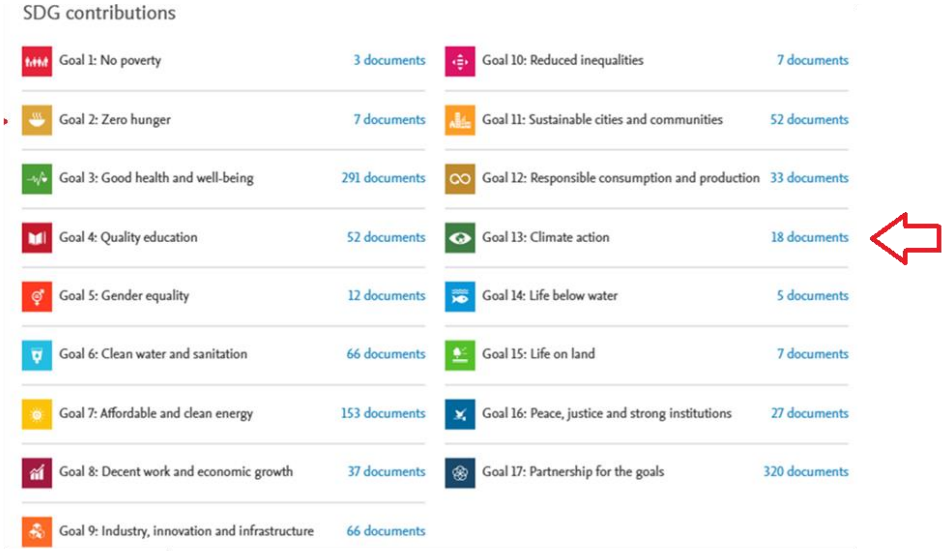
SDG13: CLIMATE ACTION

13.1 Research on Climate Action

Climate change is a major challenge for Jordan, impacting water availability, causing drought, altering sea levels, threatening plant life, and increasing extinction rates for species. This issue arises from human activities that elevate greenhouse gas levels, trapping more heat in the atmosphere.

13.1.1 Climate Action: CiteScore

Recently, faculty members at Isra University have been encouraged to conduct research on climate issues. According to Scopus, there are 18 publications related to SDG 13.



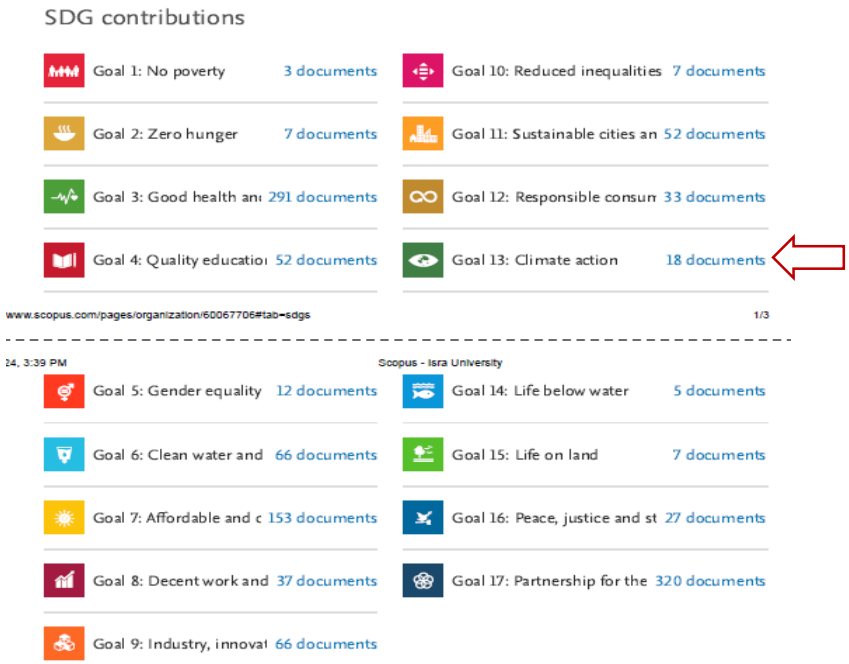
The following table displays the journals where publications are found, along with their highest percentiles according to Scopus. Approximately 16% of the publications published are in the top 10% of journals, according to the Citescore metric. There are three publications between 2022 and 2023 (highlighted).

