Times Higher Education Sustainability Impact Ratings

University: Al-Mustaqbal University

Country: Iraq

SDG 7.4: Energy and the community

7.4.4: Does your university as a body inform and support government in clean energy and energy-efficient technology policy development?

Yes, Al-Mustaqbal University actively informs and supports government efforts in clean energy and energy-efficient technology policy development. The university engages in several key activities:

- **Research Collaboration**: Faculty and students conduct research that provides valuable insights into renewable energy and energy efficiency, which are shared with government agencies.
- **Policy Advisory**: Experts from the university may serve as advisors or consultants to government bodies, helping to shape policies based on the latest research findings.
- **Workshops and Seminars**: The university organizes events that bring together policymakers, industry leaders, and academic experts to discuss clean energy strategies and technologies.
- **Publications and Reports**: Regularly published research papers and reports contribute to the body of knowledge that supports informed decision-making in energy policy.
- **Community Engagement**: By promoting awareness and understanding of clean energy initiatives, the university helps foster a collaborative environment between academia and government.

1- Research Contributions

Faculty and students conducted extensive research in the fields of renewable energy and energy efficiency. The findings are shared with government to help them policy decisions. This includes research papers, publishing reports and projects.

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1- **https://www.scopus.com/inward/record.uri?eid=2-s2.0 85208315221&doi=10.1016%2fj.energy.2024.133594&partnerID=40&md5= 72df99a36b432058fecea57ba3938066.**

2- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85209642043&doi=10.1016%2fj.csite.2024.105514&partnerID=40&md5=4a58088384b376a910c730ecf5eda0d7

3- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85209580294&doi=10.1016%2fj.energy.2024.133850&partnerID=40&md5=deb7c2222ce502c49af42247f55cae07

4- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85206991419&doi=10.1016%2fj.energy.2024.133482&partnerID=40&md5=fe9c2d5e0265b113028a7279d1ad6ad2

5- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85209239149&doi=10.1016%2fj.csite.2024.105492&partnerID=40&md5=44511e82d6147389eda4655d3d32859f

6- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203865832&doi=10.1016%2fj.energy.2024.133043&partnerID=40&md5=b25caf7a8743f6d1702e6cc0846bdff5

7- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85201380579&doi=10.1016%2fj.energy.2024.132593&partnerID=40&md5=30682e31620ebb08153b73f5ecd71f98

8- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203024196&doi=10.1016%2fj.psep.2024.08.047&partnerID=40&md5=a94cb72dfa8560af5502dc02ce4cdc3f

9- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205684162&doi=10.1016%2fj.csite.2024.105210&partnerID=40&md5=4b0f12032781b17737b980883aaa0625

10- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205006494&doi=10.1016%2fj.est.2024.113871&partnerID=40&md5=537583c845e9271e356f095325b5b932

11- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85201490998&doi=10.1016%2fj.energy.2024.132703&partnerID=40&md5=30e022a1698ded91f0bce2127404a195

12- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205498067&doi=10.1016%2fj.csite.2024.105228&partnerID=40&md5=e9b4527f7273be6b68aee3635b58d3f4

13- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85199110454&doi=10.1016%2fj.envres.2024.119526&partnerID=40&md5=f8e2c4b5a73192cc7ae80d6b15fb2c18

14- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205542654&doi=10.1016%2fj.est.2024.113966&partnerID=40&md5=020f44e53a3ddd0fbb0618a029dace73

15- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85207804715&doi=10.1016%2fj.csite.2024.105343&partnerID=40&md5=3c329e1f76a19c329d9769549ce41008

16- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85199271754&doi=10.1016%2fj.psep.2024.07.062&partnerID=40&md5=4b394ffb757c79af3bfa23992ebdddc2

17- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85200816067&doi=10.1016%2fj.psep.2024.07.068&partnerID=40&md5=fba108d478113989c5146533a32a9424

18- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193900146&doi=10.1016%2fj.desal.2024.117756&partnerID=40&md5=b3e0b6065ff1b24a0127a6571a66affd

19- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85200240954&doi=10.1016%2fj.psep.2024.07.091&partnerID=40&md5=bbacd091a61875602aa8a74d183adea4

20- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85203245427&doi=10.1016%2fj.rineng.2024.102823&partnerID=40&md5=6885ecb0d422129b40f8c1e3228911c4

21- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85201201158&doi=10.1016%2fj.renene.2024.121119&partnerID=40&md5=57d2e1ff1c290927b4c205df28908b2e

22- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85202290341&doi=10.1016%2fj.csite.2024.105028&partnerID=40&md5=cf34b4daf6edd8db18ee04b5da6db2bc

23- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193904323&doi=10.1016%2fj.csite.2024.104585&partnerID=40&md5=1d6279c45137561d6bf2f5ee03003d15

24- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85194490319&doi=10.1016%2fj.psep.2024.05.110&partnerID=40&md5=64bf3be3384f8b32e3b5874aadfbeafd

25- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193068082&doi=10.1016%2fj.csite.2024.104538&partnerID=40&md5=4bc1e7e0e7b21325c6423060ba36750a

26- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85194035332&doi=10.1016%2fj.csite.2024.104555&partnerID=40&md5=3bb990a6e230c70e2f8790ab56451d87

27- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193001750&doi=10.1016%2fj.csite.2024.104485&partnerID=40&md5=59314ec45b1b1f83ec09fdf1b5cd95d1

28- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85192177563&doi=10.1016%2fj.psep.2024.04.116&partnerID=40&md5=55281208a7ade643001e2f98eaee6f80

29- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193245839&doi=10.1016%2fj.csite.2024.104511&partnerID=40&md5=ec4015e8f63b3dab6223af95b7bca583

30- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85192749248&doi=10.1016%2fj.psep.2024.04.118&partnerID=40&md5=e209a68ace58d0b4b3510a644f52edad

31- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85194151524&doi=10.1016%2fj.csite.2024.104597&partnerID=40&md5=6b8949468837e8abc8888376e6efead0

32- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85192106324&doi=10.1016%2fj.est.2024.111880&partnerID=40&md5=52a1dc9c0cf7b3de528fe8f5a8e4acb2

33- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193599897&doi=10.1016%2fj.heliyon.2024.e31244&partnerID=40&md5=19ee6c277325b6582e746f89376e51a0

34- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85193205887&doi=10.1063%2f5.0203755&partnerID=40&md5=035419445f4bdc39d75102550d5f06df

35- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189077725&doi=10.1016%2fj.csite.2024.104298&partnerID=40&md5=5ded569ea90054873c6aa0dbab22a2ff

36- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85186955205&doi=10.1016%2fj.est.2024.111104&partnerID=40&md5=49714b81716302b7bb286cb9dea4e40c

37- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189368424&doi=10.1016%2fj.csite.2024.104319&partnerID=40&md5=9ba82b8b985034c73266177e6252131a

38- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85189109607&doi=10.1016%2fj.csite.2024.104308&partnerID=40&md5=23cbc1cca1bd74d42056b6350d744d75

39- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85188251658&doi=10.1016%2fj.csite.2024.104238&partnerID=40&md5=49a89b7cd69a699318ab20fb3372bc99

40- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85185840528&doi=10.1016%2fj.csite.2024.104135&partnerID=40&md5=d09c729b0b668bfe092d05d33eac80bc

41- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85188861429&doi=10.1016%2fj.csite.2024.104291&partnerID=40&md5=3d4211d8ff467b4fd081589c064735db

In addition to several projests:

PROJECT#1: Some students achieved and updated creative project under the supervision of professors from Al-Mustaqbal University to design a vehicle air conditioning system that operates on exhaust gases emitted from a diesel engine. Through this design, the energy generated due to the expansion of the exhaust gas was invested to drive the compressor of the refrigeration cycle system. The results showed that the performance factor of the proposed cooling system increases by 30% when

compared to the traditional cooling system. The results also showed that fuel consumption was reduced as a result of reduced loads on the engine, and thus the possibility of reducing gas emissions to the environment. Based on these results, the projects can be suggested as solution to the problem of energy waste for the air conditioning system in a vehicle operating on the vapor compression cycle. This work was published in an international magazine at the link:

