



University : Al-Mustaqbal University  
Country : Iraq  
Web Address : <https://uomus.edu.iq/>

**Total carbon footprint (CO<sub>2</sub> emission in the last 12 months, in metric tons)**

**Carbon footprint in 2023/2024 = 487.8 metric tons**

**Number of persons: (19231+7+1138)=20376**

**Carbon footprint per person =(487.8/(19231+7+1138))=0.0239 metric ton per person**

Campus energy emissions of the Al-Mustaqbal University originate from direct energy consumption of electricity used for cooling system and lighting. To determine the carbon footprint associated with the use of electricity on campus, the amount of electricity in kWh was multiplied by the CO<sub>2</sub> emissions factor obtained from DEFRA method (Department for Environment Food and Rural Affairs, UK) and GHG Protocol Website. Based on its vision to promote sustainable development and reduce the environmental impacts resulting from its activities, Al-Mustaqbal University adopts a scientific approach based on the best international practices in measuring and managing greenhouse gas emissions (GHG Emissions), through the application of the institutional standard of the GHG Protocol Corporate Standard, which represents the most prominent reference in the world in this field.

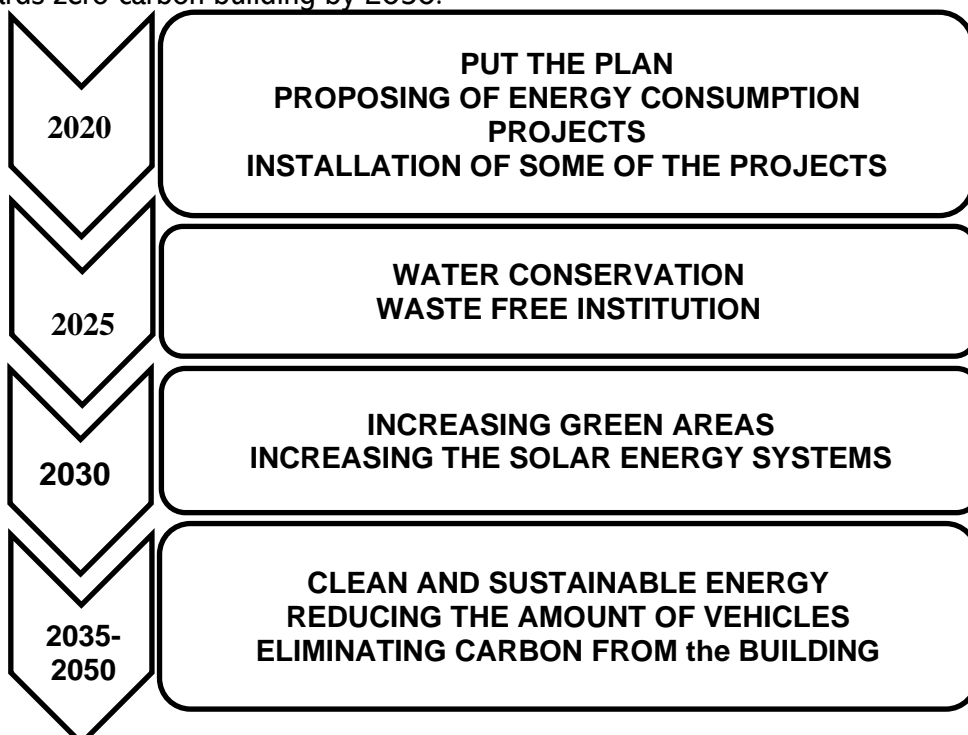
However, as pioneers of research and science, it is vital for higher education institutions to lead the shift towards sustainable development. Sighting this, Al-Mustaqbal University is leading the Iraqi higher education institutions towards sustainability. Therefore, it is a must that this institution puts forth a plan to pave its way to reduce its carbon footprint and be more sustainable. To limit the rise to 1.5°C, we must achieve nearly net-zero carbon emissions by mid-century.

The carbon footprint reduction policy stands on six fundamentals that require full commitment from staff and students to be fully achieved by 2030.

#### **Target of The Programme**

The major target of the programme is can be summarized in the following points;

- Reduction of carbon dioxide emission by half by 2030.
- Towards sustainable energy.
- Towards zero-carbon building by 2050.





## **FUNDEMENTAL ONE: CLEAN AND SUSTAINABLE ENERGY**

- By 2030, 80% of the energy consumed by Al-Mustaqbal University is sourced from alternative sources other than the national electrical grid. Al-Mustaqbal University has already started its path towards depending on sustainable energy sources such as solar and wind energy.
- Increase research on renewable energy sources and increase their output in order to meet energy demands.
- Leading the campaign to increase awareness on sustainable energy sources and help communities to get a grasp on such alternatives.
- Implementation of the roof green that contributes in reduction of cooling load leading to energy saving.