No.	Article	Cite-Score	Highest percentile
1	The Lancet, 2024	148.1	**99%**
2	Sustainability (Switzerland), 2022	6.8	**88%**
3	Journal of Environmental Chemical Engineering, 2021	11.4	**87%**
4	Heliyon, 2020	4.5	**82%**

No.	Article	Cite-Score	Highest percentile
4	Waste and Biomass Valorisation, 2024	7.9	**78%**
5	Energy Reports, 2021	8.2	**78%**
6	Flow, Turbulence and Combustion, 2024	5.7	**77%**
7	Process Integration and Optimisation for Sustainability, 2024	4.3	**74%**
8	Results in Control and Optimisation, 2024	3.0	**65%**
9	Processes, 2020	5.1	**60%**
10	Jordan Journal of Mechanical and Industrial Engineering, 2016	2.2	**49%**
11	Tehnicki Vjesnik, 2022	1.9	**46%**
12	WSEAS Transactions on Business and Economics, 2023	1.5	**32%**
13	Advances in Horticultural Science, 2011	1.2	**31%**
14	Dirasat: Human and Social Sciences, 2024 Conference Paper	0.1	**29%**
15	Environment Protection Engineering, 2019	0.8	**16%**
16	2nd International Conference on Cyber Resilience, ICCR 2024, 2024	**Conference**	
17	International Journal of Civil Engineering and Technology, 2018		**-**

13.1.2 Climate Action: FWCI

A Scopus report indicates that 18 research papers were published related to SDG 13. Three of these papers were published between 2022 and 2023.



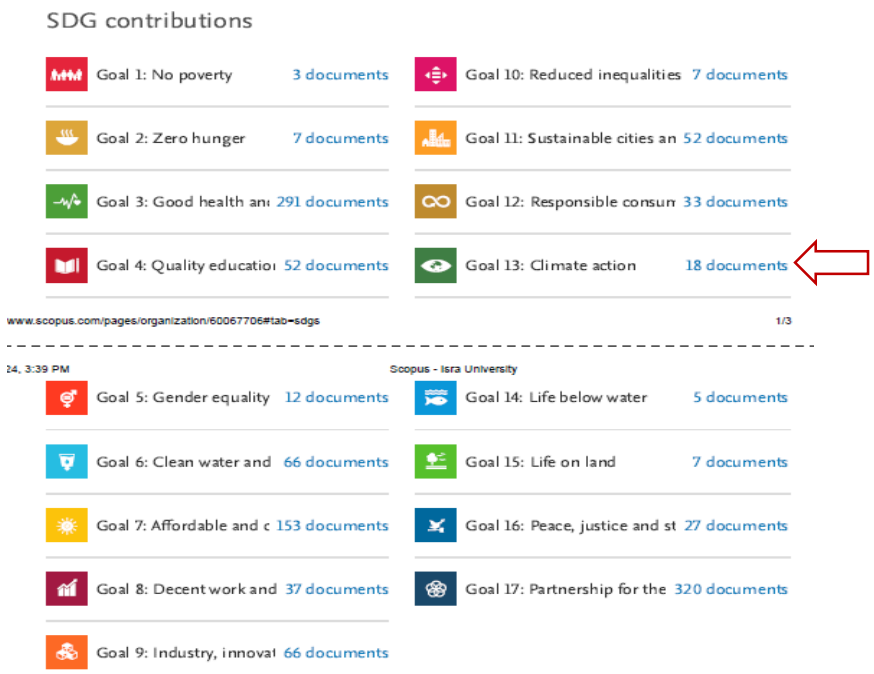
The attached table contains a list of publications related to Sustainable Development Goal 13 (SDG 13). There are 18 publications with a total of 547 citations. The papers published in 2022-2023 are highlighted.