https://doi.org/10.1007/s40032-021-00787-4

PROJECT#2: Within Al-Mustaqbal University aims to support the practical programs for students and providing educational equipment and developing in a way that suits the labor market and modern technology. A group of department staff and students designed and implemented a smart educational air conditioning system that works with IOT strategy. Through the system, you can learn how the inverter cooling system works and how to control the electric current and voltage. The students simulated the system through a smart screen that allow to recognize the change in pressures, temperatures, frequency, power consumed, and performance coefficient of the system. The Wi-Fi connected air conditioner is equipped with the latest technology, allowing the student or user to easily maintain the ideal room environment and provide full control by cellphone. It also provided the ability to save data and send it via the Internet to the user for the purpose of monitoring performance and identifying malfunctions or leaks, if any.

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=16283

PROJECT#3: Due to the Air Conditioning and Refrigeration Engineering Department's interest in renewable energies, a laboratory device was manufactured and recently developed to electrically break down water (electrolysis) under the supervision of a group of professors as a graduation project for a group of fourth-year students. The raw materials were prepared and the device was manufactured during the first semester, and good initial results were obtained with the successful production of hydrogen gas. Hydrogen gas is also used in many fields, such as welding, as a protective gas, as fuel for missiles, and in power plants as an electrical generator due to its ability to conduct heat. This method has a relatively low cost, and done by connecting two electrodes to two pieces of stainless steel and placing them in a container of water with sodium hydroxide added to it "to increase the conductivity of the water," thus breaking the chemical bonds between oxygen and hydrogen and breaking the molecules using electricity.
https://uomus.edu.iq/NewDep.aspx?depid=2&newid=16601

Project#4: This project has achieved by faculty of the Al-Mustaqbal University and other institutions in order take serious problems in solar energy systems and suggest solutions accordingly. This work included a historical overview of the utilization of solar energy in various cooling and refrigeration processes, covering aspects of design and application. providing an extensive review of various solar-powered cooling techniques, including photovoltaic, photovoltaic-thermal (PVT), absorption,

desorption, and mechanical systems, and their potential to enhance energy efficiency. It also covers the contributions of optimization and machine learning in improving the efficiency of solar cooling technologies. The current study conducts a broad survey of diverse cooling systems utilizing solar energy for either full or partial operation. This project adopted by Al-Mustaqbal University to be a guide to plan the projects needs to work on in the future.

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=28809

Project title	Project link
Solar dish collector: case study in Iraq	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_9242312.pdf
Performance study of water pump working by solar energy	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_91843490.pdf
An Experimental Study into Thermal Performance of Heating System Combined with Solar Heater	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_9229316.pdf
Design and implementation of air speed measuring device (ANEMOMETER)	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_9182636.pdf
Experimental study of a cooling system based on energy recovered from automobile exhaust gases	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_7120485.pdf
Experimental Study of Double Pipe Heat Exchanger	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2

	022_7269321.pdf
Design and implementation of wireless controller For air conditioning unit using Raspberry Pi	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_72657103.pdf
Experimental Study the Mechanical Properties of Nano Composite Materials by Using Fiber Glass and Nano Boron carbide/ Epoxy	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_91743723.pdf
Convective Heat Transfer in a Circular Tube with Short-Length Twisted Tape Insert	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_91825440.pdf
Numerical investigation Of Adding A Personal Ventilation System As combined with a Hybrid Ventilation System During Isolated Office Rooms	https:// www.uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2022_92028547.pdf
Design and Fabrication of Parabolic Trough Solar Collector for Thermal Energy Applications	https://uomus.edu.iq/ Projects/Projects/ WameedMUCProject_2021_7315301.pdf

- 3. Workshops, seminars, forums:

Al-Mustaqbal University organized several awareness campaigns on the importance of renewable energy. The campaigns have focused on society and our students.

Some of these activities are:

A- Al-Mustaqbal Energy Research Center proudly inaugurated its first training course titled "Concepts and Foundations of Renewable Energy." This event marked a

significant step in promoting knowledge and awareness of sustainable energy practices among participants from various disciplines.

