*
- *Łysiak, Grzegorz, Ryszard Kulig, and Jawad Kadhim Al Aridhee. "Toward New Value-Added Products Made from Anaerobic Digestate: Part 1—Study on the Effect of Moisture Content on the Densification of Solid Digestate." Sustainability 15.5 (2023): 4548.*
- *Al-Tuwayyij, Husham, Noorance Al-Mukaram, and Sarah S. Musa. "Impact of Plastic Waste on The Volumetric Characteristics and Resilient Modulus of Asphalt Concrete." Civil Engineering Journal 9.4 (2023): 915-926.*
- *Al-Fanharawi, Ali Abdulhamza, and Ansam Saad Al-Khafaji. "Assessment of the Organic Pollution in Sawa Lake." IOP Conference Series: Earth and Environmental Science. Vol. 1225. No. 1. IOP Publishing, 2023.*



Several environmental and sustainability-related events have been hosted or organized by Al-Muthanna University during the past three years. These events included workshops,

training sessions, maintaining some public gardens by students and staff, and events to raise awareness about the environment.



Al-Muthanna University has started to educate its academic staff, faculty staff and students on various technical aspects and skills. That has been aimed at:

- Improving faculty staff's skills regarding the use of technology.
- Training academic staff on online teaching methods, software and strategies.
- Training students on online platforms to stay connected with their ongoing studies and do their duties online.