No.	Article	Number of citations
1	An Integrated Goal Programming Model Applied for Planning a National Policy of Sustainable Development: A Case of Jordan Alnsour, M.A. **Process Integration and Optimization for Sustainability, 2024**	**2**
2	Techno-Economic and Environmental Sustainability Assessment of a Sewage Sludge Composting Plant: A Case Study **Albtoosh, A.F.,** Alnsour, M.A., Hajar, H.A., Adam Lagum, A.A. **Waste and Biomass Valorization, 2024**	**3**
3	Burden of disease scenarios for 204 countries and territories, 2022–2050: a forecasting analysis for the Global Burden of Disease Study 2021 Vollset, S.E., Ababneh, H.S., Abate, Y.H., **...**Alqutaibi, A.Y., Alrawashdeh, A.A. **The Lancet, 2024**	**63**
4	Artificial intelligent control of energy management PV system Al Smadi, T.A., Handam, A., Gaeid, K.S., **...**Al-Husban, Y.Y., Khalid, A.S. **Results in Control and Optimization, 2024**	**35**
5	Enhancing the Aerodynamic Performance of the Savonius Wind Turbine by Utilizing Quarter Elliptical Supplementary Blades Al-Ghriybah, M., Adam Lagum, A.A. **Flow, Turbulence and Combustion, 2024**	**1**
6	Climate Change in Robinson's Narrative (Venice Drowned) | تغير المناخ في قصة روبنسون (غرق البندقية)	**-**

No.	Article	Number of citations
	Al Qudah, O.A.S., Al Ahmad, M.H. **Dirasat: Human and Social Sciences, 2024** **Conference Paper**	
7	Vegetation Change Detection in Amman, Jordan Using Remote Sensing and GIS Zraqou, J.S., Alkhadour, W., Hadi, W. **2nd International Conference on Cyber Resilience, ICCR 2024, 2024**	-
8	The Impact of Environmental Disclosure on Market Performance: An Empirical Study of Jordanian-Listed Industrial Companies Alsakini, S.A.A. **WSEAS Transactions on Business and Economics, 2023**	1
9	Analysis of Internal Combustion Engine Performance Using Design of Experiment Hdaib, I.I., Yamin, J.A.A. **Tehnicki Vjesnik, 2022**	2
10	Does the past affect the future? An analysis of consumers' dining intentions towards green restaurants in the uk Shishan, F., Mahshi, R., Kurdi, B.A., Alotoum, F.J., Alshurideh, M.T. **Sustainability (Switzerland), 2022**	17
11	Integrating electrochemical and biological phosphorus removal processes via electrokinetic-based technology Adam Lagum, A.A. **Journal of Environmental Chemical Engineering, 2021**	18
12	A review on conventional passive cooling methods applicable to arid and warm climates considering economic cost and efficiency analysis in resource-based cities Song, Y.L., Darani, K.S., Khdair, A.I., Abu-Rumman, G.A., Kalbasi, R. **Energy Reports, 2021**	52
13	Sustainable environmental management and valorization options for olive mill byproducts in the Middle East and North Africa (MENA) region Khdair, A.I., Abu-Rumman, G.A. **Processes, 2020**	135
14	Current status and future investment potential in renewable energy in Jordan: An overview Abu-Rumman, G.A., Khdair, A.I., Khdair, S.I. **Heliyon, 2020**	189
15	Mitigation of scale problem in the pumped Disi water to Amman, Jordan Al-Ma'Abreh, A.M., Al-Rawajfeh, A.E., AlShamaileh, E.M., Bazedi, G.A. **Environment Protection Engineering, 2019**	10
16	External wall performance in residential buildings in hot climate countries Varouqa, I.F., Rawashdeh, T.M., Ghannam, S. **International Journal of Civil Engineering and Technology, 2018**	-
17	Greenhouse gas emissions reduction potential of Jordan's utility-scale wind and solar projects Hussein, N.M. **Jordan Journal of Mechanical and Industrial Engineering, 2016**	19
18	Seed contents of Coriandrum sativum in Jordan Valley Abu-Hammour, K.A., Wittmann, D. **Advances in Horticultural Science, 2011**	-
Total		**547**

13.1.3 Climate Action: publications

Interest in climate action research at Isra University is growing. According to Scopus, there are 18 publications related to SDG 13.