The course attracted a large and diverse audience, including students, professionals, and faculty members, all eager to deepen their understanding of renewable energy. Dr. Azhar Mohsen Abd, a respected expert in the field, delivered an engaging and comprehensive lecture that set the tone for the training series.





For more information, please visit:

https://uomus.edu.iq/En/Units/Details.aspx?UnitID=19&NewsID=752

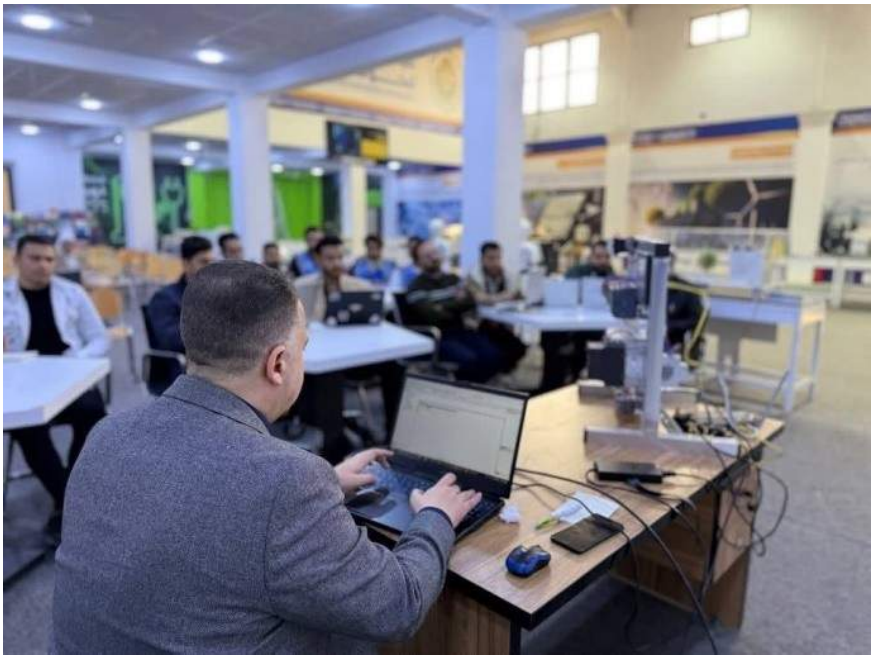
B- The College of Engineering and Engineering Technologies holds the third Clean Energy Forum.

Under the patronage of the President of Al-Mustaqbal University, Prof. Dr. Hasan Shakir, and under the supervision of the Dean of the Faculty of Engineering and Engineering Technologies, Assistant Prof. Dr. Azher Mohsen Abdel, on the occasion of World Clean Energy Day, and within the university s initiatives to promote the Sustainable Development Goals, especially Goal 7 (Clean and Affordable Energy). In collaboration between the Faculty of Engineering and Engineering Technologies - Department of Power Mechanics Technology Engineering- Energy Research Center.



https://uomus.edu.iq/En/Units/Details.aspx?UnitID=19&NewsID=1091

C- The first practical training course specialized in modern industrial control using programmed logic controllers (PLC) and HMI screens - Level 1for controlling renewable energy systems, concluded in cooperation between Al-Mustaqbal University Energy Research Center and Babylon University-Faculty of Engineering.



For more information, visit:

https://uomus.edu.iq/En/Units/Details.aspx?UnitID=19&NewsID=1124

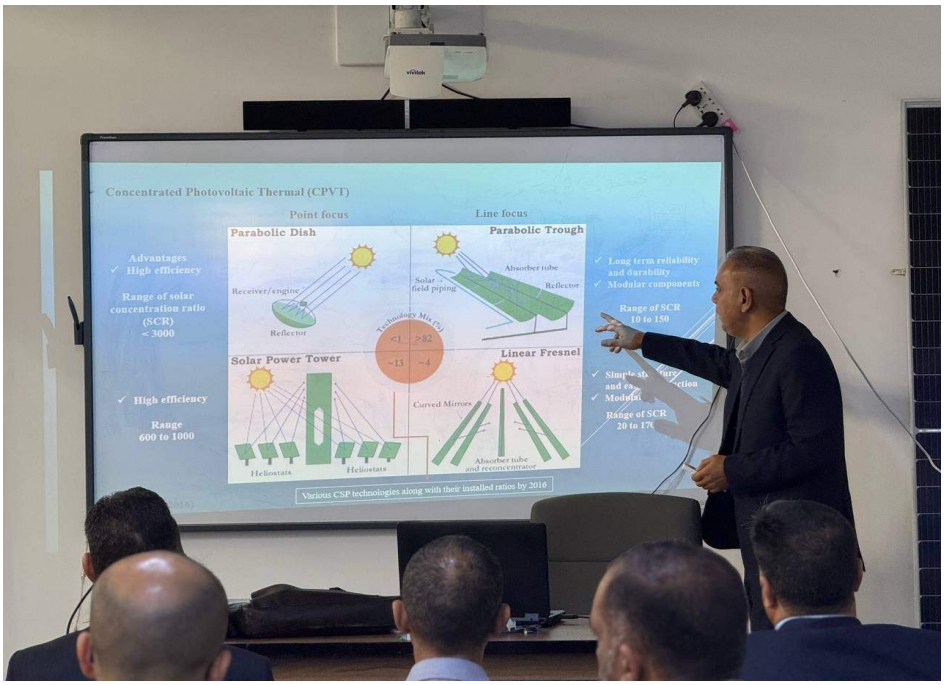
D- Workshop on Energy Harvesting: Al-Mustaqba Energy Research Center, in coordination with the Deanship of the Faculty of Engineering and Engineering Technologies at Al-Mustaqbal University, organized a workshop and lecture on energy harvesting. M. Dr. Zainab Shaker Radif in the presence of the Dean of the College Dr. Azhar Mohsen Abd, Director of the Center and a number of professors of the University of Kufa. The lecture focused on the basic methods used to harvest energy from its various sources, especially harvesting energy from vibrational motion using besoalectic materials, which convert kinetic energy into electrical energy. This workshop promotes awareness on energy harvesting techniques, encourages cooperation between universities and research centers, and supports scientific research in the fields of renewable energy.



For more information, please visit:

https://uomus.edu.iq/En/Units/Details.aspx?UnitID=19&NewsID=1137

E- Al-Mustaqbal University, in cooperation with the Deanship of the Faculty of Engineering and Engineering Technologies at Al-Mustaqbal University, organized a workshop and lecture on the use of solar collector. The event was attended by the Dean of the and many faculty members from the University of Kufa. Hosted by A. M. Dr. Fayez Abdul Muslim to provide a specialized lecture on the use of solar cylindrical reflectors in the heating process, focusing on various heat exchangers.



For more information, please visit:

https://uomus.edu.iq/En/Units/Details.aspx?UnitID=19&NewsID=1139

F- An awareness campaign on waste recycling.

Waste recycling is important in biomass systems as it considered as a renewable energy sources. For example, the Department of Building and Construction Engineering held a scientific seminar titled "Recycling Beverage Containers." This seminar took place at Al-Mustaqbal University.

https://www.uomus.edu.iq/NewDep.aspx?depid=5&newid=23237

There are many workshops that have been completed by the university to teach their students, as attached in the following links:

1- Workshop about Ozon and carbon emissions

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=28859

2- SCIENTIFIC WORKSHOP ON METHODS OF CLEANING SOLAR CELLS

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=15505

3- SCIENTIFIC SEMINAR ON THE IMPORTANCE OF HYDROELECTRIC ENERGY

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=15977

4- TRAINING WORKSHOP ON MEASURING DEVICES FOR SOLAR ENERGY SYSTEMS

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=16048

5- PRACTICAL WORKSHOP FOR STUDENTS OF THE FOURTH STAGE ON THE PARABOLIC TYPE SOLAR HEATER SYSTEM

https://uomus.edu.iq/NewDep.aspx?depid=2&newid=16606

- **Community Engagement**

AL-Mustaqbal University has engaged with the local community by hosting events focused on renewable energy solutions. This includes inviting guest speakers and collaborating with environmental groups to promote sustainable practices.

https://edu.uomus.edu.iq/En/NewColl.aspx?newid=81162&colid=31

A- Sustainability Goals:

Al-Mustaqbal University has set clear sustainability goals that support the complete transitioning to 100% renewable energy through various channels, such as community outreach. For example Al-Mustaqbal engaged in a specialized seminar on sustainable development at the Ministry of Planning of the Iraqi government.



https://uomus.edu.iq/NewCol.aspx?newid=28635

B- Al-Mustaqbal Energy Research Center at Al- Mustaqbal University announces several activites, such as workshops, seminars, webinars, trainging and even lectrues about renewable energies and applications. In addition, the center offers a free course titled “Course on Concepts and Foundations of Renewable Energy”. In this free course, the centre introduced the main principle and resources of the renewable energy and their critical rules in reducing emissions and providing sustainable future of the energy.

More than **a hundred activities** have been achieved by the center focused on renewable energy and its impact on climate change. For more information about these activities, please visit the main webpage of the center:

https://energy.uomus.edu.iq/en/Units/News.aspx?UnitID=19

https://uomus.edu.iq/NewCol.aspx?newid=27137

C- Al-Mustaqbal University organized “The 2nd International Conference on Sustainable Energy Future”

Under the patronage of His Excellency the Minister of Higher Education and Scientific Research, Dr. Naim Al-Aboudi, and under the supervision of the President of Al-Mustaqbal University, Professor Dr. Hasan Shaker Majdi, the activities of the 2nd International Conference on Sustainable Energy Future were inaugurated on Tuesday, February 20, 2024. The conference is part of Al-Mustaqbal University's

Sustainability Week, which runs from the 17th to the 22nd, under the slogan "Climate Change and the Future of Generations." The conference was opened in the presence of

the Deputy Minister for Scientific Affairs, Professor Dr. Haider Abd Dhahid, along with a number of directors-general, university presidents, assistant presidents, college deans, and representatives of government ministries. The welcoming speech was delivered by Assistant Professor Dr. Azher Mohsin Abd, Head of the Scientific Committee, who provided an overview of the participating research. A total of 42 scientific papers were presented by researchers from various Iraqi and international universities. Experts and consultants in the field of energy from around the world were also in attendance, including representatives from Malaysia, Australia, Finland, Oman, and China. The conference proceedings began with the first opening session, which featured speeches by:

- Professor Dr. Talal Youssef, an expert in renewable energy.

- Professor Dr. Steve Hill, an expert in mining and technological innovations, a member of the Australian Institute of Mining and Metallurgy, and the Global Regional Representative for Sustainable Resource Universities.

- Dr. Weng Pon, who holds a PhD in Artificial Intelligence and is responsible for establishing and developing academic institutions, as well as administrative and educational departments.

At the conclusion of the session, the speakers were honored with certificates and shields of appreciation by the Dean of the College of Engineering and Engineering Technologies, who expressed his gratitude for the insightful and impactful lectures in the field of sustainability. For more information, please visit: https://uomus.edu.iq/NewCol.aspx?newid=23068


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D- Al-Mustaqbal University organized the Third Engineering Forum for Graduation Projects entitled “Graduation Projects: “Creativity and Innovation towards a Sustainable University”. With the collaboration with the University of Babylon / College of Engineering, the Third Engineering Forum for Graduation Projects was held. The forum addressed several topics, including:

A- Mechanical and thermal applications.

B- Applications of renewable and clean energy.

C- Reducing the use of fossil fuels.

D- Environmental conservation and mitigating the greenhouse effect.

E- Carbon footprint and reducing gas emissions.





For more information, , please visit the website:

https://energy.uomus.edu.iq/en/Units/Details.aspx?UnitID=19&NewsID=1091

https://uomus.edu.iq/NewCol.aspx?newid=26307

E- AL-Mustaqbal University has engaged with the local community by hosting events focused on renewable energy solutions. This includes inviting guest speakers and collaborating with environmental groups to promote sustainable practices. These events discussed a session held titled 'Active Effective Education and Its Role in Sustainable Development' and transition to renewable energy as well.



https://uomus.edu.iq/MUCNewsPaper/displayNews.aspx?p=%2752%27





https://uomus.edu.iq/NewCol.aspx?newid=26307