## **FUNDEMENTAL TWO: WASTE FREE INSTITUTION**

- By 2025, all produced waste within the campus facilities should be reduced and recycled.
- By 2025, all formal correspondence letters within the campus are paperless and should be made via softcopy documentation.
- Plastic bags are prohibited from use within the campus by 2025.
- Increasing research in the field of waste management and cleaner production.

## **FUNDEMENTAL THREE: WATER CONSERVATION**

- By 2025, all water dispensing faucets should be sensor motion faucets for water conservation.
- By 2025, parking areas and walkways are made from permeable asphalt or concrete to ease rain harvesting.
- Watering the green areas within the campus area is controlled by sensors to provide water efficiently with the least amount possible.
- Used water inside toilets and sinks is recycled by gathering the water and recycling it to be used in plant watering.
- Installation of rain water collection / Harvesting in order to collect the rain water and then reuse it leads to both water and energy conservation. For example, it can be used in landscape irrigation, cooling towers of HVAC systems, drinking, cooking and Toilets flushing based upon the Iraqi Governorate policy.

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## **FUNDEMENTAL FOUR: INCREASING GREEN AREAS**

- By 2030, green areas should be maximized in order to create a cleaner, cooler and sustained environment.
- Growing vegetables for using them in the student restaurants within the campus.
- Increasing the number of fruitful trees that are drought resistant.
- Increasing the number of trees on the sides of walkways and near buildings within the campus.
- Including the green roofs on our institution.

## **FUNDEMENTAL FIVE: REDUCING THE AMOUNT OF VEHICLES**

- By 2030, vehicles used by staff member as well as students should be minimized to the half.
- By 2025, the university will provide shuttle buses to transport staff members as well as students back and forth to the campus.
- Encouragement on utilizing low emission fuel.
- Speeding and unnecessary acceleration reduce mileage by up to 33%, waste gas and money, and increase your carbon footprint.
- Aerodynamically, Speeding and unnecessary acceleration reduce mileage by up to 33%, waste gas and money, and increase your carbon footprint.

## **FUNDEMENTAL SIX: A TOBACCO, SMOKE AND NICOTINE FREE CAMPUS**



- By 2025, Al-Mustaqbal University is planned to be a nicotine free campus. This fundamental is developed to enhance the wellbeing and health of both staff and students.

All the above fundamentals are necessary to pave the path towards creating a sustainable environmentally friendly campus. This requires that all of us, both staff and students, to work hand in hand to achieve these fundamentals.

## 1- CO<sub>2</sub> (electricity)

### A- 2018/2019

$$Em = \frac{\text{electricity usage per year (kWh)}}{1000} \times 0,84$$
$$= \frac{331120 \text{ kWh}}{1000} \times 0,84$$
$$= 278.14 \text{ metric tons}$$

### B- 2019/2020

$$Em = \frac{123134 \text{ kWh}}{1000} \times 0,84$$
$$= 103.43 \text{ metric tons}$$

### C- 2020/2021

$$Em = \frac{205350 \text{ kWh}}{1000} \times 0,84$$
$$= 172.5 \text{ metric tons}$$

### D- 2021/2022

$$Em = \frac{277,916 \text{ kWh}}{1000} \times 0,84$$
$$= 233.45 \text{ metric tons}$$

### E- 2022/2023

$$= \frac{314,422 \text{ kWh}}{1000} \times 0,84$$
$$= 264.81 \text{ metric tons}$$

### F- 2023/2024

$$EM = \frac{426.011 \text{ kWh}}{1000} \times 0,84$$
$$= 367.8 \text{ metric tons}$$



### CO<sub>2</sub> (bus)

$$= \frac{\text{number of shuttle bus in your university} \times \text{total trips for shuttle bus service each day} \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01$$

$$= \frac{35 \times 15 \times 6 \times 240}{100} \times 0,01$$
$$= 75.6 \text{ metric tons in ( 2023/ 2024)}$$