The list of publications related to Sustainable Development Goal 13 (SDG 13) is included in the attached table. There are 18 publications, with 17 of them published in journals and one published at a conference. The publication between 2022-2023 are highlighted.

No.	Article
1. 1	An Integrated Goal Programming Model Applied for Planning a National Policy of Sustainable Development: A Case of Jordan Alnsour, M.A. **Process Integration and Optimization for Sustainability, 2024**
2.	Techno-Economic and Environmental Sustainability Assessment of a Sewage Sludge Composting Plant: A Case Study **Albtoosh, A.F.,** Alnsour, M.A., Hajar, H.A., Adam Lagum, A.A. **Waste and Biomass Valorization, 2024**
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No.	Article
	Al-Ghriybah, M., Adam Lagum, A.A. **Flow, Turbulence and Combustion, 2024**
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7.	Vegetation Change Detection in Amman, Jordan Using Remote Sensing and GIS Zraqou, J.S., Alkhadour, W., Hadi, W. **2nd International Conference on Cyber Resilience, ICCR 2024, 2024**
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13.2 Low-carbon energy use

13.2.1 Indicator: Low-carbon energy tracking

Isra University is committed to sustainability and reducing its carbon footprint by actively managing and optimising energy consumption across campus facilities. By using low-carbon energy sources, the university significantly lowers its environmental impact and generates a surplus of low-carbon energy that exceeds its total energy needs. By prioritizing energy from renewable and low-carbon sources, Isra University has minimised its reliance on fossil fuels. This effort has contributed to lower greenhouse gas emissions and supports a cleaner, more sustainable environment. The university's approach highlights its commitment to sustainable practices, making it a model for educational institutions that aim to positively impact the environment.

Total energy used	**28209kwh= 101.5 GJ**
Total energy used from low carbon sources	29048 kwh= 104.6 GJ
Surplus	-839 kwh -3 GJ / year

By prioritising energy from renewable and low-carbon sources, Isra University has minimised its reliance on fossil fuels, contributing to lower greenhouse gas emissions and supporting a cleaner, more sustainable environment. The university's approach showcases its dedication to sustainable practices, serving as a model for educational institutions aiming to make a positive impact on the environment.

The data highlights that the university's total energy usage is approximately **28209 kWh** (101.5 GJ), with low-carbon sources accounting for **29048 kWh** (104.6 GJ), resulting in a **net reduction of 839 kWh** (or 3 GJ per year). This surplus indicates that Isra University is not only offsetting its own energy requirements with low-carbon sources but is also able to contribute to broader carbon reduction efforts by reducing overall demand for high-carbon energy.

By transitioning to low-carbon energy sources, Isra University is making a substantial impact on CO_2 emissions. If we assume that traditional fossil fuel-generated electricity produces approximately **0.233 kg of CO_2 per kWh**, Isra University's use of **29048 kWh** from low-carbon sources could reduce emissions by around **6768 kg of CO_2** annually (29048 kWh * 0.233 kg CO_2/kWh).

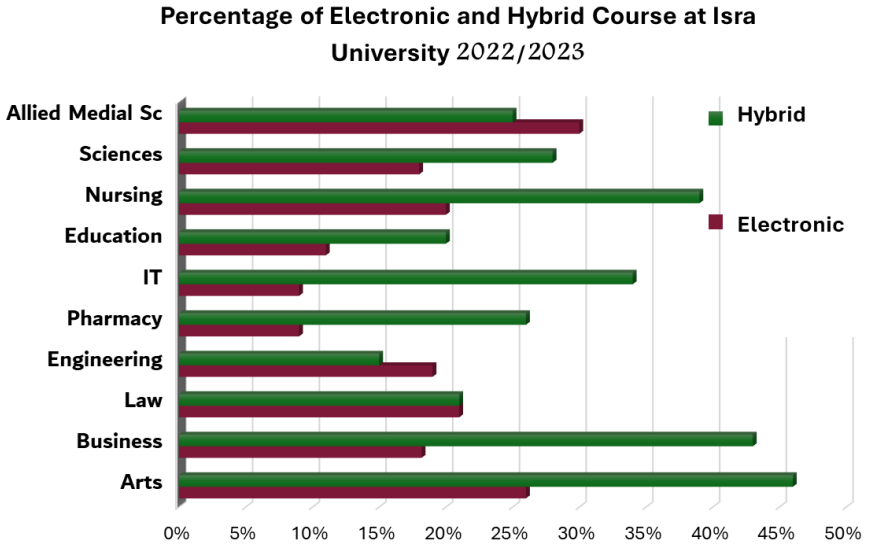
Isra University is effectively lowering its carbon footprint, aligning with global sustainability goals, and demonstrating a clear commitment to environmental responsibility. This achievement not only benefits the university community but also contributes to a sustainable future by reducing greenhouse gas emissions and promoting a cleaner, healthier planet.

13.2.2 Indicator: Low-carbon energy use

IU is committed to the United Nations call for the reduction of carbon emissions and we work hard to reduce emissions by 43% by 2030 and reach zero by 2025. To achieve that IU worked on the following:

1. Nearly 100% of our campus electricity comes from renewable resources, specifically solar energy, at the Isra University Solar Plant. One of the four invoices illustrates this consumption:

2. We used energy-efficient curtains in the university offices and classrooms to help reduce energy consumption.
3. Automating course files: Convert all paper course files into electronic format for each course resulting in reduced paper consumption.
4. 80% of faculties use renewable energy for heating
5. Provide free transportation to all students and staff to reduce traffic congestion. Using group transportation in a single vehicle lowers carbon dioxide emissions.
6. The percentage of online and hybrid courses has been increased to reduce traffic and, consequently, the environmental impact, as transportation is a significant emitter of carbon dioxide. This change aligns with the Ministry of Higher Education and Research (MoHR) requirements. During the 2022-2023 period, the university saw a rise in online courses, contributing to a reduction in carbon dioxide emissions. To facilitate this initiative, the university has designated Thursdays for online and hybrid classes, meaning that students will not need to come to campus on Thursdays, Fridays, and Saturdays. The attached chart visualises the percentage of online and hybrid courses.



7. We held a virtual conference in collaboration with Malaysia, titled "The 4th International Conference of Accounting and Management" (ICAM2022), which is indexed in Scopus. This event took place from September 21 to 22, 2022, in partnership with MARA University in Malaysia. The theme was "The Business and Accounting Landscape in the Pandemic – An Altered World." The virtual format allowed us to connect with a large audience without the need for travel, thereby contributing to a reduction in carbon dioxide emissions.

8. Isra University switched to LED bulbs, reducing energy consumption for lighting by 50%. Guidelines were also implemented to turn off lights in unused offices and to activate screen savers on idle computers.
9. Isra University aims to prioritise quality and sustainability in all our purchasing and contracting practices. Each year, we review our contracts to identify any violations.
10. All our solid waste is managed by a recycling company. For example, we have a partnership with this company where we exchange wastepaper for new recycled paper.
11. All the chemical and organic waste is contracted through the Ministry of Health for a sustainable disposal strategy.
12. We increased planting to increase the green space within the 300,000 m^2 campus.
13. Jordan has very limited water resources. At IU, we treat wastewater and recycle 37.5% of it for irrigating our plants. We consume 16,000 m^3 of water annually, with the water treatment plant providing 6,000 m^3. In 2025, we plan to invest in additional water treatment facilities to purify water for other uses.