### 2- CO<sub>2</sub> (cars)

$$= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,02$$

$$= \frac{495 \times 2 \times 2 \times 240}{100} \times 0,02$$
$$= 95.04 \text{ metric tons in (2018/ 2019)}$$

$$\frac{200 \times 2 \times 2 \times 240}{100} \times 0,02$$
$$= 38.4 \text{ metric tons in (2019/ 2020)}$$

$$\frac{150 \times 2 \times 1.5 \times 240}{100} \times 0,02$$
$$= 21.6 \text{ metric tons in (2020/ 2021)}$$

$$\frac{175 \times 2 \times 1 \times 240}{100} \times 0,02$$
$$= 16.8 \text{ metric tons in (2021/ 2022)}$$

$$= \frac{500 \times 2 \times 0.5 \times 240}{100} \times 0,02$$
$$= 24 \text{ metric tons in ( 2022/ 2023)}$$

$$= \frac{800 \times 2 \times 0.5 \times 240}{100} \times 0,02$$
$$= 38.4 \text{ metric tons in ( 2023/ 2024)}$$

### 3- CO<sub>2</sub> (motorcycle)

$$= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01$$

$$= \frac{250 \times 2 \times 0.5 \times 240}{100} \times 0,01$$
$$= 6 \text{ metric tons in ( 2023/ 2024)}$$

### CO<sub>2</sub> (total) in ( 2018/ 2019 )

$$= 278.14 + 12.096 + 95.04 + 4.752$$

$$= 390.028 \text{ metric tons}$$

Carbon footprint in 2018/2019 = 437.116 metric tons



CO<sub>2</sub> (total) in ( 2019/ 2020 )  
 = 103.34 + 2 +38.4 + 4.8 = 148.54 metric tons  
 Carbon footprint in 2019/2020 = 148.54 metric tons

Carbon footprint in 2020/2021 = 210 metric tons

CO<sub>2</sub> (total) in ( 2020/ 2021 )  
 = 172.8 + 10.8+21.6+ 4.8 = 210 metric tons

CO<sub>2</sub> (total) in ( 2021/ 2022 )  
 = 233.45+ 36.96+16.8+ 9.6 = 299.81 metric tons  
 Carbon footprint in 2021/2022 = 299.81 metric tons

CO<sub>2</sub> (total) in ( 2022/ 2023 )  
 = 264.11 + 54 + 24 + 6 = 348 metric tons  
 Carbon footprint in 2022/2023 = 348 metric tons

CO<sub>2</sub> (total) in ( 2023/ 2024 )  
 = 367.8 + 75.6 + 38.4 + 6 = 487.8 metric tons  
 Carbon footprint in 2023/2024 = 487.8 metric tons

CO<sub>2</sub> (total) in ( 2023/ 2024 ) per populations  
 =487.8/20376=0.0239 metric ton/person

Total Carbon Footprint (UI GreenMetric)

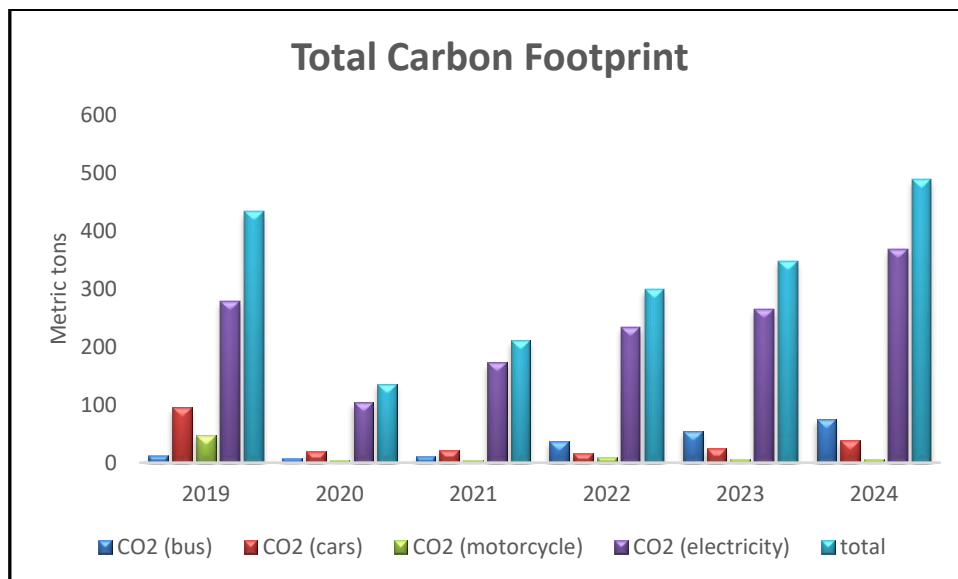


Figure 1 comparison of total carbon footprint in Al Mustaqbal Uinversty from 2019 to 2024