13.3 Environmental education measures

Isra University has integrated environmental education into its curriculum across multiple disciplines, equipping students with the necessary knowledge and skills to address climate change challenges effectively. This multidisciplinary approach ensures that all graduates, regardless of their field of study, appreciate the significance of sustainable practices and environmental conservation. Courses often cover critical topics such as renewable energy, waste management, and sustainable agriculture, linking theoretical knowledge with practical application.

13.3.1 Local education programmes on climate

Year: 2023

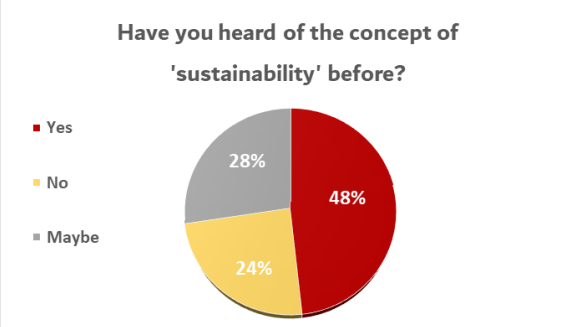
- Since 2018, Israel University and its students have recognised the critical importance of addressing climate change. In November 2018, the university participated in a climate march from Amman to Aqaba. Kawthar Al-Barghouthi represented the university during this event, which took place from November 1 to November 7. She proudly displayed the university flag throughout the march and led a team of women on foot, emphasising both safety and enjoyment.
- **Source**: https://iu.edu.jo/index.php/ar/all-news/2589-2018-11-21-11-15-48

- The Assistant President of the University and Dean of the Faculty of Engineering attended the UN Climate Summit COP27 in Sharm El-Sheikh from November 7 to 10, 2022. She was part of the Scientific Committee focused on education within the Cyprus Initiative for Climate Change Education and Outreach. During the summit, she engaged in a session on Education for Climate Change, addressing challenges within the education sector. The event featured UN Secretary-General Antonio Guterres and representatives from 196 countries and various international

organisations. This initiative demonstrates Isra University's commitment to understanding and addressing the impact of climate change on education.

Source: https://www.iu.edu.jo/index.php/ar/all-news/1255002874-iu-isra-7098

We evaluated the awareness of students on sustainability and results demonstrated that as much as 48% of our students are familiar with sustainability concept



13.3.2 Climate Action Plan, shared

Isra University is aware of climate change. It implements practices that lower its carbon footprint, recycle water, and reduce freshwater consumption by using recycled wastewater for irrigation. Additionally, in terms of energy,

- **Use green renewable solar Energy:** Install solar panels on campus buildings to generate renewable energy on-site. Almost 100% of our total energy is used for campus electricity from renewable resources.
- **Encourage Low-Carbon Commuting**: Provide incentives for walking, biking, carpooling, or using public transportation to reduce the need for campus-related travel energy.
- **Electric Vehicle (EV) Charging Stations**: Install EV charging stations and encourage the use of electric vehicles or electric campus shuttles.

13.4 Commitment to carbon neutral university

13.4.1 Commitment to carbon-neutral university

Isra University is actively working toward its goal of becoming a carbon-neutral university. As stated in section 13.2.2, we are implementing practices that contribute to this aim. Isra University is effectively reducing its carbon footprint and demonstrating a commitment to environmental responsibility. This effort benefits the university community and fosters a sustainable future by lowering greenhouse gas emissions and promoting a healthier planet.

13.4.2 Indicator: Achieve by date

- We are taking steps to reduce carbon emissions and IU is committed to the United Nations call for the reduction of carbon emissions and we work hard to reduce emissions by 43% by 2030 and reach zero by 2050. To achieve that IU worked on the following:
- Almost 100% of our total energy used for campus electricity from renewable resources (solar energy) Israa University Solar Plant. One of the four readers invoices demonstrate the consumption
- Used efficient curtains to reduce energy consumption throughout the university offices and classrooms.
- Transform paper course files into electronic files for all courses.
- 80% of faculties use renewable energy for heating
- Provide Free transportation to all students and staff – to make the roads less travelled. Using transportation in one vehicle reduced carbon dioxide emissions.